

PURPOSE OF THIS DOCUMENT

The Lesedi Local Municipality (LLM) forms part of the Sedibeng District Municipality and is situated on the south eastern border of Gauteng. The LLM provides a number of waste services to residents and commercial enterprises within the municipality. A weekly domestic collection service is provided in each of the four main areas within the municipality with a bulk container service available on request in the Heidelberg / Ratanda area. Waste collected in the Heidelberg / Ratanda area is disposed of at a transfer station from where it is transported to the Platkop waste disposal site (situated within the Ekurhuleni Metropolitan Municipality) for final disposal. Devon has its own municipal waste disposal site which is also open to the public. The waste disposal site at Impumelelo was closed some time ago due to its close proximity to houses. Waste from Impumelelo is also being disposed of at the Devon waste disposal site. Waste from Vischkuil is collected by The Waste Group, a private contractor and disposed of at the Rooikraal waste disposal site. The Devon waste disposal site is therefore the only remaining operating waste disposal site within the municipality.

The LLM appointed SCIP Engineering Group (SCIP) to act as project managers and to appoint a consultant to licence the existing waste disposal site at Devon with a view to closure and to identify and licence a new waste disposal site for the Devon area. SCIP appointed Golder Associates Africa (Golder) to conduct the waste management licensing for the closure of the existing site and identification and licensing process for a new waste disposal site. Zitholele Consulting (Pty) Ltd was appointed by Golder to undertake the Environmental Impact Assessment (EIA) processes for both the closure of the existing Devon waste disposal site and the development of a new waste disposal site in the area.

This EIA is based on recommendations made in a feasibility report compiled by Golder where it was recommended that the LMM identify and licence a new waste disposal site as soon as possible and rehabilitate and close the existing waste disposal site as soon as a new waste disposal site has been established (Golder, 2009). Golder identified three candidate sites in the vicinity of Devon and Impumelelo. These sites are being investigated in this EIA.

In terms of the Government Notice Regulation (GNR) 543 - 546, promulgated in terms of the National Environmental Management Act, No. 107 of 1998 (NEMA), and the National Environmental Waste Management, Act No. 59 of 2008 (NEM:WA)(GNR. 718, Category B) the proposed establishment of a new waste disposal facility covering an area greater than 200m² requires an EIA in support of an Waste Management License application for environmental authorisation to the relevant authority, that is, the Gauteng Department of Agriculture and Rural Development (GDARD).

The first phase of an EIA is the Scoping Phase. This is the phase during which public issues, concerns and suggestions are identified so that they can be evaluated by the EIA technical specialists during the following phase (the Impact Assessment Phase) of the EIA.

This final Scoping Report (SR) has been compiled to satisfy the requirements of the EIA regulations. The report provides details on the current regional state of the environment and the methodology for conducting this EIA.

According to the EIA Regulations, interested and affected parties must have the opportunity to comment on the proposed project and verify that all the issues raised during the Scoping Phase have been recorded. This was the main purpose of the Draft SR. The Final SR is prepared after the public review of the Draft SR, in order to capture all issues raised during this period. The Final SR will also be reviewed by the public for a period of 21 days in order for Interested and Affected Parties to

Interested and affected parties will also have an opportunity to comment on the findings of the EIA, which will be presented in a draft Environmental Impact Report (EIAR). After public review, the Draft EIAR will be updated and submitted to the lead authority, the GDARD, for a decision on the project.

Summary of what the Final Scoping Report Contains

This report contains the following for comment by stakeholders:

- The background to and description of the proposed project;
- An overview of the EIA process, including the public participation process;
- A description of the existing environment in the project area;
- The potential environmental issues and impacts which have already been identified;
- The terms of reference for the specialist studies; and
- A list of comments raised to date.

AN EIA CONSISTS OF SEVERAL PHASES



YOUR COMMENT ON THE FINAL SCOPING REPORT

The Final SR is available for comment from **17 October 2011 to 25 November 2011** (30 days). This Final SR has been distributed to the authorities, all key stakeholders, all those that have requested a copy. Copies of the report are available at strategic public places in the project area (see below).

List of public places where the Draft Scoping Report is available:

PLACE	CONTACT PERSON	TELEPHONE
Impumelelo Public Library, 221 Impumelelo Road Devon	Mr Thabo Mphafudi	Tel: (017) 688-0273
Devon Public Library, 1 Schuurman Street, Devon	Ms Lindi Gericke	(017) 688-0028

The report is also available electronically from the Public Participation office.

You may comment on the Final Scoping Report by:

- Completing the comment sheet enclosed with the report;
- Writing a letter, or producing additional written submissions; and
- Emailing or telephoning the public participation office.

DUE DATE FOR COMMENT ON THE FINAL SCOPING REPORT

17 OCTOBER 2011 – 25 NOVEMBER 2011

THE PUBLIC PARTICIPATION OFFICE:

Andre Joubert or Florence Rambuda

Public Participation Office

Zitholele Consulting (Pty) Ltd

P O Box 6002

HALFWAY HOUSE, 1685

Tel: (011) 207 2077 /2075

Fax: 086 676 9950

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ABBREVIATIONS

B-	Water Deficit Climate, resulting in only sporadic leachate generation
B+	Water Surplus climate, resulting in significant leachate generation
BEE	Black Economic Empowerment
BID	Background Information Document
BPEO	Best Practicable Environmental Option
C	Communal waste disposal site
Draft SR	Draft Scoping Report
DWA	Department of Water Affairs
ECA	Environmental Conservation Act
EA	Environmental Authorisation
EIA	Environmental Impact Assessment
EIAR	Environmental Impact Report
EMProg	Environmental Management Programme
Final SR	Final Scoping Report
G	General waste or waste disposal site for General waste.
GDARD	Gauteng Department of Agriculture and Rural Development
GN	Government Notice
GPS	Geographic Positioning System
H	Hazardous waste or waste disposal site for hazardous waste.
H:h	Hazardous waste disposal site that can receive wastes with a hazard rating of 3 and 4
H:H	Hazardous waste disposal site that can receive wastes with a hazard rating of 1 and 2
I&AP	Interested and Affected Parties
IEM	Integrated Environmental Management
L	Large
LLM	Lesedi Local Municipality
M	Medium
MRD	Maximum Rate of Deposition
NEMA	National Environmental Management Act
NEM:WA	National Environmental Management: Waste Act
PPP	Public Participation Process
RFP	Request for Proposal
S	Small
ToR	Terms of Reference
ZC	Zitholele Consulting

1 INTRODUCTION

1.1 Background Information

It has been estimated that globally, 95% of all urban waste is disposed of on land, either in open trenches or in sanitary waste disposal sites. According to the *Minimum Requirements for Disposal by Landfill, Second Edition* (Department of Water Affairs and Forestry [DWAF¹], 1998) every waste disposal site must be licensed, designed, constructed, operated and closed according to the stipulated requirements. It is becoming increasingly difficult to site new waste disposal sites as old sites reach capacity.

The existing Devon waste disposal site is situated approximately 500 m south east of Devon town along the R29 provincial road between Springs and Bethal. The Integrated Waste Management Plan (IWMP) (Kwezi V3 Engineers, 2006) and audit reports done by Gauteng Department of Agriculture and Rural Development (GDARD) indicates that the site is classified as a GCB². This means that the waste disposal site receives general waste (G), that it is a communal waste disposal site receiving less than 25 tonnes/day, and that the waste disposal site does not have the potential to generate leachate i.e. the rainfall is less than the evaporation therefore giving it a negative water balance (B²).

The Devon waste disposal site is currently operating illegally since it had not previously been permitted as required by Section 20 of the Environmental Conservation Act, No.73 of 1989 (ECA) or the National Environmental Management: Waste Act, No. 59 of 2008 (NEM:WA) and is also not operated as prescribed by the Minimum Requirements for Waste Disposal by a waste disposal site (DWAF 1998)(MR).

In order to comply with the necessary legal requirements for the proposed closure of the site, the site must be appropriately designed and licensed, in line with the requirements of the Environmental Impact Assessment (EIA) Regulations GNR 543 - 546 of 2010, promulgated in terms of chapter 5 of the National Environmental Management Act No. 107 of 1998 (NEMA) (as amended) and the NEM:WA, promulgated on 3 July 2009. Due to the lack of initial planning and historically poor operational procedures and controls, the waste disposal site has impacted upon various elements of the surrounding environment.

In order for the LLM to close the existing Devon site a new site needs to be licensed and constructed in order to fulfil the disposal needs of the Devon area. This is the main purpose of this EIA.

¹ The Department of Water Affairs and Forestry (DWAF) is now called the Department Water Affairs (DWA). Chapter 1 of the National Environmental Management: Waste Act, No. 59 of 2008 (NEM:WA) does not make reference to "landfill site" definition, and therefore, for the purposes of the Draft Scoping Report, landfill refers to waste disposal site.

1.2 Site Classification

To classify the proposed new waste disposal site, the area required for the new waste disposal site must be determined. This is done by determining the volume of waste that will be disposed of over the life of the site based on the existing disposal volumes and estimated growth rate over the life of the site. A site life of 50 years was used for all calculations. Additionally, the types of wastes involved and the potential for significant leachate generation and the need for leachate management must be determined.

These classification requirements are described below.

1.2.1 *Size of Waste Stream*

The size of the waste disposal site can be determined by the population served and/or by the amount of waste disposed of in tonnes per day, or the amount of waste that accumulated over a given period of time. Current disposal information as received from the LLM was summarised and reworked in Table 1-1 below.

Table 1-1: Waste collection volumes and estimated disposal volumes at the Devon waste disposal site

Days	Volume disposed (m ³) by LLM	Estimated density (kg/m ³)	Estimated tons/day
Monday	24	350	8.40
Tuesday	16	350	5.6
Wednesday	36	300	10.8
Thursday	8	350	2.8
Friday	8	350	2.8
Saturday	0	0	0
Sunday	0	0	0
Sub - total/week	92	330	30.4
Estimated private disposal (10%/week additional)	9.2		3.0
Total/week	101.2		33.4
Total/ annum	5 262.4		1738.88
Average per day	20.2	330	6.7

The estimated size of the general waste stream is based on the current volumes collected by the LLM as well as an additional estimated 10% per day for disposal by the public. The waste disposal site currently receives on average an estimated 6.7 tonnes of waste per day of which 6.1 tonnes/day is disposed by the municipality and 0.6 tonnes/day by the public.

The average density of the waste is taken at 330 kg/m³ to calculate the tonnages. The reason for such a high density is that the majority of the waste coming from Impumelelo has a high ash content.

The waste disposal site size classification as per the 1998 edition of the Minimum Requirements for Waste Disposal by Landfill is indicated in the Table 1-2 below.

Table 1-2: Waste disposal site size classes

Waste disposal site size class	Maximum Rate of Deposition (MRD) (Tonnes per day) 1998
Communal	<25
Small	>25 <150
Medium	>150 <500
Large	>500

The size of the waste disposal site is calculated as follows:

- $MRD = (IRD)(1+d)^t$
- IRD - (Initial rate of deposition on site in T/ day) = 6.7 tonnes
- d1 - (Expected annual development rate, based on population growth) = 3,0%
- t - (Years since deposition started at IRD) = 50
- MRD – (Maximum rate of deposition after t years) = 12.1 tonnes

The maximum rate of deposition for the site is calculated as follows:

$$6.7 \text{ tonnes} \times (1 + 0.03)^{50} = 29.4 \text{ tonnes}$$

Based on the calculation, the site will be classified as a "S" or Small site according to the Second Edition of the Minimum Requirements.

1.2.2 Type

The type of waste to be disposed of must be determined as per the Minimum Requirements. The waste type can be General or Hazardous ("G" or "H"). The waste disposal site will receive only general waste and the class should be General ("G").

1.2.3 Climatic Water Balance

To determine whether the site falls within a water deficit or a water surplus environment, a climatic water balance needs to be determined. A water deficit environment is an environment in which the evaporation rate exceeds the rainfall, i.e. water is scarce. Climatic Water Balance is a simple calculation that assists in deciding whether leachate management

is required or not, it therefore provides a conservative means of determining whether or not significant leachate generation will occur.

The Climatic Water Balance over a period of time (**B**) is calculated using only the two climatic components of the full water balance, namely (**R**) and (**E**)

The Climatic Water Balance is defined by:

$$B = R - E$$

Where:

B is the Climatic Water Balance in millimetres of water

R is the rainfall in millimetres of water

E is the evaporation from soil surface in millimetres of water.

Rainfall and evaporation data were obtained from the DWA website (www.dwa.gov.za). The closest meteorological station that had sufficient data was Deneysville at the Vaal dam which has rainfall data from 1938 to 2008 and evaporation data from 1966 to 2008. The data was manipulated as required by the Minimum Requirements and the climatic water balance was calculated. Based on the calculations all the years from 1966 to 2008 have an annual water deficit, the site therefore has a negative water balance i.e. "B⁻".

Based on the above the proposed waste disposal site classification is "GSB⁻".

1.3 Details of the Proponent

The LLM forms part of the Sedibeng District Municipality and is situated on the south eastern border of Gauteng. The N3 high way, the main link between the port of Durban and Gauteng runs along the eastern boundary of Heidelberg town, the main economic hub of the municipality.

The LLM provides a number of waste services to residents and commercial enterprises within the municipality. A weekly domestic collection service is provided in each of the four main areas within the municipality with a bulk container service available on request in the Heidelberg/Ratanda area. Waste collected in the Heidelberg/Ratanda area is disposed of at a transfer station from where it is transported to the Platkop waste disposal site (situated within the Ekurhuleni Metropolitan Municipality) for final disposal. Devon has its own municipal waste disposal site which is also open to the public. The waste disposal site at Impumelelo was closed some time ago due to its close proximity to houses with waste from Impumelelo also being disposed of at the Devon waste disposal site. Waste from Vischkuil is collected by The Waste Group, a private contractor and disposed of at the Rooikraal waste

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Our Ref : 12468: Let-02

SAHRA
111 Harrington Street
Cape Town

17 October 2011

Attention: Mr Dumisani Sibayi

Dear Mr Sibayi

**KEY COMMENTING AUTHORITY REVIEW FOR THE LICENSING AND IDENTIFICATION OF
A NEW WASTE DISPOSAL SITE FOR THE LESEDI LOCAL MUNICIPALITY**

GAU: 002/10-11/E0087

As per Government Notice No. 33306 of June 2010, Chapter 2, (6), the Minister, MEC or competent authority (GDARD) must consult with every state department that administers a law relating to a matter affecting the environment relevant to that application for an environmental authorisation when he or she considers an application. A state department consulted must submit its comments within 40 days from the date on which the Minister, MEC or competent authority requests such state department, in writing, to submit comments.

In terms of the aforementioned Zitholele Consulting is in the process of distributing the Final Scoping Report for this proposed project to the relevant departments and organisations, such as yourself, for comment. The relevant organisations that have received a copy of the report are:

- Sedibeng District Municipality (Mr Zies van Zyl – Tel: 016 932 1015)
- South African Resource Heritage Agency (Mr Dumusani Sibayi – Tel: 021 462 4502)
- Department of Environmental Affairs (Mr Lucas Mahlangu – Tel: 012 310 3536)
- Department of Water Affairs (Mr Justice Maluleka – Tel: 392 1409)

In an aim to minimise delays, Zitholele Consulting has distributed the Final Scoping Report to you as one of the above-mentioned departments and organisations with the objective of facilitating comments to assist the GDARD in making an informed decision on whether to approve the Scoping Phase of the project without unforeseen delays.

Please submit your comments to Zitholele Consulting and the GDARD before **25 November 2011**. You can submit your comments by fax or email as follows (please remember to use the reference number [GAU: 002/10-11/E0087] with your comments) :

- Zitholele Consulting: Fax: (086) 676 9950

disposal site. The Devon waste disposal site is therefore the only remaining operating waste disposal site within the municipality.

The details of the proponent are as follows:

Company:	Lesedi Local Municipality
Contact:	Mr Star Moholobela
Address:	P O Box 201, Heidelberg, Gauteng, 1438
Tel:	016 340 4355
Fax:	086 609 5404
Cell:	072 123 8634
E-mail	smoholobela@lesedilm.co.za

For more information regarding the LLM please refer to their website at www.lesedilm.gov.za.

1.4 Environmental Assessment Practitioner (EAP)

The LLM appointed Zitholele Consulting, an independent consultancy, to undertake the EIA for the proposed closure of the existing Devon Waste Disposal Site and the development of the proposed new Waste Disposal Site near Devon, in accordance with the EIA Regulations promulgated in April 2006 in terms of the NEMA as amended.

Zitholele Consulting is an empowerment company established in 2003 to provide specialist consulting services primarily to the public sector in the fields of Water Engineering, Environmental and related Waste Services and Communication (public participation, events management and awareness creation). The company promotes new opportunities for and to increase the level of participation by historically disadvantaged individuals (HDIs) in the ownership, management and control of economic activities. Mr Charles Naidoo, a professional engineer, is the Managing Director and an 80% shareholder. The remaining 20% of the shares is held by Golder Associates Africa (Pty) Ltd (GAA). Zitholele Consulting has a Level 3 BBBEE status and is staffed by HDI and PDI professionals, technical specialists and competent senior management members.

Whereas Zitholele Consulting operates independently, it works in close association with its alliances and sub-consultants in projects which allow for the collaboration of specialist teams well suited to high level and technically complex projects. In this way, the company participates and benefits from the skills transfer and subsequent capacity building of Zitholele Consulting personnel taking place in the collaboration between its alliance partners and the sub-consultants.

Zitholele Consulting has no vested interest in the proposed project and hereby declares its independence as required by the EIA Regulations.

1.4.1 EAP Contact details

In terms of the NEMA the proponent must appoint an Environmental Assessment Practitioner (EAP) to undertake the environmental assessment of an activity regulated in terms of the aforementioned Act. The details of the EAP are listed below.

Name:	Mr Warren Kok (eap)
Qualifications / Accreditation	B.Hon (Geography and Environmental Management)
Company Represented:	Zitholele Consulting (Pty) Ltd
Address:	P O Box 6002, Halfway House, 1685
Telephone:	011 207 2060
Fax:	086 674 6121
E-mail:	warren@zitholele.co.za

The Curriculum Vitae of the EAP is provided in **Appendix A**.

1.5 Objectives of this Report

This report addresses the requirements of the scoping process as outlined in the EIA regulations. The aim of this Final Scoping Report (SR) is to:

- Provide information to the authorities and Interested and Affected Parties (I&APs) on the proposed project;
- Provide information regarding alternatives that have been considered;
- Indicate how I&APs were afforded the opportunity to contribute to the project, verify that the issues they raised were considered, and comment on the findings of the impact assessments;
- Describe the baseline receiving environment;
- Present the findings of the Scoping Phase in a manner that facilitates decision-making by the relevant authorities.

2 LEGAL REQUIREMENTS

Environmental legislation in South Africa was promulgated with the aim of, at the very least, minimising and at the most preventing environmental degradation. The following Acts and Regulations are applicable to the Devon waste disposal site:

2.1 The Constitution of the Republic of South Africa No. 108 of 1996

Section 24 of the Constitution (Act 108 of 1996) states that: Everyone has the right:

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

The current environmental laws in South Africa concentrate on protecting, promoting, and fulfilling the nation's social, economic and environmental rights; while encouraging public participation, implementing cultural and traditional knowledge and benefiting previously disadvantaged communities.

2.2 The National Environmental Management: Waste Act, No. 59 of 2008

The NEM:WA came into effect in July 2009. Provisions have been made in the form of legislative and regulatory tools to facilitate and ensure implementation of the Act by all spheres of government. To this end, the Minister of the Department of Water and Environmental Affairs (DWEA) published a Waste Management Activity List in July 2009 which has clear thresholds on waste activities that need authorisation prior to commencement. The published Waste Management Activity List effectively replaced Schedule 1 of the NEMA and all waste related activities listed in EIA lists.

All waste-related activities listed in terms of section 24 (2) of the NEMA have been repealed at the same time that the Minister published the new list of waste management activities in order to align the NEM:WA and the EIA regulations and to avoid the necessity to submit two applications for the same activity.

Waste management activity means: any activity listed in Schedule 1 or published by notice in the Gazette under section 19 and includes *inter alia* the disposal of waste.

2.2.1 Schedule 1 – Waste management activities in respect of which a waste management licence is required

The Acting Minister of the DWEA, under Section 19 (1) of the NEM:WA, has published a List of Waste Management Activities which has, or is likely to have a detrimental effect on the environment in GNR 718 of 3 July 2009.

The schedule has listed activities in two different categories:

For Category “A” activities: a person who wishes to commence, undertake or conduct an activity listed under this Category, must conduct a Basic Assessment, as stipulated in the EIA regulations under section 24 (5) of the NEMA as part of a Waste Management Licence Application.

For Category “B” activities: a person who wishes to commence, undertake or conduct an activity listed under this Category, must conduct a S&EIAR process, as stipulated in the EIA regulations under section 24(5) of the NEMA as part of a Waste Management Licence Application.

This proposed project falls under **Category “A”** and **“B”**, which is as follows:

Category “A” is as follows:

- (1) The storage, including the temporary storage of general waste at a facility that has the capacity to store in excess of 100m³ of general waste at any one time, excluding the storage of waste in lagoons.
- (7) The recycling or re-use of general waste of more than 10 tons per month.
- (18) The construction of facilities for activities listed in category “A” of the schedule (not in isolation to associated activity).

Category “B” is as follows:

- (10) The disposal of general waste to land covering an area in excess of 200 m².
- (11) The construction of facilities for activities listed in Category B of the schedule (not in isolation to associated activity).

Therefore, it is imperative that a S&EIAR be conducted for the proposed project.

2.3 National Environmental Management Act, No. 107 of 1998

The NEMA contains a set of principles that govern environmental management and against which all Environmental Management Programmes (EMProg) and actions are measured. Sustainable development requires the consideration of all relevant factors including the following:

- Environmental management must place people and their needs at the forefront of its concern, and serve their physical, psychological, developmental, cultural and social interests equitably;
- The pollution and degradation of the environment are avoided or where they cannot be altogether avoided are minimised and remedied;
- Waste must be avoided, or where it cannot be altogether be avoided, minimised and reused or recycled where possible and otherwise disposed of in a responsible manner;
- That a risk averse and cautious approach is applied, which takes into account the limits of current knowledge about the consequences of decisions and actions;
- Responsibility for the environmental, health and safety consequences of a policy, programme, project, product, process, service or activity exists throughout its life cycle;
- The participation of Interested and Affected Parties (I&APs) in environmental governance must be promoted, and all people must have the opportunity to develop the understanding, skills and capacity necessary for achieving equitable and effective participation. In particular, participation by vulnerable and disadvantaged persons must be ensured;
- Decision-makers must take into account the interests, needs and values of all interested and affected parties and this includes recognising all forms of knowledge, including traditional and contemporary knowledge;
- Community well-being and empowerment must be promoted through environmental education, the raising of environmental awareness, the sharing of knowledge and experience and other appropriate means;
- The right of workers to refuse work that is harmful to human health or the environment and to be informed of dangers, must be respected and protected;
- Decisions must be taken in an open and transparent manner, and access to information must be provided in accordance with the law; and
- The vital role of women and youth in environmental management and development must be recognised and their full participation therein must be promoted.

The EIA for this project will be conducted in terms of the EIA Regulations that were promulgated in terms of Section 24 (5) of the NEMA and the new EIA regulations of 2010. The GDARD, is the competent authority responsible for issuing environmental authorisation for the proposed project.

A Scoping & Environmental Impact Reporting (S&EIAR) is applicable to all projects likely to have significant environmental impacts due to their nature or extent, activities associated with potentially high levels of environmental degradation, or activities for which the impacts cannot be easily predicted.

In terms of Government Notice Regulation (GNR) 545, S&EIAR comprising both Scoping and Impact Assessment is necessary for the proposed establishment of a new waste disposal site. The applicable activities are listed as follows:

Listing 1:GNR 544, 2010

- Activity 23: The transformation of undeveloped, vacant or derelict land to:*
- (i) Residential, retail, commercial, recreational, industrial or institutional use, inside an urban area, and where the total area to be transformed is 5 hectares or more, but less than 20 hectares.*
 - (ii) Residential, retail, commercial, recreational, industrial or institutional use, outside an urban area and where the total area to be transformed is bigger than 1 hectare but less than 20 hectares*

Activity 24: The transformation of land bigger than 1000 square meters in size to residential, retail, commercial, industrial or institutional use where at the time of the coming into effect of this schedule such land was zoned open space, conservation or had an equivalent zoning.

Listing 2: GNR 545, 2010

Activity 15: Physical alteration of undeveloped, vacant or derelict land for residential, retail commercial, recreational, industrial or institutional use where the total area to be transformed is 20 hectares or more.

The new *EIA Regulations* were promulgated on 18 June 2010 and became effective on 2 August 2010.

2.4 The Environment Conservation Act No. 73 of 1989

The Environment Conservation Act No. 73 of 1989 (ECA) was previously applicable to waste facility establishment, operation and disposal as Section 20 (1) states that 'no person shall establish, provide or operate any disposal site without a permit issued by the Minister of Water Affairs.

Section 21 (1c) The Construction, or upgrading of, transportation routes and structures, and manufacturing, storage, handling or processing facilities for any substances which are considered dangerous or hazardous, and is controlled by the national legislation.

The Minister would in such a permit indicate the control and management of disposal sites in general, the control and management of certain disposal sites or disposal sites handling particular types of waste; and the procedure to be followed before any disposal site could be withdrawn from use or utilised for another purpose.

The promulgation of the NEMA and the subsequent NEM:WA have replaced the ECA, and its regulations.

2.5 Minimum Requirements for Waste Disposal by Landfill

The project must comply with the Minimum Requirements for Waste Disposal by Landfill, (Second Edition 1998) and Minimum Requirements for the handling, classification and disposal of hazardous waste (Second Edition 1998):

The objectives of the Minimum Requirements for Waste Disposal by landfill are:

- To improve the standard of waste disposal in South Africa;
- To improve guidelines for environmentally acceptable waste disposal for a spectrum of waste disposal site sizes and types; and
- To provide a framework of minimum waste disposal standards within which to work and upon which to build.

The objectives of the Minimum Requirements for the handling, classification and disposal of hazardous waste are to:

- Prevent water pollution and ensure sustained fitness for use of South Africa's water resources;
- Attain and maintain minimum waste management standards in South Africa, so as to protect human health and the environment from possible harmful effects caused by the handling, treatment, storage and disposal of waste;
- Effectively administer and provide a systematic and nationally uniform approach to the waste disposal process; and
- Endeavour to make South African waste management practices internationally acceptable.

2.6 The National Water Act, No. 36 of 1998

The provision of water in South Africa is divided into public water and private water, and its use is regulated by the National Water Act (NWA), No. 36 of 1998 (under the directorship of the DWA).

It must be noted that, in terms of the NWA, it is an offence to pollute public and/or private water to render it unfit for the propagation of fish and aquatic life, including rainwater, seawater, and subterranean water.

In terms of the NWA and its amendments of 2006, the national government, acting through the Minister of Water Affairs ("the Minister"), is the public trustee of South Africa's water resources, and must ensure that water is protected, used, development, conserved, managed and controlled in a sustainable and equitable manner for the benefit of all persons. The Minister is responsible to ensure that water is allocated equitably and used beneficially in the public interest, while promoting environmental values. The national government, acting through the Minister, has the power to regulate the use, flow and control of all water in South Africa.

The majority of the provisions of the NWA came into effect as of 1 October 1998 and at the same time various provisions of the 1956 Water Act were repealed. The remaining provisions of the NWA commenced on 1 January 1999 and 1 October 1999 (and the remaining provisions of the 1956 Water Act repealed).

The most fundamental departure from the old legislation is the removal of the concept of water as private property. Instead, water will be made available through user licences, which may be issued for a maximum period of 40 years, subject to renewal. A priority of users has been established for the allocation of licences, with the environment near the top of the list of priorities.

Section 21 of the NWA indicates that "water use includes" *inter alia*:

- Impeding or diverting the flow of water in a water course;
- Engaging in a stream flow reduction activity contemplated in section 36 of the act;
- Disposing of waste in a manner which may detrimentally impact on a water resource;
and
- Altering the bed, banks, course or characteristics of a water course.

This water uses might be applicable to the proposed project. This will be verified during the EIA investigations and advice will be sought to the GDARD on whether the above water uses are applicable and that the proposed project requires that a Water Use License (WUL) be applied for.

2.7 The National Environmental Biodiversity Act No. 10 of 2004

The objectives of this Act are:

- (a) Within the framework of the NEMA, to provide for-

- The management and conservation of biological diversity within the Republic and of the components of such biological diversity;
 - The use of indigenous biological resources in a sustainable manner; and
 - The fair and equitable sharing among stakeholders of benefits arising from bio-prospecting involving indigenous biological resources;
- (b) To give effect to ratified international agreements relating to biodiversity which are binding on South Africa;
- (c) To provide for co-operative governance in biodiversity management and conservation and;
- (d) To provide for a South African National Biodiversity to assist in achieving the objectives of this Act.

2.8 National Environmental Management Air Quality Act No. 39 of 2004

The object of this Act is -

- (a) To protect the environment by providing reasonable measures for -
- The protection and enhancement of the quality of air in the Republic;
 - The prevention of air pollution and ecological degradation; and
 - Securing ecologically sustainable development while promoting justifiable economic and social development; and
- (b) Generally to give effect to section 24(b) of the Constitution in order to enhance the quality of ambient air for the sake of securing an environment that is not harmful to the health and well-being of people.

2.9 Department of Environmental Affairs Integrated Environmental Management Information Series

The Department of Environmental Affairs and Tourism² [DEAT, now referred to as the Department of Environmental Affairs (DEA)] Information Series 2002 - 2006 comprise 23 information documents. The documents were drafted as sources of information about concepts and approaches to Integrated Environmental Management (IEM). The IEM is a key instrument of NEMA and provides the overarching framework for the integration of environmental assessment and management principles into environmental decision-making.

² The Department of Environmental Affairs was previously known as the Department of Environmental Affairs and Tourism.

The aim of the information series is to provide general guidance on techniques, tools and processes for environmental assessment and management.

2.10 The National Heritage Resources Act No. 25 of 1999

The objectives of this Act are to:

- Introduce an integrated and interactive system for the management of the national heritage resources; to promote good government at all levels, and empower civil society to nurture and conserve their heritage resources so that they may be bequeathed to future generations;
- Lay down general principles for governing heritage resources management throughout the Republic;
- Introduce an integrated system for the identification, assessment and management of the heritage resources of South Africa;
- Establish the South African Heritage Resources Agency (SAHRA) together with its Council to co-ordinate and promote the management of heritage resources at national level;
- Set norms and maintain essential national standards for the management of heritage resources in the Republic and to protect heritage resources of national significance;
- Control the export of nationally significant heritage objects and the import into the Republic of cultural property illegally exported from foreign countries;
- Enable the provinces to establish heritage authorities which must adopt powers to protect and manage certain categories of heritage resources; and
- Provide for the protection and management of conservation-worthy places and areas by local authorities; and to provide for matters connected therewith.

2.11 Occupational Health and Safety Act No 85 of 1993

The Occupation Health and Safety Act No. 85 of 1993 (OHSA) makes provisions that address the health and safety of persons working on the site.

The objectives of the act are to:

- Provide for the health and safety of persons at work and for the health and safety of persons in connection with the use of plant and machinery;
- Protect persons other than persons at work against hazards to health and safety arising out of or in connection with the activities of persons at work;
- Establish an advisory council for occupational health and safety; and
- Provide for matters connected therewith.

3 PROJECT DESCRIPTION AND ALTERNATIVES CONSIDERED

3.1 Project Motivation

The Minimum Requirements for Waste Disposal by Landfill form part of a series of documents published by the DWA that provide a reference framework for waste disposal in South Africa. The licensing system is provided for in *Chapter 5 of the NEM:WA*. The system is also enforced in terms of the Minimum Requirements, which provide the requirements for the siting, design, licensing and operation of waste disposal sites. A license is issued by the relevant authority (i.e. GDARD) once all the requirements are met.

The Devon waste disposal site has not yet been licensed in terms of Section 45 of the *NEM:WA* and was developed as an informal waste disposal facility that is operating illegally.

Zitholele Consulting in association with Golder Associates has been appointed by the LLM to fulfil a number of consulting services, which include, amongst other activities, the licensing of the existing Devon site and the new proposed site.

Faced with waste and pollution challenges, the municipality considers the licensing for closure to be the best possible environmental option for the Devon waste disposal site, the LLM will be contributing positively by licensing the site for closure. The site will however have to be replaced with a new waste facility, hence this report.

3.2 Project Description

As aforementioned, this EIA is being undertaken for the proposed new general waste site in Devon in order to fulfil the disposal needs of the local community.

In order to close the existing Devon waste disposal site, which is operating illegally, a new waste site must be sited, licensed and constructed.

The main objective of this EIA is to receive a decision on the Environmental Authorisation (EA) for the proposed project, whilst maintaining the integrity of the surrounding environment and preserving a workable relationship with the local authorities and communities. In addition, all legal processes have to be adhered so as to obtain the required EA.

3.3 Components for a Waste Disposal Site

The following components of the waste disposal site were taken into consideration throughout this EIA and the design of the site:

- The lifespan of the site;
- Footprint of the facility (ground space);
- Height of the facility (airspace);
- Type of waste to be disposed as well as the volumes (waste stream analysis);

- Geotechnical, hydro-geological conditions and liner design; and
- Capping of the site.

Lifespan of the facility

The facility will be designed for a 30 - 50 year lifespan, depending on the final site size available.

Footprint of the facility

The footprint of the proposed site will be approximately 4 - 6 ha, depending on the site.

Height of the facility

The proposed height of the waste disposal site will be ~11 - 21 m above ground level (this is however also dependent on the depth of excavation that can be achieved).

Type of waste to be disposed as well as the volumes (waste stream analysis)

The waste disposal site will receive only general waste and the class should be General ("G"). The estimated size of the general waste stream is based on the current volumes collected by the LLM as well as an additional estimated 10% per day for disposal by the public. The waste disposal site currently receives an estimated 6.7 tonnes of waste per day of which an estimated 6.1 tonnes/day is disposed by the municipality and an estimated 0.6 tonnes/day by the public. Please refer to Appendix N for future growth of waste stream volumes.

Geotechnical Conditions and Foundation Design

A geotechnical investigation will be undertaken in order to establish whether the new site can be constructed on the geological conditions that prevail on site. This in turn will influence the foundation design of the disposal facility.

Every liner system is made up of a series of elements. Liner requirements, and hence the number and sequence of liner components, will vary with the class of waste disposal site under consideration. The detail and variation associated with a G:S:B- site is described below and depicted in Figure 3-1 below.

G layer: This is a base preparation layer consisting of a compacted layer of reworked *in-situ* soil with a minimum thickness of 150 mm and constructed to the same compaction standards as a B layer. Where the permeability of a G layer can be proven to be of the same standard as a B layer, it may replace the lowest B layer.

The surface of every G layer must be graded towards a leachate collection drain or sump in the case of B⁺ waste disposal site or to a central channel on the down gradient side of a B⁻ waste disposal site, from which sporadic leachate can be

collected if it occurs. The central channel must contain a prism of A layer material with a perforated pipe drain so as to act as an efficient leachate collector or finger drain. The minimum gradient must be 2% for G sites.

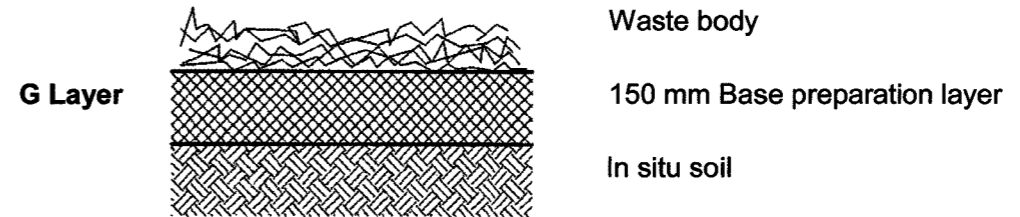


Figure 3-1: Liners: G:S:B waste disposal sites

Capping of the Waste Disposal Site

Like the liner system, a capping or final cover system is also made up of a series of elements. The capping system is designed to maximise run-off of precipitation, while minimising infiltration and preventing ponding of water on the waste disposal site. Each of the cover or capping systems is made up of a series of elements. Cover requirements, and hence the number and sequence of components, will vary with the class of waste disposal site under consideration. The detail and variation associated with a G:S:B- site is provided below and illustrated in Figure 3-2 below.

The elements are as follows:

U layer: A 200 mm thick layer of topsoil planted with local grasses and shrubs. The layer must be lightly compacted after spreading. In arid regions, this can be substituted with a layer of natural gravel.

W layer: Shaped and compacted upper surface of waste body. (If available, it may prove useful to cover the waste surface with builders' rubble before compacting).

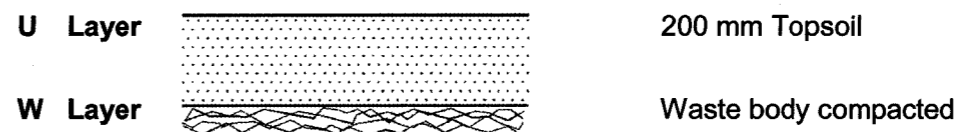


Figure 3-2: Cover: G:C and G:S:B waste disposal sites

3.4 Services and Infrastructure

It is proposed that the waste disposal site has the following auxiliary services and infrastructures present on site:

- Access and Roads;
- Fencing;
- Water;
- Electricity;
- Staff facilities; and

- Site office and fuel storage area.

3.5 Major Activities of the Overall Waste Project

The major activities for the proposed project (including the EIA), prior to and after construction, are explained in the table below.

Table 3-1: Major activities for the proposed project

ACTIVITY	DETAILS
PRE CONSTRUCTION PHASE	
Candidate Site Selection Process	Prior to the commencement with this EIA, a technical team assessed the area to determine feasible alternatives for the proposed project.
EIA	An EIA is being undertaken to ensure that all environmental, social and cultural impacts are identified and to ensure that stakeholders have the opportunity to raise issues and concerns. This is necessary to obtain EA from the competent authority in this case the GDARD.
Consultation with private property owners	All stakeholders and property owners have been, and are being engaged in the EIA.
Structure liner investigation	Investigations will be undertaken to ensure that the liner specifications are in line with the underlying geology.
Approval from authorities	
Relocation of services	If any infrastructure needs to be relocated for the development, it must be undertaken prior to commencement with construction.
CONSTRUCTION PHASE	
Structures	Fencing - Provide a safe and secured waste disposal area to restrict access and prevent injuries to livestock.
	Formation - Provide a suitable liner to the correct standard on which to place the waste disposal site.
	Drainage - Provide water drainage channels within the site and leachate management system.
SITE STABILISATION PHASE	
Rehabilitate the construction area	The area where construction activities have taken place must be rehabilitated to minimise environmental degradation by following the EMProg that is compiled in conjunction to the EIA.
OPERATIONAL PHASE	
Commencement of operations	Rehabilitation tasks have to take place progressively during operations.
DECOMMISSIONING AND CLOSURE PHASE	
Decommissioning of the waste site and its infrastructure	Once the waste disposal site is no longer in use and is no longer required, a decommissioning process may commence including the capping of the waste body and rehabilitating the area.

3.6 Overall EIA Project Schedule

The primary milestones for the Devon Waste Disposal Site Project (prior and through to post construction) are described in Table 3-2 below.

Table 3-2: Primary milestones of the Devon Waste Disposal Site

MILESTONES	DATE
Final Scoping Report	October 2011
Stakeholder Engagement on Final Scoping Report	November 2011
Undertake Specialist Studies	October – November 2011
Draft EIAR and EMProg	November – December 2011
Stakeholder Engagement on draft EIAR / EMProg	January – February 2012
Finalise EIAR and EMProg	February 2012
Stakeholder Engagement on final EIAR / EMProg	March 2012
Submission to Relevant Authorities	April 2012
Environmental Authorisation	June 2012
Appeal Period	To be confirmed after the Environmental Authorisation
Construction (including EMProg Auditing)	To be confirmed after the Environmental Authorisation

3.7 Description of the Development Activities

3.7.1 *The Pre-Construction Phase*

Environmental Authorisation and Waste Licence

If the competent authority approves the project, then an EA will be issued complying with Regulation 38 of the NEMA Regulations 2010 in the name of the applicant. Once an EA is issued, a Waste Licence can also be issued in order for the proposed project to proceed. Should both the EA and Waste License be received, and no appeal is brought against the project, the LLM may commence with construction.

Appointment of Contractor

After a tendering process, the LLM will appoint a construction contractor.

Construction Schedule

The primary milestones for the construction of the new site are described below:

3.7.2 Construction Phase

Once a positive EA and waste license are obtained, construction of the new waste site will be undertaken over a period to be determined by the municipality. The construction phase of the development will involve the following aspects:

- Site preparation and vegetation clearance for contractor's camp;
- Erection of camp sites for the contractors;
- Construction of surface drainage and storm water diversion drains;
- Construction of the liner;
- Construction of a leachate collection system;
- Construction of a leakage detection system; and
- Site preparation and commissioning.

Site preparation and vegetation clearance is undertaken for contractor's camp in order to facilitate construction.

An area will be cleared for the siting of a contractor's camp to facilitate construction. This area will be chosen to have the least environmental impacts which are easily mitigated and will be rehabilitated as per the EMProg requirements post construction.

Erection of camp sites for the contractors

The contractor's camp will be located on the site within the palisade fencing and therefore no additional fencing will be required. Site establishment shall take place in an orderly manner and all amenities shall be installed at the camp site (if applicable) before the main workforce moves onto site.

Construction of surface drainage and storm water diversion drains.

This includes the separation of unpolluted from polluted surface water and the containment of polluted water on site in impoundments. Also where leachate is generated, it must be contained separately from water which is only slightly polluted through contact with the waste.

Construction of the liner

This is a layer of low permeability material placed beneath a waste disposal site and designed to direct leachate to a collection drain or sump, or to contain leachate. It may comprise natural materials, synthetic materials, or a combination thereof (refer to Section 3.3).

Construction of a leachate collection system

The leachate collection system will be equipped with suitable drains or collection pipes that direct the gravity flow of leachate to defined collection points or sumps from which it can be collected for treatment.

Construction of a leakage detection system

The leakage detection system will be constructed to intercept any leachate that may pass the barrier of the liner. This leachate is then directed to separate leachate collection sumps or sewer, where the quantity and quality can be monitored and from which accumulated leakage can be removed or passed through to the sewer system. This system is designed to fulfil the requirements for the early warning monitoring of leakage given in Section 6 of the *Minimum Requirements for Monitoring of Waste Management Facilities, Second Edition, 1998*.

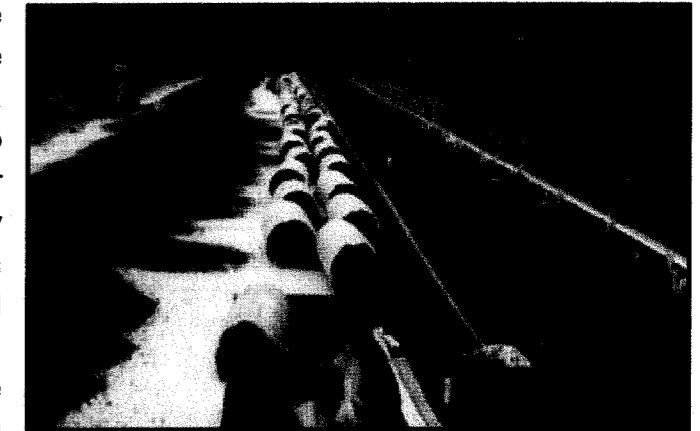


Figure 3-3: Example of a Leakage Detection System.

Site preparation and commissioning

This commences after all infrastructure has been established, in order to prepare the site to a state that is ready to receive waste and to operate as an environmentally acceptable disposal facility for a pre-determined period. This would entail having all the above in place, installed and ready for the acceptance of waste.

3.7.3 Operational Phase

The objectives of the Minimum Requirements for waste disposal site operation are:

- To ensure that all waste is disposed of in an environmentally and socially acceptable manner; and
- To ensure that the disposal operation is acceptable to those whom it affects.

Waste disposal sites must be operated in accordance with the following sanitary waste disposal site operating principles:

- Waste must be compacted; and
- Covered at the end of each day's operation.

There are different methods that should be applied for land filling general waste:

- Trench system (Only for communal and small sized waste disposal sites);
- Standard cell operation;
- Wet weather cell; and
- Special cells for putrescible waste.

Facilities and resources that the waste disposal site should have during its operation include:

Sign posting and road access

Signs in the appropriate official languages must be erected in the vicinity of the waste site, indicating the route and the distance to the waste disposal site from the nearest main road. These traffic signs must conform to the requirements of the Road Ordinance. A general notice board must also be erected at the site entrance stating the class of the disposal site and the types of waste that can be accepted as well as the correlated tariffs charged.

Controls

Waste Acceptance

General waste disposal sites may only receive general waste. Prior to waste being accepted at the general waste disposal sites, it must be inspected by a suitably qualified staff and the transporter must confirm that waste is indeed general waste.

Access Control

It is a Minimum Requirement that vehicle access to the site be limited to a single controlled entrance to prevent the unauthorised entry and illegal dumping. The site entrance should have a lockable gate which should be managed during operation hours.

Collection of disposal tariffs

Waste disposal tariffs should be levied and collected at all waste disposal sites from medium size upward. Therefore there are no planned tariffs for the site.

Security

It is a Minimum Requirement that unauthorised pedestrian access be strictly prohibited. Waste reclamation and squatting should be discouraged.

Operational Management Plan

This is a plan that is a site specific document that will be developed as part of the waste license application procedure. It describes the way in which the site is to be operated, commencing at the level and detail of daily cell construction and continuing through to the projected development of the site with time. This plan will be attached to the Draft EIAR in the next phase of the project.

Resources

Adequate facilities, equipment, and suitably trained staff are required in order to ensure an ongoing environmentally acceptable waste disposal operation.

4 ALTERNATIVE ASSESSMENT

The Integrated Environmental Management (IEM) Guidelines (DEA) state that information on reasonable alternatives should be provided. The following alternatives have been considered and are discussed in more detail below:

- Site alternatives;
- Design alternatives; and
- "No-go" alternative.

Alternatives are different means of meeting the general purpose and need of a proposed activity. Alternatives may involve location (site), activity, process or technology, temporal or the no-go alternatives. Alternatives relevant to the project have been detailed below.

4.1 Site Alternatives

Three alternative sites have been identified for the proposed location of the new waste disposal site. These sites were based on the following criteria:

- Location;
- Geology;
- Historical sensitivities;
- Ecological sensitivities;
- Hydrology; and
- Economic radius.

The three identified alternatives being assessed in this EIA are described below (Figure 4-1):

Alternative 1

Alternative 1 borders the north eastern portion of the existing Devon waste disposal site. This site was chosen since it is located directly adjacent to the existing site making further development of the existing site possible. It will also ensure that waste disposal site activities do not move to a completely new site. The surrounding land use of the area is residential to the south and north-west with agricultural or farming areas to the north and north east. The area available for waste disposal site development is approximately 18 ha, which is also appropriate for the candidate waste disposal site requirements and will cater for the disposal of the waste stream over the long term of 30 years.

The area south west from the site can also be categorized as residential.

Alternative 2

Alternative 2 encompasses the old sewage works to the north of Impumelelo. The surrounding land use of this area is residential to the south and agricultural or farming areas to the north, west and east.

The area available for development is ~16 ha. This site is however closely situated to Impumelelo (located within 100m to the south of the site), and there is therefore not a suitable buffer area around the site. Should a suitable buffer area be applied to the site i.e. ~500m, the useable area of the site is reduced to between 5 - 7 ha.

Buffer zones are separations between the boundaries of registered waste disposal sites and residential developments. They may vary between 500m and 1000m in width, depending on the classification of the waste disposal site. No residential development may take place within a proclaimed buffer zone. At the discretion of the local authority and the state departments, however, developments such as industrial development may be permitted.

Alternative 3

Alternative 3 is situated within the boundaries of the existing sewage works about 3.7 km from Devon to the south east and 2.5 km from Impumelelo to the east. The surrounding land use of the area is agricultural, and sewage works to the east of the site. The area available for the development of the waste disposal site is just more than 4 ha.

4.2 Design Alternatives

Information on the design alternatives will be provided once the preferred site has been selected, investigated and assessed. The next step would be to carry out the design of the General Waste Disposal Site. The General Waste Disposal Site design is based on the outcome of the Site Investigation and the EIA. The general objective of General Waste Disposal Site design is to provide a cost-effective, environmentally acceptable waste disposal facility. More specific objectives include:

- The mitigation of any adverse impacts identified in the Site Investigation and EIA;
- The prevention of leachate pollution of adjacent ground and surface water; and
- The provision of sufficient cover material to ensure an environmentally and aesthetically acceptable operation.

If the best available site, is sub-optimal from an environmental or geohydrological point of view, the subsequent site design must compensate for these shortcomings by means of appropriate engineering. Where there is an environmental risk associated with the chosen site, the design must be upgraded to compensate. Such compensatory design must be to the satisfaction of the competent authority, and will usually be in excess of the Minimum Requirements, in order to protect sensitive aspects of the environment.

4.3 The No Go Alternative

In the case that none of the alternatives is suitable for the proposed new waste disposal site, there will be no waste disposal facility in Devon. Waste generated within the area will have to be transported to the nearest available site, the Rietfontein waste disposal site which is not feasible due to the millions of rands that will be wasted in transport costs. Additionally the transportation of waste will further damage the existing road infrastructure and will have an impact on air quality.

5 DESCRIPTION OF THE RECEIVING ENVIRONMENT

5.1 Physical environment

5.1.1 *Climate*

Methodology and Data Sources

The climate information was obtained from the Climate of South Africa database.

Regional Description

The study area displays a mild climate, characterised by warm moist summers and cool dry winters typical of the Highveld climate. The region falls within the summer rainfall region of South Africa, rainfall occurs mainly as thunderstorms from October to March, with a mean annual precipitation of 668mm. This varies from 900mm in the central higher lying areas to 556mm in the lower lying northern and southern areas of the province. Mean annual temperature varies from approximately 19.3°C in the north of the province to 16.0°C in the south. The eastern and central areas, however, experience a lower mean annual temperature of around 15.0°C. There is large variation between summer and winter temperatures, with Gauteng experiencing a daily mean temperature in January and July of 21.2°C and 9.8°C, respectively (Schulze, 1997).

Due to the long clear nights, mild wind and dry air in Gauteng in winter, the occurrence of frost is common in the region. The region experiences on average 30 days of frost per year (Schulze, 1997). Winter atmospheric conditions cause temperature inversions, which have the effect of keeping polluted air close to the surface, so that winter air quality over the Highveld is generally poor.

Sensitivities

There are no foreseen climatic sensitivities associated with the site or the proposed activity.

5.1.2 *Geology and Soils*

Methodology and Data Sources

A desktop screening assessment, using a Geographic Information Systems (GIS) tool was undertaken of the geological environment. The geological data was taken from the Environmental Potential Atlas Data (ENPAT) from the DEA.

Regional Description

All three candidate sites are situated in the network of dolerite sills, sheets and dykes, mainly intrusive into the Karoo Supergroup and are not situated in any unstable areas such as dolomitic areas and fault zones based on maps indicating the regional geology.

Sensitivities

There are no foreseen geological sensitivities posed upon the site or the proposed activity, however due to the potential groundwater pollution from the waste disposal site a Geohydrological Investigation will be undertaken during the Environmental Impact Phase of the project. Additionally a Soil Assessment will be conducted in the next phase of this project.

5.1.3 Topography**Methodology and Data Sources**

The topography of the area was taken from the Surveyor General 1:50 000 topocadastral map sheet of the area (2627 DB). Land Use was determined utilising a Geographic Information Systems (GIS) desktop study, the data was obtained from the DWAF database. Information was also taken from GDARD's Hydrology and Water Research Commission (WR90).

Regional Description

The topography of the region is characterised by moderate relief. Small, scattered wetlands and pans occur in the area. Altitude ranges from 1,600 to 1,700 metres above sea level (masl). The area's land use is characterised predominantly by residential areas (including informal settlements), maize farming and cattle grazing.

Sensitivities

There are no foreseen topographical sensitivities in the study area.

5.1.4 Surface Drainage Features

Methodology and Data Sources

A desktop screening assessment using a Geographic Information Systems (GIS) tool was undertaken on the surface water environment. The surface water data was taken from the WR90 data supplied by the DWA.

Regional Description

All three site alternatives are located in the Vaal River Catchment (Figure 5-4).

Surface waters comprise flowing rivers and lakes or dams, with many of the smaller tributaries being seasonal in nature (i.e. dry in the winter). Such rivers include the Wilge River and Boesmanspruit, which flow in a north easterly and north westerly direction respectively.

Sensitivities

According to the map (Figure 5-4) Alternative 2 is located in a wetland buffer zone as delineated by the GDARD, however after investigation and a site visit it was determined that this site is located within the borders of the Devon Sewage Farm. This will be further investigated in the next phase of the project.

There are foreseen drainage sensitivities posed on all three alternatives and it is recommended that a surface water and wetland delineation study be undertaken. Due to the potential groundwater pollution from the waste disposal site it is also recommended that a Geohydrological Investigation be undertaken during the EIA Phase of the project to determine groundwater pollution possibilities and impacts. All the surface water bodies are considered to be sensitive features, and should be avoided as far as possible.

5.1.5 Fauna and Flora

Methodology and Data Sources

A literature review of the faunal species that may occur in the area was conducted. A detailed ecological study will be conducted in the summer months as part of the final report.

Regional Description

According to the South African National Biodiversity Institute, the study area falls within the Grassland Biome, where most of the county's maize production occurs. The main vegetation type found in the region is the Soweto Highveld Grassland vegetation unit as classified by Mucina and Rutherford³ as described below.

The Soweto Highveld Grassland is found in the Mpumalanga and Gauteng Provinces in a broad band roughly delineated by the N17 Highway in the north, Perdekop in the southeast and the Vaal River in the south. The landscape is typical of the gently undulating Highveld plateau which supports dense tufted grassland dominated by *Themeda triandra*, *Elionurus muticus*, *Eragrostis racemosa*, *Heteropogon contortus* and *Tristachya leucothrix*. This grassland is only interrupted by wetlands, occasional ridges and agricultural activities.

This vegetation type is endangered as almost no conservation of the vegetation type occurs. An estimated 45% of the vegetation type has already been transformed by cultivation, urban sprawl and mining.

Sensitivities

According to the available desktop GIS information Site Alternative 3 is located adjacent to an irreplaceable ecologically sensitive site, and as such is at this early stage of the development already considered to be more sensitive than the other two sites. A terrestrial ecological assessment will be conducted.

³ *The Vegetation of South Africa, Lesotho and Swaziland*, Mucina and Rutherford 2006.

5.2 Cultural and Historical Environment

5.2.1 *Cultural and Historical Features*

At present, no historical resources have been identified in the proposed area. However a Heritage Impact Assessment will be conducted in the next phase of the project to assess the various alternatives.

5.3 Social and Economic Environment

5.3.1 *Socio-Economic Features*

Methodology and Data Sources

A literature review of the socio-economics in LLM was conducted through a desktop study of available data through an internet search (various sources consulted and referenced where used).

Regional Description

Sedibeng District Municipality consists of the three local municipalities, namely Lesedi, Midvaal and Emfuleni. Lesedi is approximately 1042 km² comprising of 22.5% of the Sedibeng District. Lesedi has a population of approximately 72,000 people (9% of Sedibeng population) (Available at http://en.wikipedia.org/wiki/Sedibeng_District_Municipality).

In terms of the economy, the district is dominated by manufacturing, which contributed ± 32% to the local economy during 2001. Manufacturing in the district is dominated by the fabricated metal and the chemical sectors (Mittal Steel Company (previously ISCOR) and Sasol). The manufacturing sector will remain the dominant economic sector in the district in the near future. The local economy has been stagnating for a number of years, with a net loss in formal job opportunities. Economic sectors which do present opportunities for further local development and economic growth include agriculture and tourism. (2001, Census).

Sensitivities

There are currently between 5 and 30 waste salvagers on the existing Devon waste disposal site. They depend on the site for their livelihood. Closing the waste disposal site will therefore have socio-economic effects. However, the licensing of a new site will ensure their livelihood (although this should be strictly formalised).

6 ENVIRONMENTAL IMPACT ASSESSMENT

The proposed new Devon waste disposal site is anticipated to impact on a range of biophysical and socio-economic aspects of the environment. One of the main purposes of the EIA process is to understand the significance of these potential impacts and to determine if they can be minimised or mitigated.

Based on the history of the site, negative impacts can be readily predicted and mitigated. It should be noted that a comprehensive construction and operational EMProg will be developed and implemented to regulate and minimise the impacts during construction and operation. The potential environmental impacts identified during the Scoping Phase, which will be investigated further in the EIA phase of the project, are summarised in Table 6-1 below.

Table 6-1: Potential Environmental Impacts to be investigated in the EIA Phase

ENVIRONMENTAL ELEMENT	POTENTIAL ENVIRONMENTAL IMPACT
Climate	1.) Local climate conditions do not appear to be of significant concern to the project.
Geology, Soil, Land Capability and Drainage Features	<p>Geotechnical</p> <p>1.) Geotechnical stability may be an issue of concern for the proposed new waste disposal site as well as end land use.</p> <p>Drainage Features</p> <p>1.) Insufficient rehabilitation post construction and after closure may result in erosion of the landscape. Eroded materials may enter the surface water environment, contributing to sedimentation of the local surface water resources.</p> <p>2.) Surface runoff from the landfill site may cause the pollution of nearby surface water resources. Proper storm water management is required as well as the installation of cut off drains.</p> <p>3.) A GSB- liner must be installed on the new waste disposal area to prevent seepage of polluted water into the underground water resources.</p> <p>Soil and Land Capability</p> <p>1.) Insufficient control measures during construction and operation may result in erosion, compaction and sterilization of soil resources.</p> <p>2.) A consequence of impacts to the soil resource may be a reduction in land capability. Some areas are already severely impacted by previous activities.</p>
Fauna	1.) Vegetation clearing will have a negative impact on habitat, and consequently on the faunal elements of the receiving environment.
Flora	<p>Vegetation Clearing</p> <p>1.) Vegetation clearing for the footprint of the waste site may have an impact on the flora in the area.</p> <p>Allen Invasive Species</p> <p>1.) Disturbed areas are prone to infestation by alien invasive species.</p>
Cultural and Historical	1.) The construction phase may result in the destruction or vandalism of cultural or historical significant areas.
Socio-Economic Features	<p>Traffic</p> <p>1.) During the construction phase increased heavy vehicle traffic should be expected. Without management, such increased traffic loads may negatively impact on existing traffic flow.</p> <p>2.) Unmanaged construction vehicles may decrease road safety</p>

	<p>to other road users</p> <p>3.) Uncontrolled movement of construction vehicles may result in unnecessary impacts to the environment through vegetation and habitat destruction.</p> <p>Salvagers livelihood</p> <p>1.) The existing Devon waste disposal site is a means of making a living for salvagers. This is by means of salvaging recyclable refuse at the waste disposal site in search of materials such as glass, plastic, paper, tins and pieces of metal that could be sold for recycling.</p> <p>2.) The site is soon to be closed and this EIA is undertaken for the identification of a new waste disposal site which will replace the closed one, and therefore create jobs for the salvagers..</p> <p>Health and Nuisance</p> <p>1.) The proposed alternative (Alternative 1 and 2) waste disposal sites are too close to the surrounding houses and the associated odours expected to emanate from the site will be felt by the surrounding communities, which is a negative impact.</p> <p>2.) The site should not be accessible to children from the surrounding communities as that may pose a danger to the children.</p> <p>3.) Reclaiming of waste on site should be formalised and PPE is should be worn by salvagers. This has a high</p> <p>Crime</p> <p>1.) A palisade fence should be erected. There should be proper access control on site.</p> <p>Employment and Community Related Impacts</p> <p>1.) During construction, employment opportunities will be temporarily provided to contractors and labourers who will begin with excavation operations and infrastructure construction.</p> <p>2.) The LLM should attempt to contract local businesses and suppliers during the construction phase in order to increase the positive spin-offs for local business.</p>
Infrastructure	<p>Roads</p> <p>1.) The most likely infrastructure to be negatively affected will access roads to the approved site.</p>
Air	<p>1.) Air quality may be altered due to fugitive dust in the construction phase and methane gas in the operational phase.</p>
Visual	<p>1.) Construction of a waste disposal site and associated infrastructure may alter the visual environment. A decrease in the quality of the visual environment may affect land uses.</p> <p>2.) The presence of a waste disposal site throughout operation may decrease the visual environment.</p>

7 SCOPING PROCESS

The information in the Scoping Report has been compiled from various sources, including consultation with the client, site visits, interviews and meetings, literature reviews and existing documentation.

7.1 Technical process followed by the Consultant

For the Scoping Phase of this EIA, the technical process as detailed below has been followed:

7.1.1 *Pre-consultation meeting with client*

Subsequent to Zitholele Consulting being appointed, a project kick-off meeting was held on 29 September 2009. The client described the proposed project and its scope. The study area was visited by Jacqui Hex and Konrad Kruger of Zitholele Consulting.

During this project kick-off meeting the following were discussed:

- Project Scope and requirements;
- Project Schedule;
- Identification of key stakeholders and role players; and
- Preliminary alternatives for the proposed new waste site.

7.1.2 *Consultation with the Authorities*

Pre-application consultation with Lutendo Tshifhango and Lindokuhle Vilakazi, of the GDARD was conducted between January and March 2010. Discussions were based on GDARD requirements for successful completion of the proposed project. Please refer to Appendix C for the official letter received from the GDARD in this regard.

7.1.3 *Application Forms*

The EIA application form (Appendix B) for the proposed project was submitted to the GDARD on 19 October 2010. A response from the GDARD was received on 9 November 2010.

7.1.4 *Site Visits*

Additional site visits were conducted by Jacqui Hex and Konrad Kruger from Zitholele on 8 February 2010 and 21 October 2010 in order to identify all aspects of the environment that will need to be assessed during the EIA phase. The current status of the environment was also identified, including identification of any potential impacts to the environment on site and in the surroundings.

7.1.5 Draft Scoping Report and Terms of Reference for specialist studies

The Draft Scoping Report (DSR) was prepared based on the information gathered during the Scoping Phase of this EIA. Terms of Reference (ToR) for the envisaged specialist studies during the Environmental Impact Assessment Phase and a Plan of Study for EIA are included in Section 8.2.2 of this report.

7.1.6 Final Scoping Report and Terms of Reference for specialist studies

This Final Scoping Report (FSR) was prepared based on the information gathered during the Scoping Phase of this EIA. Terms of Reference (ToR) for the envisaged specialist studies during the Environmental Impact Assessment Phase and a Plan of Study for EIA are included in Section 8.2.2 of this report. After the public review period of the Draft Scoping Report, comments from I&AP's were obtained, and therefore this Final SR considered all those comments. All registered stakeholders have received letters announcing that the FSR is available for public review for a period of 30 days. Once the review period is over, this Final SR will be submitted to the GDARD for approval to commence the Environmental Impact Phase.

7.2 Public Participation Process

Public participation is an essential and legislative requirement for environmental authorisation. The principles that demand communication with society at large are best embodied in the principles of the NEMA, South Africa's overarching environmental law. In addition, Section 24 (5), under the NEMA, guides the public participation process that is required for an EIA.

The public participation process for the waste disposal site has been designed to satisfy the requirements laid down in the above legislation and guidelines. Figure 7-1 provides an overview of the EIA technical and public participation processes, and shows how issues and concerns raised by the public are used to inform the technical investigations of the EIA at various milestones during the process. This section of the report highlights the key elements of the public participation process to date.

7.2.1 Objectives of public participation in an EIA

The objectives of public participation in an EIA are to provide sufficient and accessible information to I&APs in an objective manner to assist them:

- During Scoping:
 - To identify issues of concern, and provide suggestions for enhanced benefits and alternatives.
 - To contribute local knowledge and experience.
 - To verify that their issues have been considered.

- During Impact Assessment:
 - To verify that their issues have been considered either by the EIA Specialist Studies, or elsewhere.
 - To comment on the findings of the EIA, including the measures that have been proposed to enhance positive impacts and reduce or avoid negative ones.

The key objective of public participation during Scoping is to help define the scope of the technical studies to be undertaken during the Impact Assessment.

7.2.2 Identification of interested and affected parties

The identification of stakeholders is an on-going process, refined throughout the process as the on-the-ground understanding of affected stakeholders improves through interaction with various stakeholders in the area. The identification of key stakeholders and community representatives (land owners and occupiers) for this project is important and was done in collaboration with the local municipality and other organisations in the study area.

Stakeholders' details are captured on *Maximiser 9*, an electronic database management software programme that automatically categorises every mailing to stakeholders, thus providing an ongoing record of communications - an important requirement by the authorities for public participation. In addition, comments and contributions received from stakeholders are recorded, linking each comment to the name of the person who made it.

According to the EIA regulations a register of I&APs must be kept by the public participation practitioner. Such a register has been compiled and is being kept updated with the details of involved I&APs throughout the process (Appendix G).

7.2.3 Announcement of opportunity to become involved

The opportunity to participate in the EIA Process was announced in October 2010 as follows:

- Distribution of a letter of invitation to become involved, addressed to individuals and organisations by name, accompanied by a Background Information Document (BID) containing details of the proposed project, including maps of the project area, and a registration sheet (Appendix I);
- Advertisements were placed in the following newspapers (Appendix D):

PUBLICATION	PUBLICATION DATE
Heidelberg Nigel Heraut	3 November 2010
Rekord Nigel & Heidelberg	9 November 2010

- Notice boards were placed prominently during October 2010 at various conspicuous places. Site notices were placed prominently to invite stakeholder participation. (Appendix E).

7.2.4 Obtaining comments and contributions

The following opportunities were (and remain) available during Scoping for I&APs to contribute comment:

- Completing and returning registration/comment sheets on which space was provided for comment.
- Providing comment telephonically or by email to the public participation office.
- Attending the stakeholder meeting that was advertised (see table below) and raising comments there.

DATE	VENUE
05 April 2011 from 16h00 – 18h00.	Impumelelo Community Hall

I&APs have raised, and are still raising both environmental technical issues and public participation issues during the Scoping period. Issues relevant to the current project configuration will be carried forward into the Impact Assessment phase.

Advertisements were placed in the following newspapers to advertise the public review period and the stakeholder meeting of the DSR:

PUBLICATION	PUBLICATION DATE
Heidelberg Nigal Heraut	23 March 2011
Rekord Nigal & Heidelberg	29 March 2011

7.2.5 Comments and Response Report and Acknowledgements

Issues raised thus far, are captured in a Comments and Response Report (CRR) Version 2, appended to this Final SR (Appendix H). This report will be updated to include any additional I&AP contributions that may be received as the EIA process proceeds, and as the findings of the EIA become available. Issues and comments raised during the public review period of the Final SR will be considered and added to this report as Version 2 of the CRR

7.2.6 Draft Scoping Report

The purpose of the Draft SR was to enable I&APs to verify that their contributions have been captured, understood and correctly interpreted, and to raise further issues. At the end of Scoping, the issues identified by the I&APs and by the environmental technical specialists, will be used to define the Terms of Reference (ToR) for the Specialist Studies that will be conducted during the Impact Assessment Phase of the EIA. A period of 40 days was available for public review of the report (28 March 2011 to 26 May 2011).

In addition to media advertisements and site notices to announce the opportunity to participate in the EIA, the opportunity for public review was announced as follows:

- In the BID of October 2010 (Appendix I);
- In advertisements published to advertise the public review period (see above and Appendix D); and
- In a letter sent out on 22 October 2010, and addressed personally to all individuals and organisations on the stakeholder database.

The Draft SR, including the CRR Version 1, was distributed for comment as follows:

- Left in public places in the project area. The public places where documents were made available are below:

PLACE	CONTACT PERSON	TELEPHONE
Impumelelo Public Library, 221 Impumelelo Road, Devon	Mr Thabo Mphafudi	(017) 688-0273
Devon Public Library, 1 Schuurman Street, Devon	Ms Lindi Gericke	(017) 688-0028

- Mailed to key stakeholders (Appendix M); and
- Mailed to I&APs who requested the report.

I&APs were afforded an opportunity to comment on the report in various ways, such as completing the comment sheet accompanying the report, and submitting individual comments in writing or by email.

7.2.7 Final Scoping Report

The Final Scoping has been updated with any additional issues raised by I&APs and any new information that may have been generated as a result of this process. It will be distributed to the Authorities (GDARD) and key I&APs, and to those individuals who specifically request a copy. I&APs will be notified of the availability of the report.

Once the lead authority for the EIA has approved the Final SR, the Impact Assessment Phase of the EIA will commence. This will comprise various Specialist Studies to assess the

potential positive and negative impacts of the proposed project, and to recommend appropriate measures to enhance positive impacts and avoid or reduce negative ones. I&APs will be kept informed of progress on these studies.

The Final Scoping Report will be put out for a period of 30 days for public review.

7.2.8 Public participation during the Impact Assessment

Public participation during the impact assessment phase of the EIA will mainly involve a review of the findings of the EIA, presented in the Draft EIAR, and the volume of Specialist Studies. I&APs will be advised in good time of the availability of these reports, how to obtain them, and the dates and venues of public and other meetings where the contents of the reports will be presented for comment.

The Final EIAR will be put out for a period of 21 days for public review.

8 PLAN OF STUDY FOR EIA

8.1 Introduction

In terms of Chapter 5 of the NEMA regulations, EIA means the process of collecting, organising, analysing, interpreting and communicating information that is relevant to the consideration of the application. This includes an assessment of the nature, extent, duration, probability and significance of the identified potential environmental, social and cultural impacts of the proposed development as well as the cumulative impacts thereof. Mitigatory measures for each significant impact are to be determined. Alternative land uses or developments, their impacts and their cumulative impacts will also be considered and compared with those of the proposed development. Details of the Public Participation Process (PPP) followed during the course of the assessment will be given and it will be indicated how issues raised by interested and affected parties (I&APs) have been addressed. Knowledge gaps will be identified and descriptions of the arrangements for monitoring and management of the environmental impacts will be given.

8.2 Technical Process

8.2.1 *Prepare Specialist Investigations*

The specialist investigations that will be conducted during the EIA phase of the project consist of the following studies:

- Geotechnical Investigation;
- Groundwater Investigation;
- Heritage Impact Assessment;
- Geographic Information Systems (GIS);
- Visual Impact Assessment;
- Terrestrial Ecology (Fauna and Flora) Assessment;
- Soils and Land Capability;
- Air Quality Impact Assessment; and
- Wetland Delineation.

The findings of these studies will be reflected in the EIA Report. The proposed ToR for each of the specialist investigations are indicated below:

8.2.2 Specialist Studies: Terms of Reference (ToR)**ToR: Geotechnical, Soils and Land Capability**

A soil and land capability investigation will be conducted on the waste disposal site and the proposed site alternatives. The objectives of the study will be:

- To review existing geological information available;
- To determine the nature and relevant geotechnical properties of the soil and rock strata underlying the site under consideration;
- To assess the suitability of the soils underlying the site for use in the construction of waste disposal site liners, final capping and end land use;
- Comment on the excavation potential of the soil and rock strata present at the site;
- Comment on any other geotechnical aspects of the site that may affect the extension of the existing waste disposal site; and
- Comment on site water management aspects, particularly pertaining to potential for shallow groundwater seepage.

ToR: Geohydrological Investigation

A Geohydrological investigation will be conducted on the waste disposal site and the proposed site alternatives. The objectives of the study will be:

- A desk study and photo interpretation;
- Geophysical investigation to assist in siting boreholes;
- Drilling and testing boreholes up- and downstream of the site;
- Soil investigation to determine unsaturated zone hydraulic properties;
- Unsaturated and saturated groundwater flow and solute transport modelling;
- Geohydrological modelling of the potential pollution plumes that may originate from the proposed waste disposal site; and
- Reporting at the required level of detail and recommending monitoring requirements.

ToR: Terrestrial Ecological Assessment

An ecological investigation will be conducted on the waste disposal site and the alternative sites. The objectives of this study will be:

- Review existing ecological information available;
- Conduct a site visit to determine the general ecological state of the proposed site alternatives, determine the occurrence of any red data and vulnerable species;
- Provide mitigation measures to prevent and/or mitigate any environmental impacts that may occur due to the proposed project;
- Provide a ranking assessment of the suitability of the proposed site alternatives; and
- Compile an ecological report, indicating findings, recommendations and maps indicating sensitive and/or no-go areas.

ToR: GIS and Visual Assessment

A GIS and Visual Assessment will be conducted on the waste disposal site. Specific objectives of the study will be:

- Desktop Study (consulting existing and appropriate literature);
- Site visit of the project area if required;
- Assess the visual impact of the proposed extension on each of the alternative sites;
- Suggest any recommendation / mitigation measures that can be implemented to decrease the impacts of the proposed development;
- Provide a ranking assessment of the suitability of the proposed alternatives; and
- Compile a visual assessment report, indicating findings, fatal flaws, recommendations and maps indicating sensitive and/or no – go areas.

ToR: Air Quality Impact Assessment

The terms of reference for the air quality assessment of the proposed waste disposal site at the Devon is as follows:

- Description of the regional climate and site-specific atmospheric conditions impacting on the dispersion potential of the waste site;
- Overview of the legislation and regulatory context as it pertains to the regulation of atmospheric emissions and air pollutant concentrations;
- Analysis of the baseline air quality, based on any available observational data which may be of relevance to the study site;

- Review types of emissions from waste disposal sites (construction and operational);
- Identification of potentially sensitive receptors in the vicinity of the proposed development susceptible to air quality impacts (health and odour impacts); and
- Indication of expected impact area based on health and odour management zones recommended locally and internationally taking into consideration local meteorology and site specific operational procedures.

ToR: Heritage Impact Assessment

A Phase 1 Heritage Impact Assessment (HIA) for the proposed development of the new waste disposal site is proposed. The study will attempt to evaluate both the accumulated heritage knowledge of the area as well as information derived from direct physical observations.

- Evaluating Heritage Impacts

A combination of document research as well as the determination of the geographic suitability of areas and the evaluation of aerial photographs determined which areas could and should be accessed. After plotting of the site on GPS the areas will be accessed using suitable combinations of vehicle access, access by foot as well as four-wheeler motorbike. Sites will be documented by digital photography and geo-located with GPS readings using the WGS 84 datum. Further techniques will be used which might include interviews with local inhabitants, visiting local museums and information centres and discussions with local experts. All this information will be combined with information from an extensive literature study as well as the result of archival studies based on SAHRA provincial databases.

Geological maps guided investigations into the paleontological riches of the area.

- Assessing Visual Impact

Visual impacts of developments result when sites that are culturally celebrated are visually affected by a development.

ToR: Wetland Delineation

The approach to the project is based on the prioritising of the elements of the scope, into a logical sequence. The following are envisaged:

- Review of available existing information;
- Identify (wetland indicators) and delineate the wetland area within the designated development area;
- Provide a suitable buffer zone to the wetland area;
- Assess potential impacts that may arise from project area;

- Provide mitigation measures to prevent and/ or mitigate any environmental impacts that may occur due to construction; and
- Compile a Wetland Assessment Report indicating findings, recommendations and maps indicating sensitive and/ or no-go areas as well as preferred options of continuing with the constructions.

ToR: Waste Facility Design

A design report will be compiled for the proposed new Devon waste disposal site. The design report will address at a minimum:

- Determining airspace requirements and liner design requirements based on site topography and estimated waste generation;
- Conceptual cell and site layout that will include all infrastructure;
- Surface water drainage;
- Contaminated water management i.e. leachate management in cells and drainage to the contaminated water dam;
- Phased cell development;
- Final landform design;
- Preliminary final cover and drainage design;
- Operating and maintenance plan,
- Monitoring and closure plan; and
- Developing a design summary sheet that will provide details of the design standards as well as design methodologies.

8.2.3 Impact Analysis

To ensure uniformity, the assessment of impacts is addressed in a standard manner so that a wide range of impacts can be compared with each other. For this reason a clearly defined significance rating scale is provided to assess the significance (importance) of the associated impacts. The scale embraces the notion of extent and magnitude, but does not always clearly define these since their importance in the rating scale is very relative. For example, the magnitude (i.e. the size) of area affected by atmospheric pollution may be extremely large (1000 km²) but the significance of this effect is dependent on the concentration or level of pollution. If the concentration were great, the significance of the impact would be HIGH or VERY HIGH, but if it were dilute it would be LOW or VERY LOW. Similarly, if 60 ha of a grassland type are destroyed the impact would be VERY HIGH if only 100 ha of that grassland type was known. The impact would be VERY LOW if the grassland type were common.

The potential significance of every environmental impact identified is determined by using a ranking scale, based on the following (the terminology is extracted from the DEA guideline document on EIA Regulations, April 1998):

- Occurrence
 - Probability of occurrence (how likely it is that the impact may occur?), and
 - Duration of occurrence (how long may it last?).
- Severity
 - Magnitude (severity) of impact (will the impact be of high, moderate or low severity?); and
 - Scale/extent of impact (will the impact affect the national, regional or local environment, or only that of the site?).

Each of these factors has been assessed for each potential impact using the following ranking scales:

<p>Probability: 5 – Definite/don't know 4 – Highly probable 3 – Medium probability 2 – Low probability 1 – Improbable 0 – None</p>	<p>Duration: 5 – Permanent 4 – Long-term (ceases with the operational life) 3 – Medium-term (5-15 years) 2 – Short-term (0-5 years) 1 – Immediate</p>
<p>Scale: 5 – International 4 – National 3 – Regional 2 – Local 1 – Site only 0 – None</p>	<p>Magnitude: 10 – Very high/don't know 8 – High 6 – Moderate 4 – Low 2 – Minor</p>

The environmental significance of each potential impact was assessed using the following formula:

$$\text{Significance Points (SP)} = (\text{Magnitude} + \text{Duration} + \text{Scale}) \times \text{Probability}$$

The maximum value is 100 Significance Points (SP). Potential environmental impacts were rated as high, moderate or low significance as shown in Table 8-1.:

Table 8-1: Significance Threshold Limits

High	60 - 100	
Moderate	30 - 60	
Low	0 - 30	

The degree of certainty of the assessment will be judged on the following criteria:

- Definite:** More than 90% sure of a particular fact.
- Probable:** Between 70 and 90% sure of a particular fact, or of the likelihood of that impact occurring.
- Possible:** Between 40 and 70% sure of a particular fact or of the likelihood of an impact occurring.
- Unsure:** Less than 40% sure of a particular fact or the likelihood of an impact occurring.

8.2.4 Draft EIA Report and Environmental Management Programme

Findings and/or recommendations of the specialist studies will be integrated into a report that will be updated as comments are received from I&APs. The Final EIA report, together with a draft construction and operation EMPreg, will be submitted to the GDARD for environmental authorisation.

8.3 Public Participation

The public participation process for the EIA will involve the following proposed steps:

- Announcement of the availability and public review of the draft EIAR;
- Announcement of the availability and public review of the final EIAR; and
- Notification of the authorities' decision with regard to EA.

Information about each step is provided below.

8.3.1 Announcing the availability of the Draft Environmental Impact Report and Environmental Management Programme

At this point, specialist assessments would have been conducted and the Draft EIAR and EMPreg would be ready for public review. A letter will be sent to all registered I&APs, informing them of progress made with the study and that the Draft EIAR and EMPreg are available for comment. The report will be distributed to public places and also presented at a stakeholder public meeting.

8.3.2 Public review of Draft EIAR and Environmental Management Programme

The EIA Guidelines specify that stakeholders must have the opportunity to verify that their issues have been captured and assessed before the EIA Report will be approved. The findings of the specialist assessments will be integrated into the Draft EIAR. The report will be written in a way accessible to stakeholders in terms of language level and general

coherence. The Draft EIAR will have a comprehensive project description, motivation, and description of alternatives considered and also the findings of the assessment and recommended mitigation measures. It will further include the CRR, which will list every issue raised, with an indication of where the issue was dealt with in the EIAR. The findings of the assessment and recommended mitigation measures will also be incorporated into the EIAR.

As part of the process to review the Draft EIAR and EMProg, stakeholder workshops with an open house component will be arranged to afford stakeholders the opportunity to obtain first-hand information from the project team members and also to discuss their issues and concerns.

Contributions at this meeting will be considered in the Final EIAR. It is proposed that the same public places be used as in the Scoping phase and also that stakeholder meetings be conducted at the same venues as during Scoping.

8.3.3 Announcing the availability of the Final EIAR and Environmental Management Programme

After comments from I&APs have been considered, all registered stakeholders will receive a letter announcing that the final EIAR is available for public review for a period of 21 days. A letter will be sent to all registered I&APs, informing them of progress made with the study and that the Final EIAR and EMProg are available for comment. A final letter will be sent out to inform stakeholders where we are in the process, to thank those who commented to date and to inform them that the Final EIAR and EMProg have been submitted to the lead authority for consideration.

8.3.4 Announcing authorities' decision on Environmental Authorisation

Based on the contributions by the stakeholders, the decision of the authorities may be advertised through the following methods:

- Personalised letters to individuals and organisations on the mailing list;
- Advertising in local newspapers.

9 CONCLUSION AND WAY FORWARD

The LLM appointed Zitholele Consulting in conjunction with Golder Associates Africa to undertake the EIA for the proposed new Devon waste disposal site. This Scoping Study has been undertaken with the aim of investigating potential negative impacts on the bio-physical and social environment and identifying issues, concerns and queries from I&APs. This report documents the process followed, the findings and recommendations of the Scoping study, and the proposed Plan of Study for the EIA Phase to follow. The way forward recommended by this study is as follows:

- The report is to be made available for public review of 21 days;
- All issues and comments received during the public comment period will be documented in the CRR (version 2);
- The Final Scoping Report will be submitted to the relevant authority for approval prior to proceeding with the EIA phase of the project;
- Upon approval of the Scoping Report all participating stakeholders are to be notified of the conditions of the relevant authority for proceeding with the EIA;
- Amend the Plan of Study as required by conditions recommended by the relevant authority; and
- Execute the Plan of Study for the EIA phase of the project.

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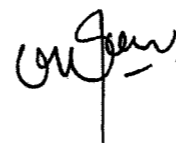
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ZITHOLELE CONSULTING (PTY) LTD



Warren Kok



Konrad Kruger

Appendix A: EAP CV

Warren Kok

Education	BA Honours, Geography and Environmental Management, RAU 2000 BA Humanities, Geography and Environment Management, and Psychology, RAU 1999
Short courses	<ul style="list-style-type: none"> • Project Management, Higher Certificate in Project Management, Damelin 2001 • Social Impact Assessment - Dr Liezel Malan, IAIA Conference, 2000 • Advanced Course in Social Impact Assessment - Dr Liezel Malan, 2001 • Environmental Project Management - Mr. Andrew G. Duthie, IAIA Conference, 2001 • Advanced Course in ArcGIS - GIMS, 2003 • International Association of Public Participation - Public Participation, 2008
Affiliations	Certified Environmental Assessment Practitioner ([EAP], 2004). International Association of Impact Assessment.
Experience	Midrand, South Africa
March 2011 to date	<p>Zitholele Consulting (Pty) Ltd <i>Environmental Scientist</i></p> <p>Project manager on both environmental and waste management projects. Is responsible for EMP Amendments, EIAs, EMPs, environmental auditing, waste management and hazard rating of waste.</p>
Feb 2009 to February 2011	<p>PHOENIX Environmental and Social Consulting Services <i>Member</i></p> <p>The consultancy works across all sectors, including inter alia mining, public services, sustainable development planning, and waste reduction and management. The primary services of the company include Environmental Project Management, Environmental Authorisation (BA's / EIA's / SIA's / WULA / Mining Authorisations), EMP Compilation / Implementation / Compliance Auditing, and GIS services.</p>
April 2004 to February 2009	<p>Cymbian Enviro-Social Consulting Services <i>Director</i></p> <p>Cymbian was a multi-disciplinary consultancy with a business focus on Africa, primarily South Africa. The consultancy worked across all sectors, although most work was undertaken for the mining sector. The staple work load of the company comprised EIA's, SIA's, EMP Compilation / Implementation / Compliance Auditing, SEA's, and specialist studies in Ecology / Pedology / Biodiversity / Water Quality / Visual Assessments.</p>
August 2000 to April 2004	<p>Oryx Environmental <i>Senior Environmental Consultant</i></p> <p>Oryx was a multi-disciplinary consultancy with a business focus on the South African mining industry. The staple work load of the company comprised EIA's, EMP Compilation / Implementation / Compliance Auditing, and specialist studies in Ecology / Pedology / Biodiversity</p>
April 2000 to August 2000	<p>Matrix Environmental <i>Junior Environmental Consultant</i></p>

Warren Kok

- Collation, management, and mapping of all spatial information; and the determination and spatial analysis of land use for the Middelbult Block 8 Underground Coal Mine Expansion Project.
- Mapping and spatial analysis of socio-economic indicators for the SIA of the Block 8 Middelbult Underground Coal Mine Expansion Project.
- Collation, management, and mapping of all spatial information; and the determination and spatial analysis of land use for the Ingwe Klipspruit Project.
- Baseline environment mapping; spatial information collation and management; and the route selection and raster overlay analysis of a dragline walkway route from Rietspruit Colliery to the proposed Klipspruit Strip mine near Ogies.
- Baseline environment mapping; spatial information collation and management; and the route selection and analysis of a dragline walkway route from Syferfontein Colliery to Kleinkopje Colliery.
- Supervision and management of the GIS for the Elders-Goedehoop extension, Kriel Block 2 and 3, and the Kriel Block F projects.
- Supervision and management of the GIS for the Syferfontein Mine Addendum.
- Compilation of Cadastral and Site locality maps for over 20 Vodacom Base Stations.

Electrical Installations

- Principal Environmental Assessment Practitioner and Project Manager for the consulting team responsible for obtaining the Environmental Authorisations for the ESKOM Bravo Project.
- Principal Environmental Assessment Practitioner and Project Manager for the consulting team responsible for obtaining the Environmental Authorisations for the new Dalkieth powerline and substation installation to improve Joburg City Power's power distribution on the West Rand.
- Environmental Management Plan Compilation for the Springs Powerline.

Energy Efficiency and Housing Projects

- United States Agency for International Development - Initiative on Energy Efficient Housing in South Africa.
- Premier Mine contractor housing EIA and Development Planning Project. (In progress).
- Green Building Design Evaluation and Environmental Impact Assessment Screening Report for the proposed new Regional Office Facilities within the Kruger National Park.

Major Hazardous Installations

- Compiled EIA for 5 LPG gas refilling stations of various sizes around Gauteng.

Scoping Reports

- Scoping Study for the Environmental Impact Assessment of the Development of a B -Grade Abattoir in Vanderbijlpark.
- Scoping Study for the Environmental Impact Assessment of the Development of a Regional Shopping Centre in Vanderbijlpark.
- Scoping Study for the Environmental Impact Assessment of the Development of a Fuel Station in Vanderbijlpark.

Socio-Economic Projects

- Using poverty as an indicator for target areas of AIDS intervention strategies (Honours Dissertation).
- Social Impact Assessment of the Sasol Block 8 Middelbult Underground Coal Mine Expansion Project.

Development Projects

- EIA and Exemption Application for a Residential Development in Celtisdal ext 39, Raslouw, Centurion.
- EIA and Exemption Application for a Residential Development for Billy Cahill in Raslouw, Centurion.
- EIA and Exemption Application for a Residential Development for Crown Silver Properties, Raslouw, Centurion.
- Environmental Impact Assessment and Water Use License Application for the development of Teak Place, a sustainable micro-community development located in the buffer zone of the Cradle of Humankind World Heritage Site. This development is the only township establishment project approved uncontested by all stakeholders and authorities within the management area of the Cradle of Humankind World Heritage Site. This project has contributed to the eradication of

Appendix B: EIA Application Forms



Gauteng Department of Agriculture and Rural Development

Application for *NEW* license in terms of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008), as amended and the Environmental Impact Assessment Regulations, 2010 (Version 1)

PART 1: THE WASTE LICENSING APPLICATION PROCESS

SECTION 1: LICENSING APPLICATION PROCESS FOR WASTE ACTIVITIES EXPLAINED

- 1.1 Licensing process:
- 1.1.1 The waste licensing process for listed activities under Schedule 1 in the National Environment Management Waste Act, 2008 (Act 59 of 2008) (NEMWA) is outlined in the Environmental Impact Assessment (EIA) Regulations, 2010 made under section 24(5) of the National Environment Management Act, 1998 (Act 107 of 1998).
- 1.1.2 This application form is the official form in terms of Regulation 12 of the EIA Regulations of 2010 and must accompany every waste license application pertaining to general and hazardous waste.
- 1.2 Where to submit applications
- 1.2.1 The MEC/HOD is the competent authority in respect of all listed activities listed in both categories of Schedule 1 pertaining to waste. The application for a waste license in terms of section 45 of NEMWA must be submitted by lodging an application with the Gauteng Department of Agriculture and Rural Development. The application must be marked as follows:

Administrative Unit of the Sustainable Utilisation of the Environment (SUE) Branch
Gauteng Department of Agriculture and Rural Development
Waste Management Directorate
P.O. Box 8789
Johannesburg
2000

Administrative Unit of the Sustainable Utilisation of the Environment (SUE) Branch
Waste Management Directorate
18th floor Glen Cairn Building
73 Market Street, Johannesburg

Administrative Unit telephone number: (011) 355 1345
Department central telephone number: (011) 355 1900

- 1.3 Making an Application
- 1.3.1 The applicant must fill in all relevant sections of this form. Incomplete applications will not be processed. The applicant will be notified of the missing information in the acknowledgement letter that will be sent within 14 days of receipt of the application. Sections in the form that do not apply to the applicant must be marked "not applicable".
- 1.3.2 There is no prescribed fee at this stage.
- 1.3.3 All application forms must be accompanied by 5 (five) copies of reports and other documents required in terms of the EIA Regulations, 2010 and this application form.
- 1.3.4 Please clearly mark confidential sections of the information submitted in this application and the supporting documents. All other information will become public information on receipt by the Department.

SECTION 2: DEFINITIONS

- 2.1 Definitions in this form are as per the EIA Regulation, 2010 and waste management activities list in terms of NEMWA.

APPLICATION FORM [REGULATION 12]

	ENVIRONMENTAL MANAGEMENT: WASTE ACT)	OF ENVIRONMENTAL MANAGEMENT: WASTE ACT).	
GOVERNMENT NOTICE NO 718 OF GOVERNMENT GAZETTE NO. 32368, 3 JULY 2010	CATEGORY A	20	THE DECOMMISSIONING OF ACTIVITIES LISTED IN THIS SCHEDULE - NAMELY ACTIVITY 15 - THE DISPOSAL OF GENERAL WASTE TO LAND COVERING AN AREA OF MORE THAN 50M2 BUT LESS THAN 200M2 AND WITH A TOTAL CAPACITY NOT EXCEEDING 25 000 TONS.

PART 2: APPLICATION FORM FOR NEW LICENSE

SECTION 1 - TYPE OF FACILITY:

Indicate the type of facility/operation and fill in the required sections only

TYPE OF ACTIVITY	MARK	SECTIONS OF THE FORM TO BE FILLED IN
Recycling and/or recovery Facility		All except Section 8
Storage and/or transfer Facility		All except Section 8
Treatment facility		All except Section 8
Disposal facility	X	All sections

All sections of this form are important and they must all be filled as per this section.

NB: Authorisation issued will only cover activities applied for and listed above. Activities added in the middle or after the processing of this authorisation may mean a totally new application.

SECTION 2: SITE IDENTIFICATION, LOCATION AND LANDUSE

Please give a full description of the property on which the site is situated in terms of the Deeds Act and examples of the address are:

- Portion 49 (portion of Portion 27) of the farm Brandbach 471 JR
- -Remainder of the farm Klaver Valley 356
- -Remaining Extend of Portion 6 of the farm Klaver Valley 356
- -Sub 38 (sub of Sub 24) of the farm Weltevreden 1017
- -Plot 10 of Hunters Hill Agricultural holdings
- -Portion 1 of Erf 155, Dendron Township

THE SOUTHERN PART OF THE REMAINDER OF THE SOUTHERN PORTION OF THE FARM LEEUWKOP 299IR

Size of Site and Classification

Size of facility for a waste management activity

3.3 HECTARES
G:C:B-
G:C:B-

Classification of facility in terms of climatic water balance

Classification of Facility in terms of the type and the quantity of waste received

SECTION 3: CONTACT INFORMATION

A) Person to contact about application (EAP)
First name & Surname

Company name (if any):
Company Registration/identity number for individuals

Physical address:

Postal address:

Postal code:

Telephone:

Email Address

MPHO MANYABE		
ZITHOLELE CONSULTING (PTY) LTD		
2000/000392/07		
THANDANANI PARK, MATUKA CLOSE, HALFWAY GARDENS		
MIDRAND		
PO BOX 6002,		
HALFWAY HOUSE		
1685	Cell:	+27 72 250 7917
+27 (11) 207-2073	Fax:	+27 86 676 9950
MPHOM@ZITHOLELE.CO.ZA		

B) First name & Surname of Applicant – (Person wishing to hold license)

Company name (if any):

Contact person

Trading name (if applicable)

Company Registration/identity number for individuals

Physical address

Postal address

Postal code:

Telephone:

E-mail:

HENNIE B. COETSEE		
LESEDI LOCAL MUNICIPALITY		
HENNIE B. COETSEE		
NOT APPLICABLE		
CIVIC CENTRE, C/O HF VERWOERD AND LOUW STREET, HEIDELBERG		
GAUTENG		
PO BOX 201,		
HEIDELBERG		
1438	Cell:	082 377 4061
016-340 4308	Fax:	016-3404394
COETSEEB@LESEDILM.CO.ZA		

In instances where the applicant is not the land owner attach the land owner consent form

List of land owners attached

N/A

Land owner consent form attached

N/A

APPLICATION FORM [REGULATION 12]

THE SITE IS SITUATED APPROXIMATELY 600M SOUTH EAST OF THE DEVON TOWN ALONG THE R29 PROVINCIAL ROAD BETWEEN SPRINGS AND BETHAL

In instances where there is more than one town or district (including alternatives) involved, please attach a list of towns or districts to this application

Current zoning

AGRICULTURAL AND MUNICIPAL

In instances where there is more than one current land use zoning (including alternatives) please attach a list of current land use zonings that also indicate which portions each use pertains to, to this application

List of current land use zonings is attached

NO

Socio-economic value of the activity

What is the expected capital value of the activity on completion?

R 2 MIL

What is the expected yearly income that will be generated by or as a result of the activity?

R 0.00

Will the activity contribute to service infrastructure?

NO

Will the activity contribute to a public amenity?

NO

Total number of new employment opportunities to be created in the development phase of this activity.

3

Of these opportunities how many are:

Women

1

People with disabilities

0

Female

0

Male

0

Youth

1

Female

1

Male

0

What is the expected value of the employment opportunities during the development phase?

R 200 000

What percentage of this will accrue to previously disadvantaged individuals?

0%

Total number of new employment opportunities to be created in the operational phase of this activity.

0

Women

0

People with disabilities

0

Female

0

Male

0

Youth

0

Female

0

Male

0

What is the expected current value of the employment opportunities during the first 10 years?

R 0

What percentage of this will accrue to previously disadvantaged individuals?

0%

STUDY ON THE CONTINUED OPERATION OF THE DEVON WASTE DISPOSAL SITE. GOLDER CONDUCTED A STATUS QUO INVESTIGATION ON THE EXISTING SITE TO DETERMINE THE FEASIBILITY OF CONTINUED USE OF THIS SITE VERSUS OTHER WASTE MANAGEMENT OPTIONS SUGGESTED.

FROM THE ABOVE MENTIONED FEASIBILITY DONE BY GOLDER ASSOCIATES IN 2009, THE STUDY RECOMMENDED THAT THE LLM IDENTIFY AND LICENCE A NEW WASTE DISPOSAL SITE AS SOON AS POSSIBLE AND REHABILITATE AND CLOSE THE EXISTING DEVON WASTE DISPOSAL SITE AS SOON AS A NEW WASTE DISPOSAL SITE HAS BEEN ESTABLISHED.

THE SITE HAS A REMAINING AIRSPACE OF APPROXIMATELY SEVEN TO EIGHT YEARS IF DEVELOPED TO A HEIGHT OF 10M. (THE DEVON WASTE DISPOSAL SITE IS AT PRESENT THE ONLY REMAINING OPERATING WASTE DISPOSAL SITE WITHIN THE LLM).

THE STATUS QUO INVESTIGATION REVEALED THAT TWO THIRDS OF THE CURRENT SITE AREA IS SITUATED ON PROPERTY NOT OWNED BY THE MUNICIPALITY AND THAT THE SITE IS NOT MANAGED AND OPERATED ACCORDING TO THE DWAF MINIMUM REQUIREMENTS.

THE FOLLOWING WAS ALSO CONCLUDED FROM THE INVESTIGATION:

- THE FOOTPRINT OF THE EXISTING SITE BE REDUCED TO FIT ONTO THE PROPERTY OWNED BY THE MUNICIPALITY AND THAT THE AREAS ADJACENT TO THE MUNICIPAL PROPERTY BE CLEARED OF WASTE, REHABILITATED AND RESTORED TO ITS ORIGINAL STATE AS SOON AS POSSIBLE;
- THE EXISTING WASTE DISPOSAL SITE AT DEVON BE CLOSED AS SOON AS POSSIBLE I.E. AS SOON AS A NEW WASTE DISPOSAL SITE HAS BEEN AUTHORISED AND ESTABLISHED (CONSTRUCTED). THIS PROCESS WILL TAKE AT LEAST THREE TO FOUR YEARS TO COMPLETE.

THE DEVON WASTE DISPOSAL SITE WAS NOT PERMITTED AS REQUIRED BY SECTION 20 OF THE ENVIRONMENTAL CONSERVATION ACT, (ACT 73 OF 1989) (ECA) AND IS ALSO NOT OPERATED AS PRESCRIBED BY THE MINIMUM REQUIREMENTS FOR WASTE DISPOSAL BY LANDFILL (DWAF 1998)(MR). THIS LED TO THE MUNICIPALITY QUESTIONING THE FUTURE OF THE WASTE DISPOSAL SITE AND AS A CONSEQUENCE THEY COMMISSIONED SCIP ENGINEERING GROUP (SCIP) TO CONDUCT A FEASIBILITY STUDY ON THE FUTURE OF THE WASTE DISPOSAL SITE.

THE PROPOSED CANDIDATE WASTE DISPOSAL SITE APPLICATION FOR A NEW WASTE DISPOSAL FACILITY WILL RUN IN CONJUNCTION PARALLEL WITH THIS LICENCE APPLICATION FOR CLOSURE.

Additional information can be provided as Appendix

SECTION 5: WASTE QUANTITIES

Indicate or specify types of waste and list the estimated quantities expected to be managed daily (should you need more columns, you are advised to add more)

GENERAL WASTE COLLECTION VOLUMES AND ESTIMATED DISPOSAL VOLUMES AT THE DEVON LANDFILL IS INDICATED IN THE TABLE BELOW. MORE INFORMATION WILL BE PROVIDED DURING THE BASIC ASSESSMENT PROCESS.

APPLICATION FORM [REGULATION 12]

--	--	--	--	--	--	--

SECTION 6: GENERAL

Prevailing wind direction (e.g. NWW)

November – April
May – October

Northerly direction	
Northerly and south westerly direction	

The size of population to be served by the facility

NOT APPLICABLE AS THIS IS AN APPLICATION FOR CLOSURE.

	Mark with 'X'	Comment
0-499		
500-9,999	X	Information from SDF
10,000-199,999		
200,000 upwards		

Indicate the geological formations underlying the site:

Granite
Shale
Sandstone

Quartzite
Dolomite
Dolerite

X

Other _____

SECTION 7: COMPETENCE TO OPERATE SITE

NOT APPLICABLE AS THIS IS AN APPLICATION FOR CLOSURE

It is imperative that the holder of the waste license is a fit person in terms of section 59 of the NEMWA (59 of 2008). To assess the holder's competence to operate the site, please disclose the following:

Legal compliance

Has the applicant ever been found guilty or issued with a non compliance notice in terms of any National Environmental Management Legislation?

Has the applicant's license in terms of the Waste Act ever been revoked?
Has the applicant ever been issued with a non compliance notices or letters in terms of any South African Law?

YES/NO	DETAILS

NB: Details required above include any information that the applicant wants the Department to take into consideration in determining whether they are a "fit person" and this includes reasons why the offence happened and measures in place to prevent recurrence

Technical competence

What technical skills are required to operate the site?

How will the applicant ensure and maintain technical competency in the operation of the site?

Details of applicant's experience and qualification along with that of relevant employees must be summarised as shown in the table below:

NAME	POSITION	DUTIES AND RESPONSIBILITIES	QUALIFICATIONS AND EXPERIENCE

Financial Provisions

APPLICATION FORM [REGULATION 12]

Recycling installation	
Format salvaging	
Contractor	
No salvaging planned	

Fatal Flaws for the site:

Indicate which of the following apply to the facility for a waste management activity:

Within a 3000 m radius of the end of an airport landing strip	NO
Within the 1 in 50 year flood line of any watercourse	NO
Within an unstable area (fault zone, seismic zone, dolomitic area, sinkholes)	NO
Within the drainage area or within 5 km of water source	YES
Within an area with shallow and/or visible water table	NO
Within an area adjacent to or above an aquifer	NO
Within an area with shallow bedrock and limited available cover material	NO
Within 100 m of the source of surface water	NO
Within 1 km from the wetland	NO
Indicate the distance to the boundary of the nearest residential area	20M metres
Indicate the distance to the boundary of the industrial area	ns metres

Wettest six months of the year
November-April

X

May-October

For the wettest six month period indicated above, indicate the following for the preceding 30 years

RAINFALL AND EVAPORATION DATA WERE OBTAINED FROM DWAF WEBSITE (WWW.DWAF.GOV.ZA). THE CLOSEST METEOROLOGICAL STATION THAT HAD SUFFICIENT DATA WAS DENEYSVILLE AT THE VAAL DAM WHICH HAS RAINFALL DATA FROM 1938 TO 2008 AND EVAPORATION DATA FROM 1966 TO 2008. THE DATA WAS MANIPULATED AS REQUIRED BY THE MR AND THE CLIMATIC WATER BALANCE WAS CALCULATED. BASED ON THE CALCULATIONS ALL THE YEARS FROM 1966 TO 2008 HAS AN ANNUAL WATER DEFICIT, THE SITE THEREFORE HAS A NEGATIVE WATER BALANCE I.E. "B-".

	Year	Total rainfall for 6 months	Total S-pan evaporation for 6 months	Climatic water balance
For the 1 st wettest year	1973/74	877.7	1599.7	-530.0
For the 2 nd wettest year	1995/96	792.0	1441.8	-476.8
For the 3 rd wettest year	1966/67	745.5	1390.2	-477.9
For the 4 th wettest year	2005/06	728.9	1327.4	-439.2

SECTION 9: DECLARATIONS

The independent Environmental Assessment Practitioner

MPHO MANYABE

I, _____, declare under oath that I –

act as the independent environmental assessment practitioner in this application for **CLOSURE OF THE EXISTING DEVON GENERAL WASTE DISPOSAL SITE** (name the activity);

- do not have and will not have any financial interest in the undertaking of the activity, other than; remuneration for work performed in terms of the Environmental Impact Assessment Regulations, 2010;
- have and will not have no vested interest in the proposed activity proceeding;
- have no, and will not engage in, conflicting interests in the undertaking of the activity;
- undertake to disclose, to the competent authority, any material information that have or may have the potential to influence the decision of the competent authority or the objectivity of any report, plan or document required in terms of the Environmental Impact Assessment Regulations, 2010;
- will ensure that information containing all relevant facts in respect of the application is distributed or made available to interested and affected parties and the public and that participation by interested and affected parties is facilitated in such a manner that all interested and affected parties will be provided with a reasonable opportunity to participate and to provide comments on documents that are produced to support the application;
- will ensure that the comments of all interested and affected parties are considered and recorded in reports that are submitted to the competent authority in respect of the application, provided that comments that are made by interested and affected parties in respect of a final report that will be submitted to the competent authority may be attached to the report without further amendment to the report;
- will keep a register of all interested and affected parties that participated in a public participation process; and
- will provide the competent authority with access to all information at my disposal regarding the application, whether such information is favourable to the applicant or not.

For Basic Assessment applications I further declare under oath that :

- I have fixed the site notice(s) in a conspicuous place, on the property(ies) where it is intended to undertake the activity(ies)
- I have placed a notice in the required newspaper(s)
- I have provided the following with all the project information and given them an opportunity to register as an I&AP
 - o landowners and occupiers of adjacent land
 - o landowners and occupiers of land within 100 metres of the boundary of the property
 - o the ward councillor
 - o any organisation that represents the community in the area of the application
 - o the municipality which has jurisdiction over the area in which the proposed activity will be undertaken
 - o any organ of state that may have jurisdiction over any aspect of the activity of the applicant's intention to submit an application to the competent authority; and
- I have included on the register all persons as required per Regulation 55
- I have given all registered I&APs an opportunity to comment on the project proposal, the investigation findings and the Basic Assessment Report
- The Basic Assessment Report attached herewith contains the same information (including layout, project design and mitigation) as provided to the registered I&APs for comment (NB: **THE FINAL BASIC ASSESSMENT REPORT IS TO BE SUBMITTED IN JUNE 2011**)
- All issues raised by the I&APs during the public participation process have been included in the Comments and Response Report as attached (**THE FINAL BASIC ASSESSMENT REPORT IS TO BE SUBMITTED IN JUNE 2011 WITH THE COMMENTS AND RESPONSE REPORTS**)

The Applicant

I, **Hennie B. Coetsee** declare under oath that I -

- Am, or represent, the applicant in this application;
- appointed the environmental assessment practitioner as indicated above to act as the independent environmental assessment practitioner for this application;
- will provide the environmental assessment practitioner and the competent authority with access to all information at my disposal that is relevant to the application;
- will be responsible for the costs incurred in complying with the Environmental Impact Assessment Regulations, 2006, including but not limited to -
- costs incurred in connection with the appointment of the environmental assessment practitioner or any person contracted by the environmental assessment practitioner;
- costs incurred in respect of the undertaking of any process required in terms of the regulations;
- costs in respect of any fee prescribed by the Minister in respect of the regulations;
- costs in respect of specialist reviews, if the competent authority decides to recover costs; and
- the provision of security to ensure compliance with conditions attached to an environmental authorisation, should it be required by the competent authority;
- will ensure that the environmental assessment practitioner is competent to comply with the requirements of these regulations;
- am responsible for complying with the conditions of any environmental authorisation issued by the competent authority;
- hereby indemnify the government of the Republic, the competent authority and all its officers, agents and employees, from any liability arising out of the content of any report, any procedure or any action for which the applicant or environmental assessment practitioner is responsible in terms of these regulations; and
- will not hold the competent authority responsible for any costs that may be incurred by the applicant in proceeding with an activity prior to an appeal being decided in terms of these regulations.

Signature of Applicant

Lesedi Local Municipality
Name of company:

Lesedi local municipality

21 February 2011

Date:

Signature of the Commissioner of Oaths:

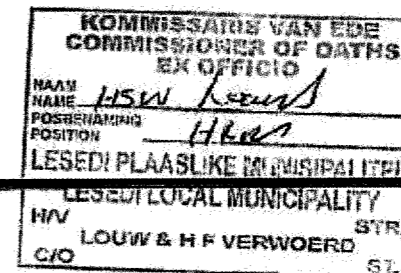
Date:

22 February 2011

Designation:

HR Manager 98016573509

Official stamp (Above)



Rev 2 (01 July 200)

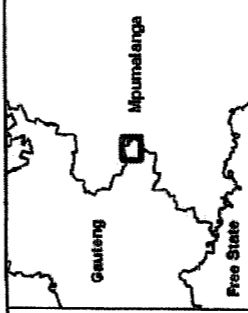
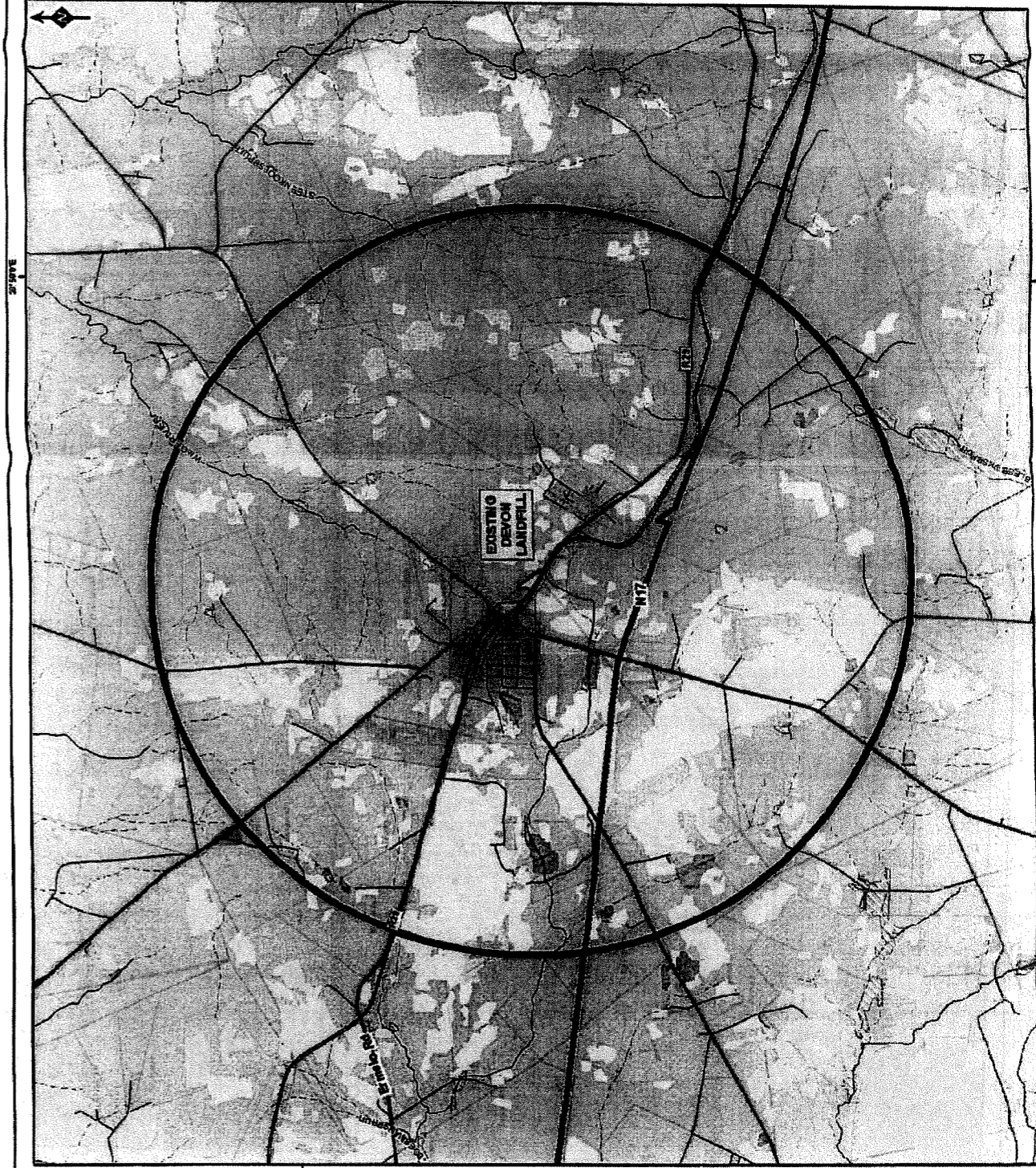
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APPLICATION FORM [REGULATION 12]

APPENDIX B1

The following **MUST** be included in the application as supporting documentation and the applicant must indicate specific section(s) where they are appended in the reports.

REQUIRED PIECE OF INFORMATION	SECTION IN THE REPORTS WHERE IT CAN BE FOUND	COMMENTS (if any)
1. Extremely clear Google Earth colour picture of the site (dated not more than a month from the date of the application)	ATTACHED TO THIS LICENCE APPLICATION	
2. 1:50 000 topography / topo-cadastral map of the area showing 2.1 the site and 5 km radius 2.2 Existing residential and industrial areas 2.3 Possible future development (indicate the type of development) 2.4 Other waste handling sites (existing or closed) in the area 2.5 Existing and possible future residential areas. 2.7 Sites which are listed as national monuments or archaeological, paleontological and cultural historical sites or objects worthy of conservation.	ATTACHED TO THIS LICENCE APPLICATION	
3. Security and access aspects of the site	TO BE ADDRESSED DURING STUDY	
4. The site plan drawn to scale showing the site's boundary showing: 4.1 Activities or development existing on all 4 directions of the site. 4.2 Waste receipt, storage and handling areas 4.3 Impermeable surfaces 4.4 Sealed drainage systems 4.5 Drainage system for the site including sumps and discharge points 4.6 Road names and access from all major roads in the area 4.7 Land Owner's consent (letter with signature)	WILL BE ATTACHED WITH THE FINAL WASTE LICENCE APPLICATION	
5. Waste hierarchy implementation plan	NOT APPLICABLE	



LEGEND

- Dam Buffer
- Existing Devon Waste Disposal Facility
- Railway line
- National Road
- Main road
- Secondary road
- Access road
- Rivers - Perennial
- Rivers - Non perennial
- Cultivated Land
- Grassland
- Forest & Woodland
- Shrubland
- Mixed & Cropland
- Urban
- Wetlands
- Farm Parkings

RESOURCES



REFERENCE: UTM 28 S UTM 28 S

PROJECT NO: 15052016

DATE: 15/05/2016

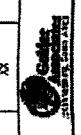
PROJECT: DEVON LANDFILL SITE CLOSURE

SCALE: 1:50,000

LOCALITY & LAND USES SURROUNDING THE EXISTING WASTE DISPOSAL FACILITY

NO	REV	DATE	BY
1	0	15/05/2016	JK
2	1	15/05/2016	JK
3	2	15/05/2016	JK

DRAFT



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Appendix C: Correspondence with the GDARD



agriculture and rural development

Department: Agriculture and Rural Development
GAUTENG PROVINCE

Diamond Corner Building, 68 Eloff & Market Street, Johannesburg
P O Box 8769, Johannesburg, 2000

Telephone: (011) 355-1900
Fax: (011) 355-1000
Website: <http://www.gdard.gpp.gov.za>

Reference:	Gaut: 002/10-11/W0066
Enquiries:	Justine Chan
Telephone:	(011) 355-1830
Email:	Justine.Chan@gauteng.gov.za

Zitholele Consulting (Pty) Ltd

Fax no. 086 676 9950

PER FACSIMILE

Dear Sir / Madam

Application for Environmental Authorisation: Closure of existing Devon general waste disposal site

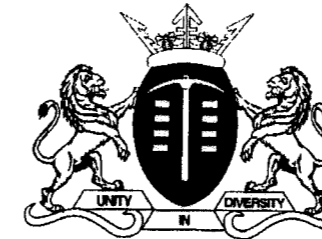
The Department acknowledges having received the application form for environmental authorisation of the above-mentioned project on 03/03/2011, but final amendments were received on 11/05/2011.

The application has been assigned the reference number Gaut: 002/10-11/W0066. Kindly quote this reference number in any future correspondence in respect of the application.

Please circulate the draft report to any state department that administers a law relating to a matter affecting the environment to comment.

You are required to submit two (2) copies (full colour CDs-PDF) of the Draft Basic Assessment Report as well as proof of submission to state departments referred to above.

In order to determine whether a biodiversity assessment is required and, if so, which specialist studies are required, please send a shapefile (WGS84 datum; geographic co-ordinate system) of the application site to our biodiversity information service



agriculture and rural development

Department: Agriculture and Rural Development
GAUTENG PROVINCE

Diamond Corner Building, 68 Eloff & Market Street, Johannesburg
P O Box 8769, Johannesburg, 2000

Telephone: (011) 355-1900
Fax: (011) 355-1000
Website: <http://www.gdard.gpg.gov.za>

Reference:	Gaut: 002/10-11/W0067
Enquiries:	Justine Chan
Telephone:	(011) 355-1830
Email:	Justine.Chan@gauteng.gov.za

Zitholele Consulting (Pty) Ltd

Fax no. 086 676 9950

PER FACSIMILE

Dear Sir / Madam

Application for Environmental Authorisation: Development of the proposed Devon waste disposal facility

The Department acknowledges having received the application form for environmental authorisation of the above-mentioned project on 04/03/2011, but final amendments were received on 30/05/2011.

The application has been assigned the reference number Gaut: 002/10-11/W0067. Kindly quote this reference number in any future correspondence in respect of the application.

Please circulate the draft report to any state department that administers a law relating to a matter affecting the environment to comment.

You are required to submit two (2) copies (full colour CDs-PDF) of the Draft Scoping Report as well as proof of submission to state departments referred to above.

In order to determine whether a biodiversity assessment is required and, if so, which specialist studies are required, please send a shapefile (WGS84 datum; geographic co-ordinate system) of the application site to our biodiversity information service

Appendix D: Newspaper Advertisements (announcement of project)

Adverts for the announcement phase were placed in the following newspapers:

PUBLICATION	INSERTION DATE
Heidelberg Nigel Heraut	3 November 2010
Rekord Nigel & Heidelberg	9 November 2010

**ENVIRONMENTAL IMPACT ASSESSMENT STUDIES
AND APPLICATION FOR WASTE LICENSES**

**Environmental studies for the proposed closure of the Devon
General Waste Disposal Site and the licensing and
identification of a new site for the Lesedi Local Municipality**

Notice is hereby given, in terms of Section 24 (b) of the National Environmental Management Act (NEMA), (Act No 107 of 1998) and Regulations (GNR 543 - 546 - Government Gazette No. 33306) published on 18 June 2010, of Lesedi Local Municipality's intent to license the existing landfill at Devon with a view to closure and to identify and license a new landfill site for the Devon area.

Waste licenses will be applied for under the Waste Regulations under Section 19 (1) of the National Environmental Management Waste Act (NEM:WA), Act 59 of 2009. According to Regulation 718 of NEM:WA a Basic Assessment (BA) as defined by NEMA is required for the decommissioning of a waste facility. Regulation 719 of the NEM:WA, states that an Environmental Impact Assessment (EIA) is required when a new landfill site is needed. All submissions will be made to the Gauteng Department of Agriculture and Rural Development (GDARD).

PUBLIC COMMENT ENCOURAGED

For more information and a Background Information Document please contact the Zitholele Consulting public participation office:

André Joubert / Florence Rambuda
Zitholele Consulting (Pty) Ltd, P.O. Box 6002, Halfway House, 1685
Tel: (011) 254 4855 / 4903 Fax: 088 676 9950
email: andrej@zitholele.co.za or florencer@zitholele.co.za

Please respond within 30 days

3 NOVEMBER 2010

HEIDELBERG/NIGEL HERAUT

Adverts for the scoping phase were placed in the following newspapers:

PUBLICATION	INSERTION DATE
Rekord Nigel & Heidelberg	22 March 2011
Heidelberg Nigel Heraut	23 March 2011

**ENVIRONMENTAL STUDIES AND
WASTE LICENSE APPLICATIONS**

(GAU: 002/10-11/E0001) (GAU: 002/10-11/E0007)

Environmental studies for the proposed closure of the Devon
General Waste Disposal Site and the licensing and
identification of a new site for the Lesedi Local Municipality

**PUBLIC REVIEW OF DRAFT BASIC ASSESSMENT REPORT
AND DRAFT SCOPING REPORT**

The Draft Basic Assessment Report and the Draft Scoping Report
will be available for public review from 28 March to 26 May 2011
at the following public places:

CONTACT	LOCATION	TELEPHONE
Lindi Gericka	Devon Public Library	017 688 0028
Thebo Mphahlele	Impumelelo Public Library	017 688 0273

PUBLIC MEETING

You are invited to attend a public meeting on Tuesday, 5 April 2011 at 18:00 at the
Impumelelo Community Hall, 217 Impumelelo Road, Devon to review and discuss
these Reports.

**FOR A COPY OF THE REPORTS AND/ OR TO REGISTER
FOR THE MEETING, PLEASE CONTACT:**

André Joubert / Florence Rambuda
Zitholele Consulting (Pty) Ltd, P.O. Box 6002, Halfway House, 1685
Tel: (011) 207 2077/ 207 2075 - Fax: 086 678 9950
email: andrej@zitholele.co.za or florence@zitholele.co.za

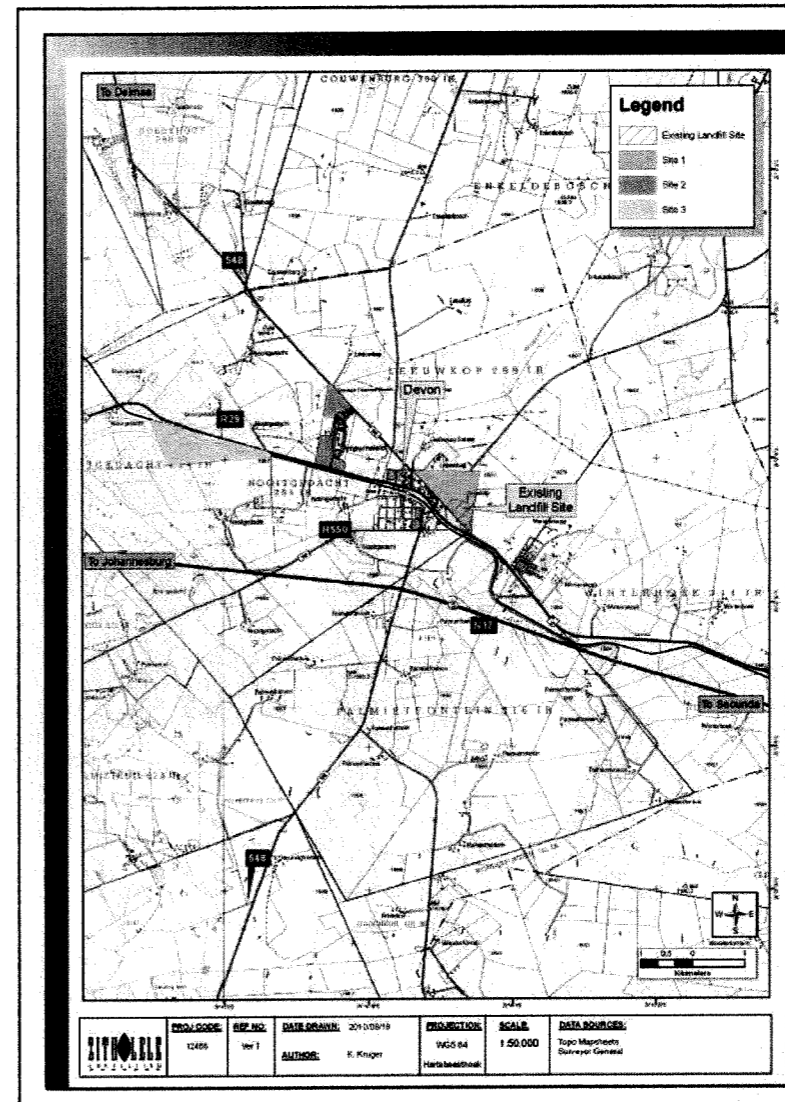
22 MARCH 2011

NIGEL/HEIDELBERG REKORD.

Appendix E: Site Notices

**NOTICE OF ENVIRONMENTAL IMPACT ASSESSMENT STUDIES
AND WASTE MANAGEMENT LICENSE APPLICATIONS**

Environmental studies for the proposed closure of the Devon General Waste Disposal Site and the licensing and identification of a new site for the Lesedi Local Municipality



Notice is hereby given, in terms of Section 24 (5) of the National Environmental Management Act (NEMA), (Act No 107 of 1998) and Regulations (GNR 543 - 546 – Government Gazette No. 33306) published on 18 June 2010, of Lesedi Local Municipality's intent to license the existing landfill at Devon with a view to closure and to identify and license a new landfill site for the Devon area.

Waste licenses will be applied for under the Waste Regulations under Section 19 (1) of the National Environmental Management: Waste Act (NEM:WA), Act 59 of 2009. According to Regulation 718 of NEM:WA a Basic Assessment (BA) as defined by NEMA is required for the decommissioning of a waste facility. Regulation 719 of the NEM:WA, states that an Environmental Impact Assessment (EIA) is required when a new landfill site is needed.

All submissions will be made to the Gauteng Department of Agriculture and Rural Development (GDARD)

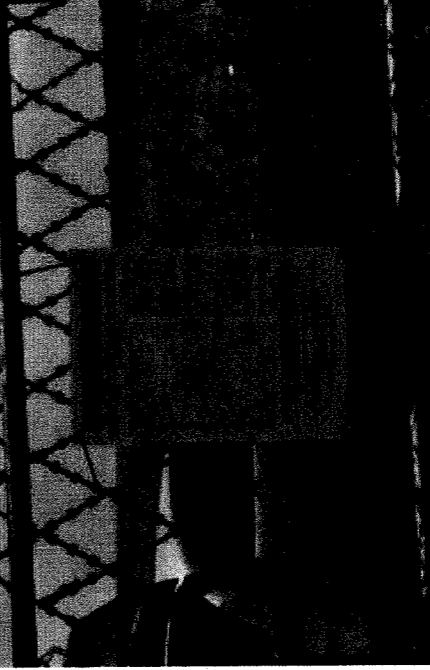

The purpose of this study is to identify and evaluate issues of concern and potential environmental and social impacts, and propose feasible mitigation measures against such impacts. The objective of the assessment is to investigate the potential environmental and social impacts and issues of the proposed activity in support of an application for Environmental and Waste License Authorisation.

PUBLIC COMMENT ENCOURAGED


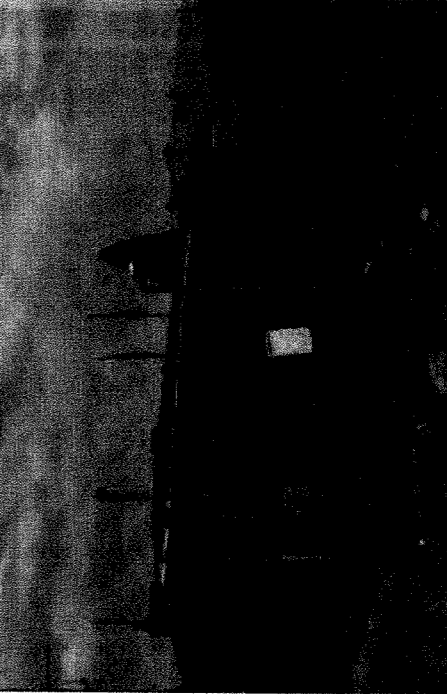
For more information and a Background Information Document please contact the public participation office:
 Andre Joubert/Florence Rambuda at Zitholele Consulting (Pty) Ltd
 P O Box 6002, Halfway House, 1685
 Tel: (011) 207-2077/2075, Fax: 086-676-9950
 Email: andrej@zitholele.co.za or florencer@zitholele.co.za
 Please respond by 25 November 2010

**BASIC ASSESSMENT AND ENVIRONMENTAL IMPACT ASSESSMENT FOR THE PROPOSED CLOSURE OF
THE DEVON WASTE SITE AND LICENSING AND IDENTIFICATION OF THE NEW SITE**

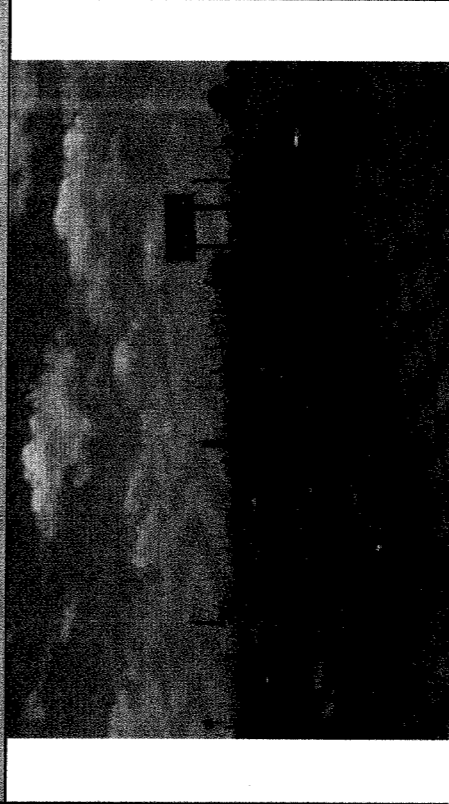
Table 1: Indicates the location of site notices placed

ite (M)	Description of the location of notice	GPS co-ordinates	Picture/photo
1	Entrance to the existing Devon Waste Disposal Site	28,790614 E 26,360357 S	
2	Entrance to the existing Devon Waste Disposal Site	28,790614 E 26,360357 S	

BASIC ASSESSMENT AND ENVIRONMENTAL IMPACT ASSESSMENT FOR THE PROPOSED CLOSURE OF THE DEVON WASTE SITE AND LICENSING AND IDENTIFICATION OF THE NEW SITE

Item	Description of the location of notice	GPS co-ordinates	Picture/photo
5	Entrance to the Devon Sewage Treatment Plant, adjacent to Alternative 3.	28,74518 E 26,345793 S	
6	Devon Police Station	28,785633 E 26,356351 S	

BASIC ASSESSMENT AND ENVIRONMENTAL IMPACT ASSESSMENT FOR THE PROPOSED CLOSURE OF THE DEVON WASTE SITE AND LICENSING AND IDENTIFICATION OF THE NEW SITE

Item	Description of the location of notice	GPS co-ordinates	Picture/photo
9	Access road to existing Devon Waste Disposal Site and Alternative 1	28,789754 E 26,361727 S	

Appendix F: Project Location Map

Appendix G: Stakeholder Database

12468 – Stakeholder database – Devon Landfill Site

<u>Last Name</u>	<u>First Name</u>	<u>Company</u>	<u>City</u>
Bhuda	Jim		DEVON
Bokala	Willie	Sowetan Newspaper	JOHANNESBURG
Borman	Johnny	Lesedi Local Municipality	DEVON
Bunu	Ethel	Siyaphila Home Base Care	DEVON
Chan	Justine	Department of Agriculture and Rural	JOHANNESBURG
Coetsee	Hennie	Lesedi Local Municipality	HEIDELBERG
de Swardt	Willie	Farm Leeuwkop 299 IR	DEVON
Ferreira	Belinda	Lesedi Local Municipality	HEIDELBERG
Funani	Frans		DEVON
Gama	Thokhozile	Vulamehlo Disable Organization	DEVON
Gamede	Neli		DEVON
Hlela	Sbongile	SAPS (Devon)	SASOLBURG
Jeffrey	M	Usizolwethu Clinic	DEVON
Kubeka	Nelly	Lesedi Local Municipality	HEIDELBERG
Lamula	Roselinah		DEVON
Leslie	Mary		CAPE TOWN
Mabela	Elias	Lesedi	DEVON
Majola	Zwelibanzi	Lesedi Local Municipality	HEIDELBERG
Makhathini	Nhlanhla	Department of Agriculture and Rural	JOHANNESBURG
Maloka	Lerato	Lesedi Local Municipality	HEIDELBERG
Marwa	Herman	Lesedi Local Municipality	HEIDELBERG
Masangane	Richard	Sedibeng District Municipality	VEREENIGING
Mdluli	Tsepo	Lesedi Local Municipality	DEVON
Mnyoni	Goodman	Nomnekhane Primary School	DEVON
Modisakeng	Busisiwe	Lesedi Local Municipality	HEIDELBERG
Mofokeng	Simon	Sedibeng District Municipality	VEREENIGING
Moholobela	Star	Lesedi Local Municipality	HEIDELBERG
Mokoena	Cynthia	Lesedi Local Municipality	HEIDELBERG
Molo	Themba	Lesedi Local Municipality	DEVON
Mosia	Ntombifuthi		DEVON
Motaung	Daniel	Hamija Nathi Youth Club	DEVON
Motha	Pinky		DEVON
Motsepe	Nomthandazo	Lesedi Local Municipality	DEVON
Mphafudi	Thabo	Impumelelo Public Library	DEVON
Ndobochani	Nonofho	South African Heritage Resources Agency	CAPE TOWN
Ngubeni	Thulani		DEVON
Nkosi	Maria	Lesedi Local Municipality	DEVON
Nkosi	Mduduzi		DEVON
Nkozi	Muzi		HEIDELBERG
Oelofse	Gert	Lesedi Local Municipality	HEIDELBERG
Rakgoad	Klaas	Lesedi Waste	DEVON
Sepogwane	Beatrice	Heidelberg Library	HEIDELBERG
Sibanyoni	Moses	Resident	DEVON
Sibanyoni	Sipho		DEVON
Sibeko	Anna		DEVON
Sibeko	Velaphi		DEVON
Sibiya	Zanele		DEVON
Sikhosana	Roselina		HEIDELBERG
Sithole	June	Lesedi Municipality	DEVON
Smit	Hennie	Department of Water Affairs (DWA)	PRETORIA
Tarr	Don	Devon Public Library	DEVON
van Coller	Yvonne	Heidelberg Nigel Heraut Newspaper	HEIDELBERG
van den Heever	Pieter	Lesedi Local Municipality	HEIDELBERG
van Zyl	Zies	Sedibeng District Municipality	VEREENIGING
Verster	Cornelis	Lesedi Local Municipality	HEIDELBURG
Vilakazi	Lindokuhle	Gauteng Department of Agriculture and	JOHANNESBURG

Appendix H: Comments and Response Report (version 2)

**Scoping and Environmental Impact Report for the licensing and
identification of a new General Waste Disposal Site for the Lesedi Local
Municipality at Devon**
(Gaut: 002/10-11/E0087)
Comments and Responses Report
Version 2

This report (Version 2) captures the issues raised by stakeholders during the Scoping and Environmental Impact Report process for the licensing and identification of a new General Waste Disposal Site for the Lesedi Local Municipality at Devon in Mpumalanga.

As part of the announcement, a Background Information Document (BID), with a comment and registration sheet was posted and distributed by hand during October 2010. An advertisement was also placed in various newspapers and site notices were put up during October 2010 in the area of the proposed development. Comments received as a result of the announcement process were captured in Version 1 of this report which was an appendix to the Draft Scoping Report.

The Draft Scoping Report was available for public review from 28 March 2011 to 26 May 2011. Stakeholders were notified of the availability of the Draft Scoping Report for comment through the placement of advertisements and notification letters. A meeting was held on 5 April at the Impumelelo Community Hall in Devon to review the contents of the Draft Scoping Report. Comments raised at this meeting and during the public review process of the Draft Scoping Report were captured in Version 2 of this report which is appended to the Final Scoping Report.

The Final Scoping Report will be made available for public review. Comments as a result of the public review of the Final Scoping Report will be captured in Version 3 of this report which will be appended to the Draft Environmental Impact Report.

	COMMENTS, QUESTIONS AND ISSUES	COMMENTATOR(S)	SOURCE(S)	RESPONSE(S)
A. BIOPHYSICAL STUDIES				
1	How big will the buffer zone be between the waste disposal site and the neighbouring houses?	Stakeholder at meeting	Public meeting on 5 April 2011 in the Impumelelo Community Hall, Devon	A buffer zone of 400 metres will be kept between the waste disposal site and neighbouring houses. After consultation with legislation documents, according to the <i>Minimum Requirements for Waste Disposal by Landfill (DWAF, 1998)</i> , buffer zones are 'set back distances' or separations between the registered site boundary and residential developments. At the discretion of the local authority and the state departments, however, developments such as industrial development may be permitted.
2	Why are you closing down the old site and what are the benefits to the community of having a new Waste Disposal Site?	Stakeholder at meeting	Public meeting on 5 April 2011 in the Impumelelo Community Hall, Devon	The existing site has never been permitted and is thus illegal. Every existing Waste Disposal Site has to be licensed and operated according to the <i>Minimum Requirements for Waste Disposal by Landfill (DWAF, 1998)</i> . The existing Waste Disposal Site also was not developed according to these Requirements and therefore, there are no liners as prescribed. A new site will therefore be constructed and operated according to these Requirements, reducing chances of environmental and social impacts associated with Waste Disposal Sites. The existing Waste Disposal Site is adjacent to formal and informal housing stands and poses a health risk to the people
B. PROCESS ISSUES				
1	Will there be another public meeting after this one?	Stakeholder at meeting	Public meeting on 5 April 2011 in the Impumelelo Community Hall, Devon	Yes, a public meeting will be held in the same place in September 2011 to discuss the findings of the specialist studies on Draft Environmental Impact Assessment Report (DEIAR).
2	The advertisement states that	Mr Lucas Mahlangu,	Letter on 26 May	Noted with thanks

	decommissioning and the construction of the new site) run concurrently, an alternative site must be identified for the disposal of waste.	Directorate: Authorisation and Waste Disposal Management, Department of Environmental Affairs, Pretoria.	2011	closed down when the new site is operational.
C. SOCIAL ISSUES				
1	We need work and must have access to the new site.	Ms Anna Sebia, Mr Amos Noke, Mr Bright Mokokula, Ms Sarah Mnyakeni, Ms Rachina Kokela, Ms Dora Mhlangu, Mr Johnson Mkwai, Ms Poppy Mnisi, Ms Maria Ndlovu, Ms Emily Khosi, Ms S Dube, Ms Elizabeth Simelane, M Viliiala Dumisani, Mr January Msiza, Ms Jane Mogabe, Ms Lea Sibebe, Salvagers at current Devon landfill site	Site visit on 21 October 2010	Noted
2	The municipality must provide the salvagers with safety gear.	Ms Anna Sibiya, salvager at current Devon landfill site	Site visit on 21 October 2010	Noted
3	I would prefer if the waste is collected and sorted close to the current site and that a municipality vehicle take the material to Springs for recycling.	Ms Anna Sebeko, salvager at current Devon landfill site	Site visit on 21 October 2010	The BA will identify the most suitable site and we note your request to have it close to the existing site. The vehicle transport to Springs will be mentioned to the Municipality but cannot be addressed through this study at this time.
4	Will the environmental processes create any jobs that can be given to locally unemployed people?	Stakeholder at meeting	Public meeting on 5 April 2011 in the Impumelelo Community Hall, Devon	No, it is being undertaken by Zitholele Consulting (Pty) Ltd and no additional people are needed to complete these studies.
D. ECONOMIC ISSUES				
1	I prefer the alternative nearest	Mr Aaron Mabena, salvager	Site visit on 21	The environmental studies will suggest a location for the

Appendix I: Background Information Document and Registration Sheet

Environmental studies for the proposed closure of the Devon General Waste Disposal Site and the licensing and Identification of a new site for the Lesedi Local Municipality

BACKGROUND INFORMATION DOCUMENT

October 2010

The purpose of this Background Information Document (BID) is to brief Interested and Affected Parties (I&APs) about the environmental processes being conducted for the closure of the Devon General Waste Disposal Site and the licensing of a new General Waste Disposal Site for the Lesedi Local Municipality in Gauteng.

This BID also provides I&APs with the opportunity to:

- register as stakeholders in the public participation process; and
- make initial comments on and contributions to the proposed projects.

Your comments are important

Your comments will ensure that all relevant issues are evaluated in the environmental processes.

You are requested to complete the enclosed reply sheet, write a letter, call or email the public participation office (see information box at the back of this BID for contact details).

Please register by 25 November 2010

Stakeholders can register and comment at any time during this process.

The date mentioned above is to ensure that all your comments are included in the draft reports.

When you register you will be included in the database and receive further documents as it becomes available.

BACKGROUND

The Lesedi Local Municipality (LLM) is part of the Sedibeng District Municipality, with Heidelberg its economic hub.

The LLM provides a number of waste services to residents and commercial enterprises within the municipality. A weekly domestic waste collection service is provided in each of the four main areas within the LLM.

Devon has its own municipal landfill which is also open to the public. The landfill site at Impumelelo, a suburb of Devon, was closed some time ago due to its close proximity to houses. Thereafter waste from Impumelelo was also disposed of at the Devon landfill site. Waste from the other areas in the municipality is disposed at landfill sites outside Lesedi.

The Devon landfill is therefore the only remaining operating landfill within the municipality. The landfill site is located approximately 500m south east of Devon town along the R29 provincial road between Springs and Bethal.

Zitholele Consulting and Golder Associates Africa have been appointed to undertake the required environmental studies and licensing processes respectively for the closure of the existing Devon landfill site and the establishment of a new landfill for the Devon area. Three possible sites in the vicinity of Devon and Impumelelo have been identified.

TWO PROCESSES

The Devon landfill site is currently operating illegally since it was not permitted as required by Section 20 of the Environmental Conservation Act, (Act 73 of 1989) or as per the National

Environmental Management Waste Act (NEM:WA) (Act 59 of 2009). It is also not operating as prescribed by the Minimum Requirements for Waste Disposal by Landfill. This resulted in LLM deciding to close this site and rather establish a new landfill site that will be properly planned and licensed.

The Devon landfill site must, however, first be licensed before it can be closed, because there are specific regulations regarding land rehabilitation that must be followed when closing a landfill site.

According to **Regulation 718** of the NEM:WA a **Basic Assessment** (BA) as defined by the National Environmental Management Act (NEMA), Act 107 of 1998 is required for the decommissioning of a waste facility.

Regulation 719 of the NEM:WA, states that an **Environmental Impact Assessment** (EIA) must be undertaken prior to establishing a new landfill site larger than 200m².

The BA and EIA processes as well as the licensing of the Devon landfill site fall under the jurisdiction of the Gauteng Department of Agriculture and Rural Development (GDARD).

FEASIBILITY STUDY

A study was done to determine the feasibility of the continued use of the landfill site versus the following options:

- the upgrading of the existing site to be used to its full potential airspace;
- the development of a new landfill site;
- the development of a transfer station at Devon; or

As mentioned earlier in the document, a BA has to be conducted towards the closure of the existing landfill site and an EIA for the proposed new landfill site. Each process is described below in more detail.

Environmental Impact Assessment

An Environmental Impact Assessment (EIA) is a planning and decision-making process undertaken in terms of Section 24 (5) of the National Environmental Management Act (NEMA), Act No 107 of 1998.

WHAT IS AN EIA?

An EIA has two parallel and integrated processes namely, a **technical** and a **public participation** process.

The **technical process** investigates "hard" information: facts based on scientific and technical studies, statistics or technical data. It identifies the potential negative and positive consequences of a proposed project or development at an early stage and recommends ways to enhance positive impacts and to avoid, reduce or mitigate negative impacts.

The EIA regulations require that an Environmental Management Programme (EMProg) be developed. The EMProg provides recommendations on how to operate and implement the project. The provisions of the EMProg are legally binding on the developer and its contractors.

Public participation ensures that the EIA process is fair, open and, transparent. It also provides stakeholders with sufficient information and gives them opportunity to contribute.

PHASES OF AN EIA

SCOPING PHASE OF THE EIA

The **first phase** of an EIA is the Scoping Phase, which is conducted to gain understanding of the potential environmental issues that are relevant to the project and to determine where further information is required, in the form of specialist studies / investigations.

The Scoping Report and Plan of Study for the EIA are submitted to the GDARD for review and to approve the proposed approach to the detailed investigation required in the next phase.

Activities involved in the Scoping Phase include:

- Meetings with authorities to agree on process and study requirements;
- The placing of site notices, the distribution of letters, this Background Information Document and an invitation to contribute to the EIA process to Interested and Affected Parties in the project area and beyond;

- Advertisements in local and regional newspapers to announce opportunities to participate;
- Progress feedback letter to be issued and announcements to be made of the availability of the Draft Scoping Report (DSR) and Issues and Responses Report (IRR);
- Distribution of a DSR, including IRR, for comment;
- Convening stakeholder workshops in the project area to obtain comment on the DSR;
- Submission of a Final Scoping Report (FSR), capturing all issues raised for the impact assessment, to the GDARD;
- Submit the Plan of Study for the EIA to the GDARD;
- Distribution of the FSR for information; and
- Progress feedback letter to stakeholders.

IMPACT ASSESSMENT PHASE OF THE EIA

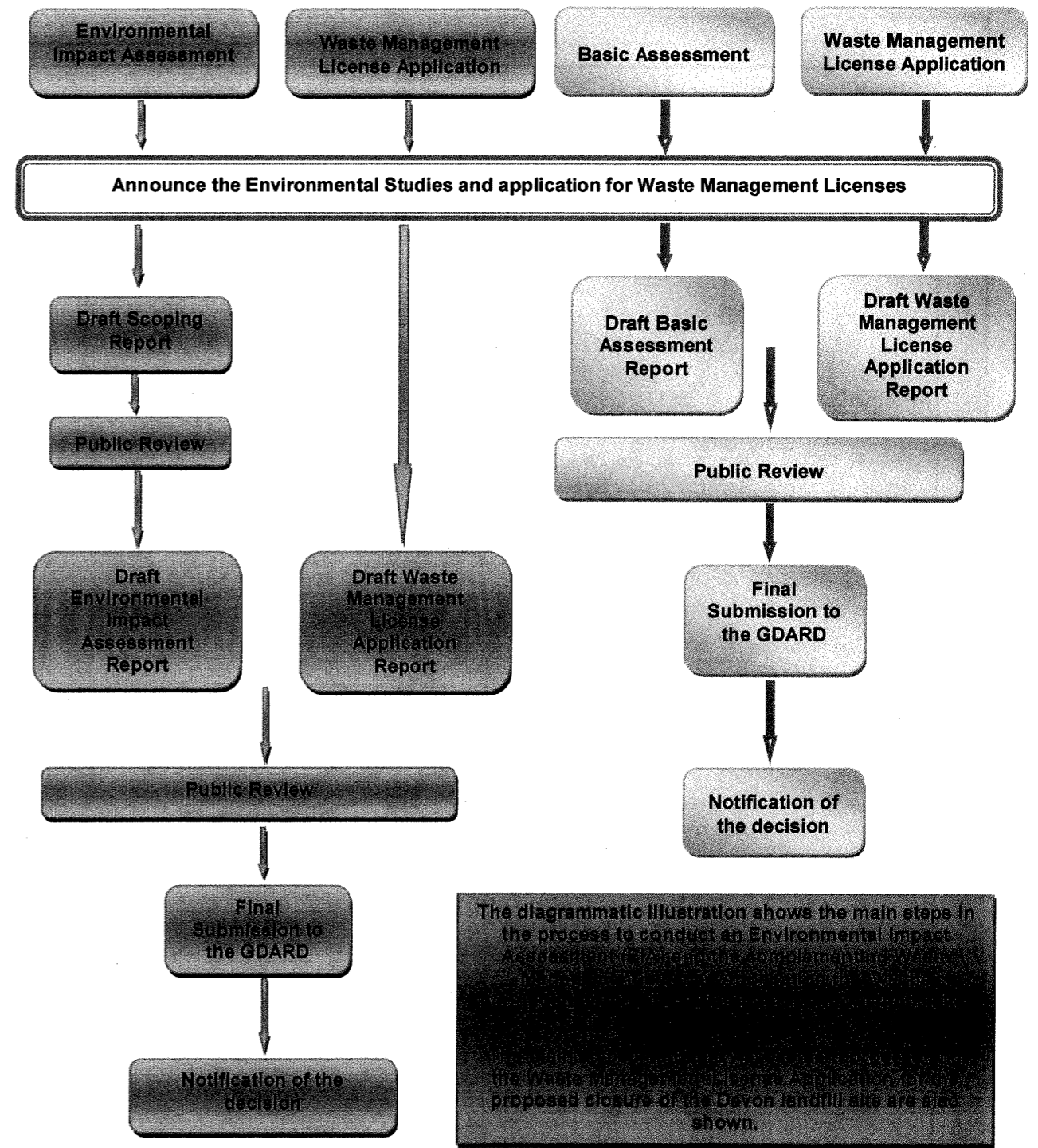
The **second phase** of the EIA is an Impact Assessment Phase which entails undertaking various specialist studies, compiling an Environmental Impact Report (EIR) and a Draft EMProg.

As part of the assessment, an EMProg for the project will also be submitted to the GDARD for their approval. Following the EMProg, pre and post construction, will ensure compliance to environmental regulations during the

planning, construction, operation and decommissioning (if applicable) phases. The list of identified specialist studies required for the EIA will be confirmed once the Scoping process has been completed. The Draft EIR and EMProg will be made available to stakeholders for their review and comments. Once comments have been considered, the Draft EIR and EMProg will be finalised and submitted to the GDARD for a decision.

DECISION-MAKING PHASE OF THE EIA

The **third phase** involves a decision by the decision-making authority, the GDARD in this case. The GDARD must accept or reject this report within 60 days, make a decision within a further 45 days and notify the applicant within 2 days. Should any of these timeframes lapse the GDARD will automatically be given a 60 day extension. Stakeholders will be advised of the GDARD's decision if Environmental Authorisation has been granted or not and the appeal procedure should they wish to appeal the decision.



The diagrammatic illustration shows the main steps in the process to conduct an Environmental Impact Assessment (EIA) and the complementary Waste Management License Application (WMLA) for the proposed closure of the Devon landfill site are also shown.

PUBLIC PARTICIPATION OFFICE	TECHNICAL ENQUIRIES
Andre Joubert, Zitholele Consulting PO Box 6002, Halfway House 1685 Tel: (011) 207 2077 Fax: 086 676 9950 E-mail: andrej@zitholele.co.za	Jacqui Hex, Zitholele Consulting PO Box 6002, Halfway House 1685 Tel: (011) 207 2078 Fax: 086 676 9950 E-mail: jacquih@zitholele.co.za

REGISTRATION AND COMMENT SHEET Environmental studies for the proposed closure of the Devon General Waste Disposal Site and the licensing and identification of a new site for the Lesedi Local Municipality Inserted in the Background Information Document October 2010	Public Participation Office Andre Joubert/Florence Rambuda Zitholele Consulting (Pty) Ltd P O Box 6002, Halfway House, 1685 Tel: (011) 207-2077 / 2075 Fax: 086-676-9950 Email: andrej@zitholele.co.za florenccer@zitholele.co.za
---	---

Please complete by 25 November 2010 and return to the Public Participation Office (as above)

TITLE		FIRST NAME					
INITIALS		SURNAME					
ORGANISATION		EMAIL					
POSTAL ADDRESS							
		POSTAL CODE					
TEL NO		FAX NO					
Please formally register me as an interested and affected party (I&AP) so that I may receive further information and notifications during the process			<table border="1"> <tr> <td style="width: 50px;">YES</td> <td style="width: 50px;">NO</td> </tr> </table>	YES	NO		
YES	NO						
I would like my notifications by			<table border="1"> <tr><td>Letter (mail)</td></tr> <tr><td>Email</td></tr> <tr><td>Fax</td></tr> <tr><td>Telephone</td></tr> </table>	Letter (mail)	Email	Fax	Telephone
Letter (mail)							
Email							
Fax							
Telephone							
I would like to receive documents for comment as follows			<table border="1"> <tr><td>Paper copies</td></tr> <tr><td>By email</td></tr> <tr><td>On CD</td></tr> </table>	Paper copies	By email	On CD	
Paper copies							
By email							
On CD							
In terms of GNR 543 - 546 (EIA process regulations) I disclose below any direct business, financial, personal or other interest that I may have in the approval or refusal of the application:							

COMMENTS (please use separate sheets if you wish)

I suggest that the following issues of concern be investigated in the environmental studies:

.....

.....

.....

Any other comments:

.....

.....

Please ask the following of my colleagues/friends to register as I&APs for this project:

.....

.....

THANK YOU FOR YOUR CONTRIBUTION

Appendix J: Minutes of Public Meeting

The comments and concerns raised at the public meeting which was held on 5 April 2011 were incorporated in the Comments and Response Report – See Appendix H

Appendix K: Evaporation and Precipitation Data

Monthly rainfall data as acquired from the DWAF website

Data are continuously updated and reviewed.

Format of the data is as follows: (I4,X,12,13(X,A6,A1,A1)) where:

I4 = CCYY

X = /

I2 = YY

13(X,A6,A1,A1) = 12 Monthly rainfall in mm from Oct to Sep.

Value 13 is the yearly total.

X = Space

AG = 999999

A1 = & or space (& = Monthly Reading)

A1 = # or space (# = record incomplete or does not exist)

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Appendix L: Calculations on Climatic Water Balance

Water Balance

	Nov	Dec	Jan	Feb	Mar	Apr	Total	S-pan evaporation	S-pan factor (0.88)	Water balance
30 1966/67	100.8	87.4	211.3	138.4	164.9	42.7	745.5	1390.2	1223.4	-477.9
31 1967/68	70.4	175	59.5	33.8	134.9	30.2	503.8	937.2	824.7	-320.9
32 1968/69	75.7	83.3	31.2	18.3	104.4	37.6	350.5	625.3	550.3	-199.8
33 1969/70	89.9	115.8	37.6	84.6	18.8	43.9	390.6	691.3	608.3	-217.7
34 1970/71	117.1	92.7	100.8	76.7	86.1	103.9	577.3	1037.5	913.0	-335.7
35 1971/72	90.7	159.3	230.9	31	92.5	15.8	620.2	1149.7	1011.7	-391.5
36 1972/73	70.4	66.8	88.9	129.8	77.2	74.7	507.8	945.2	831.8	-324.0
37 1973/74	155.7	285	118.1	122.5	110.2	86.2	877.7	1599.7	1407.7	-530.0
38 1974/75	157.2	97.8	175.4	112.4	46.6	95.8	685.2	1213.2	1067.6	-382.4
39 1975/76	92.6	103.8	116.2	123.7	85.5	55.3	577.1	1061.6	934.2	-357.1
40 1976/77	60.6	112.5	55.5	38.6	92.2	11.9	371.3	682	600.2	-228.9
41 1977/78	73.4	271.6	116.6	45.5	29.8	39.9	576.8	1080.2	950.6	-373.8
42 1978/79	48.3	57.4	101.6	13.7	28.7	20.3	270	491.7	432.7	-162.7
43 1979/80	163.1	48.5	134.1	96.8	20.6	42.7	505.8	848.5	746.7	-240.9
44 1980/81	133.4	92.5	178.1	63.3	54.4	19.6	541.3	949.2	835.3	-294.0
45 1981/82	77.5	136.2	124.5	102.4	44.2	58.4	543.2	1008.9	887.8	-344.6
46 1982/83	24.9	66.8	61	54.6	16.3	17.3	240.9	456.9	402.1	-161.2
47 1983/84	126.2	208	86.4	13	97.8	9.6	541	955.8	841.1	-300.1
48 1984/85	154.9	57.2	117.1	64.3	63.3	12.5	469.3	783.7	689.7	-220.4
49 1985/86	41.3	111.4	149.5	61.5	99.4	101.8	564.9	1088.5	957.9	-393.0
50 1986/87	114	171.7	63.7	44	60	71.3	524.7	935.4	823.2	-298.5
51 1987/88	92	141.5	57.8	76.1	107.7	47.2	522.3	952.6	838.3	-316.0
52 1988/89	61.2	60.7	108.1	110.4	70.6	51.4	462.4	863.6	760.0	-297.6
53 1989/90	145	84	78.5	78	157.7	85.3	628.5	1112	978.6	-350.1
54 1990/91	41.2	30.3	162.2	64.6	125.6	0	423.9	806.6	709.8	-285.9
55 1991/92	58.5	119.6	55.7	47.6	10	13	304.4	550.3	484.3	-179.9
56 1992/93	182.9	79.8	76.9	83.8	61.5	24.6	509.5	836.1	735.8	-226.3
57 1993/94	91.7	111.5	118.4	59.7	43.2	40.6	465.1	838.5	737.9	-272.8
58 1994/95	75.4	131.1	118.1	55.6	61.2	39.2	480.6	885.8	779.5	-298.9
59 1995/96	142.2	216	98	178.2	65	92.6	792	1441.8	1268.8	-476.8
60 1996/97	78.2	88.2	22.8	88	225.6	51.8	554.6	1031	907.3	-352.7
61 1997/98	99.8	188.4	195.7	49.1	95.3	3.5	631.8	1163.8	1024.1	-392.3
62 1998/99	187.9	111.1	18.6	52.4	39.8	14.2	424	660.1	580.9	-156.9
63 1999/00	31.8	194.1	155.2	106.8	118	31.5	637.4	1243	1093.8	-456.4
64 Jan-00	106.8	125.4	48	52.2	50.2	11.4	394	681.2	599.5	-205.5
65 Feb-01	86.7	138.3	164	72.8	18.8	8.2	488.8	890.9	784.0	-295.2
66 Mar-02	0	133.8	76.2	56.6	44.6	1.4	312.6	625.2	550.2	-237.6
67 Apr-03	187	37.1	97	158.7	100.4	22.8	603	1019	896.7	-293.7
68 May-04	89.6	125.2	117.3	36.6	0	0	368.7	647.8	570.1	-201.4
69 Jun-05	130.4	88.3	247.1	136.6	84.2	42.3	728.9	1327.4	1168.1	-439.2
70 Jul-06	76.6	186.6	75.6	41.8	10.5	56.7	447.8	819	720.7	-272.9
71 Aug-07	43	47.4	128	56.2	105.7	9	389.3	735.6	647.3	-258.0
72 Sep-08	113.6	75.8	228.6	173.6	38.8 #		630.4	1147.2	1009.5	-379.1
Avg:	96.1	118.3	111.1	82.9	73.6	42.8	524.8			
ZZZZZZZZZZ							312.4634			

Appendix M: Letters to Stakeholders



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22 October 2010

Dear Stakeholder

**ENVIRONMENTAL STUDIES FOR THE PROPOSED CLOSURE OF THE DEVON GENERAL LANDFILLSITE
AND THE LICENSING AND IDENTIFICATION OF A NEW SITE FOR THE LESEDI LOCAL MUNICIPALITY**

Environmental studies are being conducted for the proposed licensing of the existing landfill at Devon with a view to closure and to identify and license a new landfill site in the Devon area for Lesedi Municipality.


Environmental studies are required in terms of Section 24 (5) of the National Environmental Management Act (NEMA), (Act No 107 of 1998) and Regulations (GNR 543 - 546 – Government Gazette No. 33306) published on 18 June 2010, of Lesedi Municipality's intent to license the existing landfill at Devon with a view to closure and to identify and license a new landfill site for the Devon area.

Waste licenses will be applied for under the Waste Regulations under Section 19 (1) of the National Environmental Management: Waste Act (NEM:WA), Act 59 of 2009. According to Regulation 718 of NEM:WA a Basic Assessment (BA) as defined by NEMA is required for the decommissioning of a waste facility. Regulation 719 of the NEM:WA, states that an Environmental Impact Assessment (EIA) is required when a new landfill site is needed. All submissions will be made to the Gauteng Department of Agriculture and Rural Development (GDARD).

You are invited to formally register as an Interested and/or Affected Party (I&AP) and to participate in the EIA and BA processes by using the registration and comment sheet in the enclosed Background Information Document. Please return the comment sheet by 25 November 2010 for this initial public notification process, although submissions and public participation will still continue throughout the project.

Kindly send your reply to Andre Joubert or Florence Rambuda at the Public Participation Office on fax number 086-676-9950 or e-mail to andrej@zitholele.co.za / florencer@zitholele.co.za. You are also welcome to contact Zitholele telephonically on (011) 207-2077 or (011) 207-2075.

Yours sincerely

p.p. 

Andre Joubert
ZITHOLELE CONSULTING
Public Participation Office

Both the DBAR and the DSR will be on public review from 28 March until 26 May 2011. Thereafter the report will be updated and submitted to the GDARD.

Please use the **enclosed** form to request your own electronic copies of the DBAR or DSR if you intend to comment. In addition, both documents will be available at the public places listed below. Both will also be available on the Zitholele Consulting website – www.zitholele.co.za.

List of Public Places

Contact	Location	Contact Tel
Ms Lindi Gericke	Devon Public Library, 1 Schuurman Street, Devon	(017) 688-0028
Mr Thabo Mphafudi	Impumelelo Public Library, 221 Impumelelo Road, Devon	(017) 688-0273

You are requested to comment on the DBAR or DSR in any of the following ways:

- By completing the comment sheet enclosed with the reports;
- By writing a letter, or producing additional written submissions;
- By email or telephone to the public participation office; or
- By attending the public meeting (see below for details).

Invitation to a public meeting on 5 April 2011

The purpose of the public meeting will be to present the findings of the DBAR and the DSR, and to allow discussions around those findings and recommendations of the processes. The contents of the DBAR and the DSR will also be presented during the meeting.

It is important that you register for the public meeting in advance - please use the **enclosed form and return it by Wednesday, 30 March 2011**. This will allow us to send you electronic copies of the DBAR and DSR in advance. The details of the public meeting are:

Date: Tuesday, 5 April 2011
Venue: Impumelelo Community Hall, 217 Impumelelo Road, Devon
Time of Public Meeting: Registration: 15:30
Meeting: 16:00 – 18:00

Kindly send your reply to André Joubert or Florence Rambuda at the Public Participation Office on tel: (011) 207-2077 or (011) 207-2075, fax: 086-676-9950 or e-mail: andrej@zitholele.co.za / florencer@zitholele.co.za.

Yours sincerely

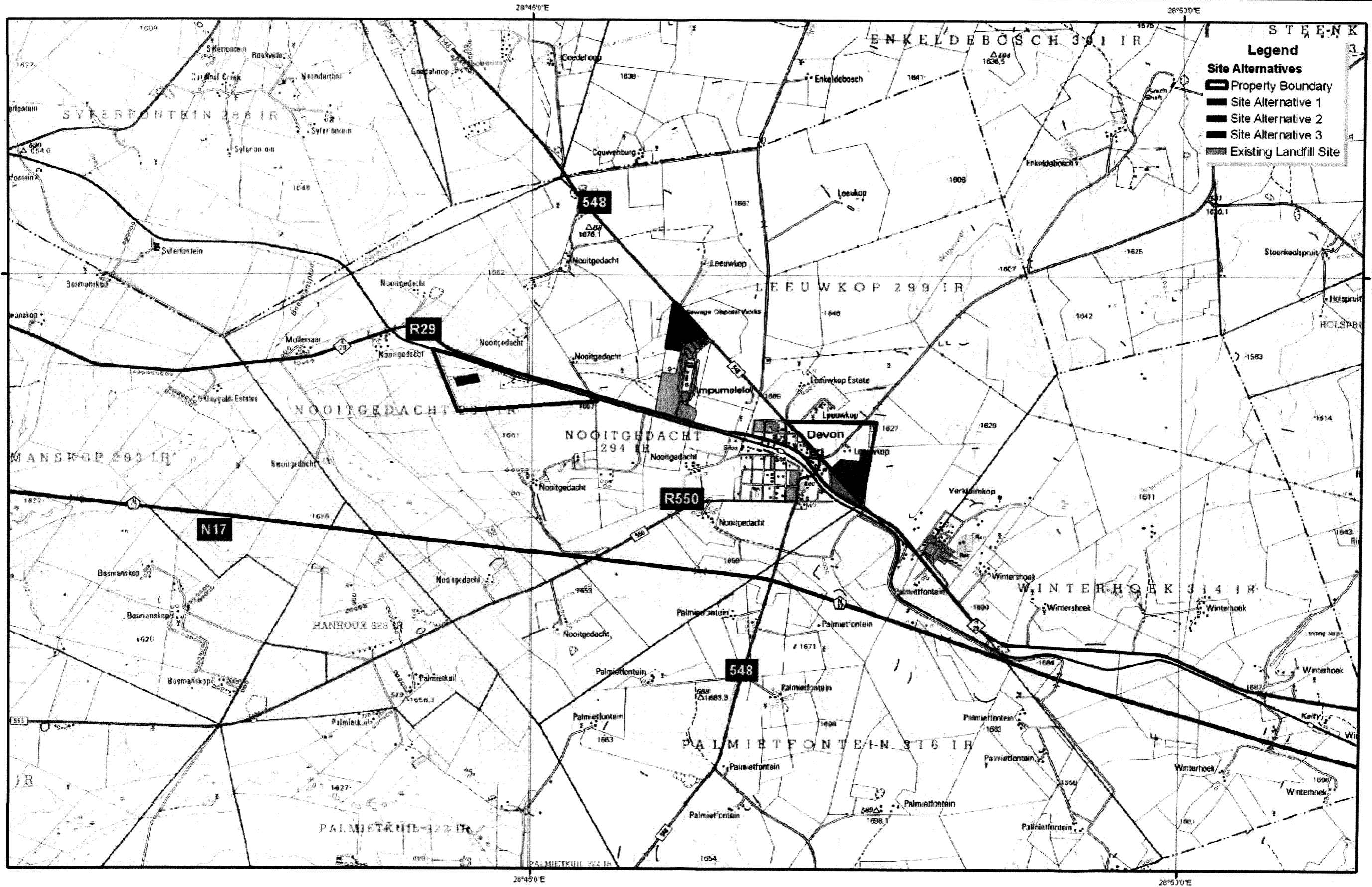


André Joubert
Public Participation Office

Appendix N: Future Growth of Waste Stream Volumes

Days	Volume disposed (m ³) by LLM	Estimated density (kg/m ³)	Estimated tons/day	Estimated growth						
				2010	2015	2020	2025	2030	2035	2040
Monday	24	350	8.40	8.7	9.7	11.3	13.1	15.2	17.6	20.4
Tuesday	16	350	5.6	5.8	6.5	7.5	8.7	10.1	11.7	13.6
Wednesday	36	300	10.8	11.1	12.5	14.5	16.8	19.5	22.6	26.2
Thursday	8	350	2.8	2.9	3.2	3.8	4.4	5.1	5.9	6.8
Friday	8	350	2.8	2.9	3.2	3.8	4.4	5.1	5.9	6.8
Saturday	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sunday	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sub - total/week	92	330	30.4	31.3	35.2	40.9	47.4	54.9	63.7	73.8
Estimated private disposal (10%/week additional)	9.2		3.0							
Total/week	101.2		33.4	34.4	38.8	44.9	52.1	60.4	70.0	81.2
Total/ annum	5262.4		1738.88	1791.0	2015.8	2336.9	2709.1	3140.6	3640.8	4220.7
Average per day	20.2	330	6.7	6.9	7.6	9.0	10.4	12.1	14.0	16.2

IRD	6.7 ton/day
Growth rate	3%
Design life	30
MIRD	16.2 ton/day



Legend

Site Alternatives

- Property Boundary
- Site Alternative 1
- Site Alternative 2
- Site Alternative 3
- Existing Landfill Site

	PROJ CODE: 12468	REF NO: Ver 1	DATE DRAWN: 2010/12/13	PROJECTION: WGS 84 Hartebeesthoek	SCALE: 1:50.000	DATA SOURCES: Topo Mapsheets Surveyor General	TITLE: Locality		
	AUTHOR: K. Kruger								

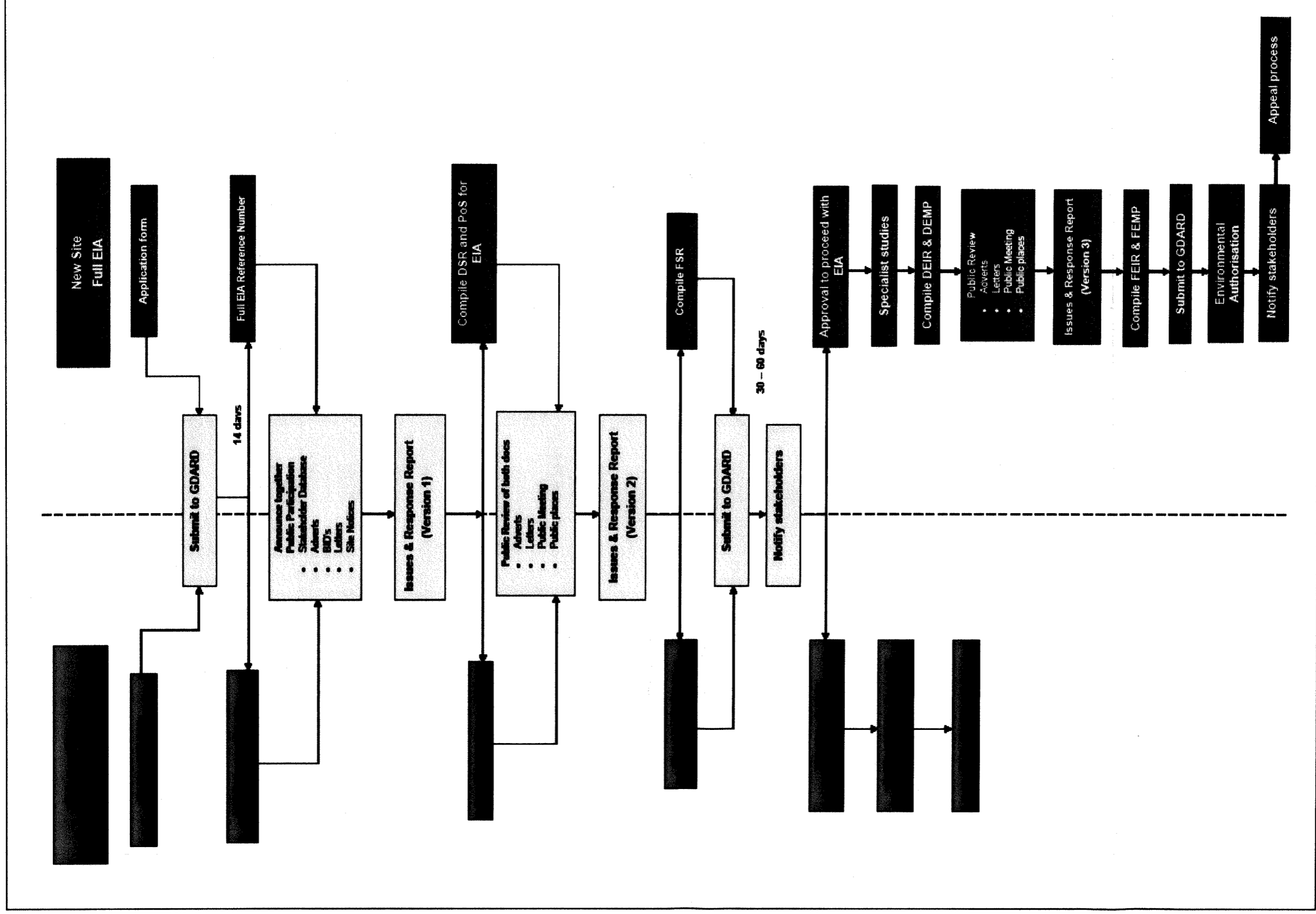


Figure 7-1: Technical and public participation process and activities that comprise the Environmental Impact Assessment for the new Devon waste disposal site.

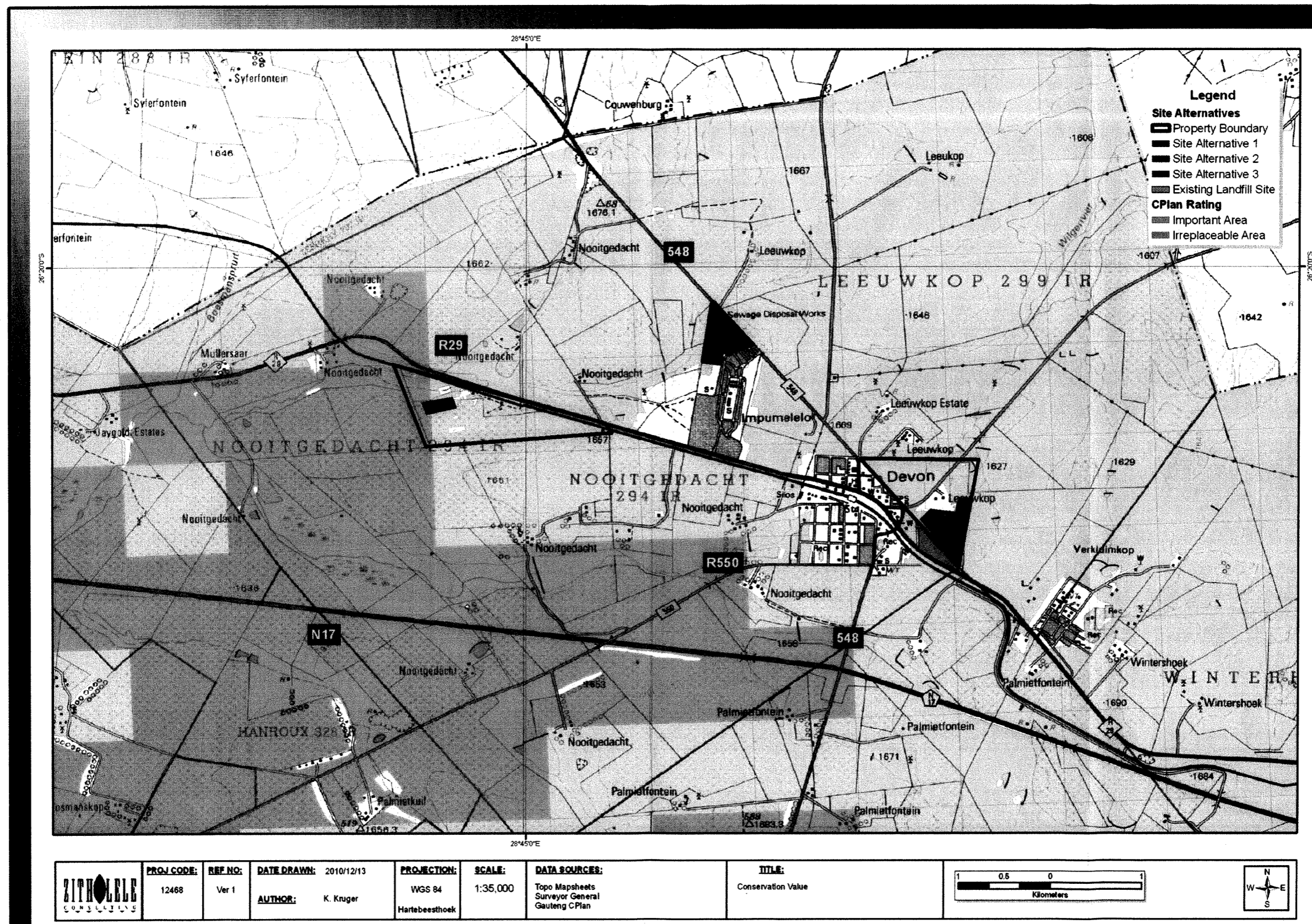


Figure 5-6: Regional Conservation.

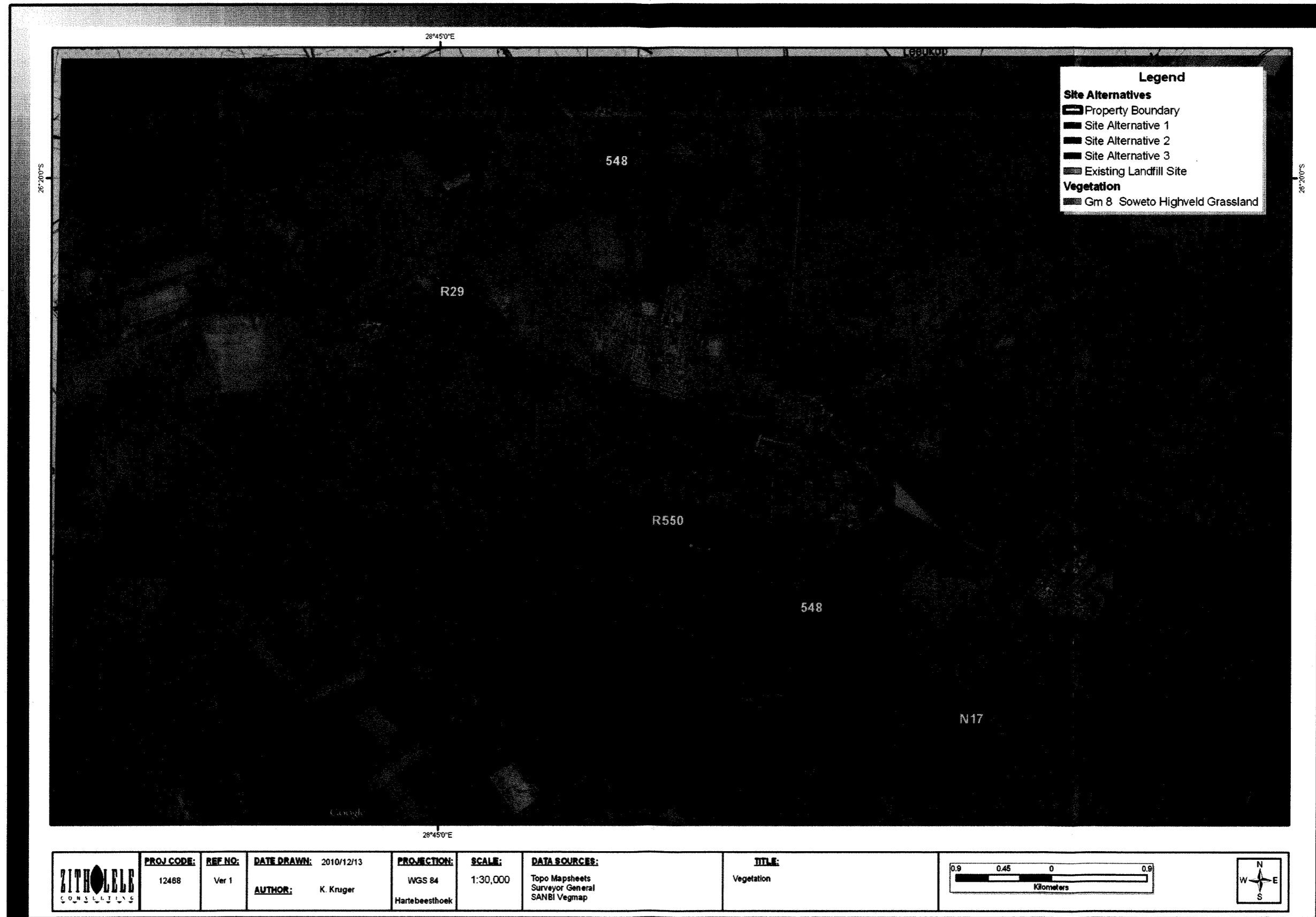


Figure 5-5: Regional Vegetation.

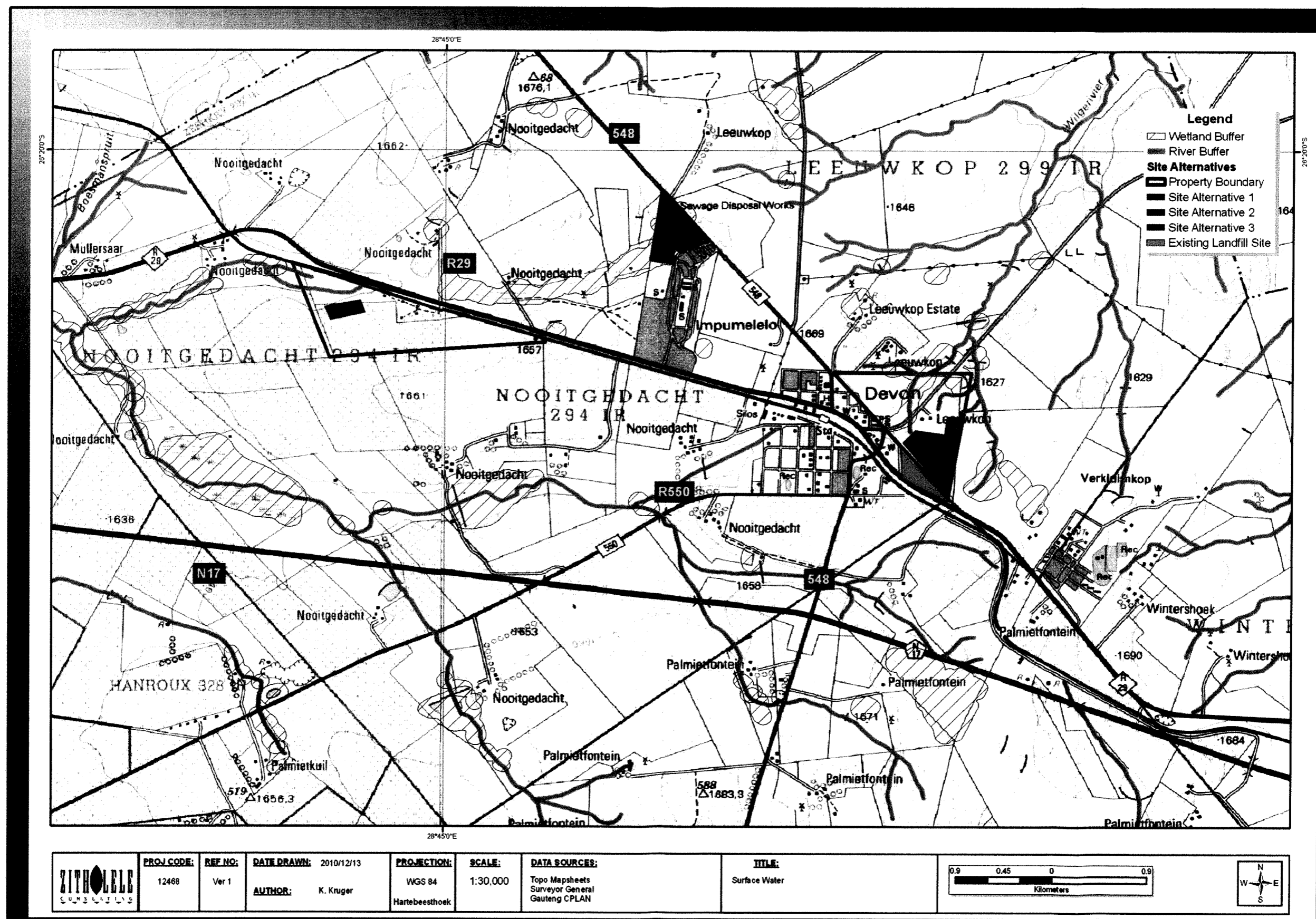


Figure 5-4: Regional Surface Water.

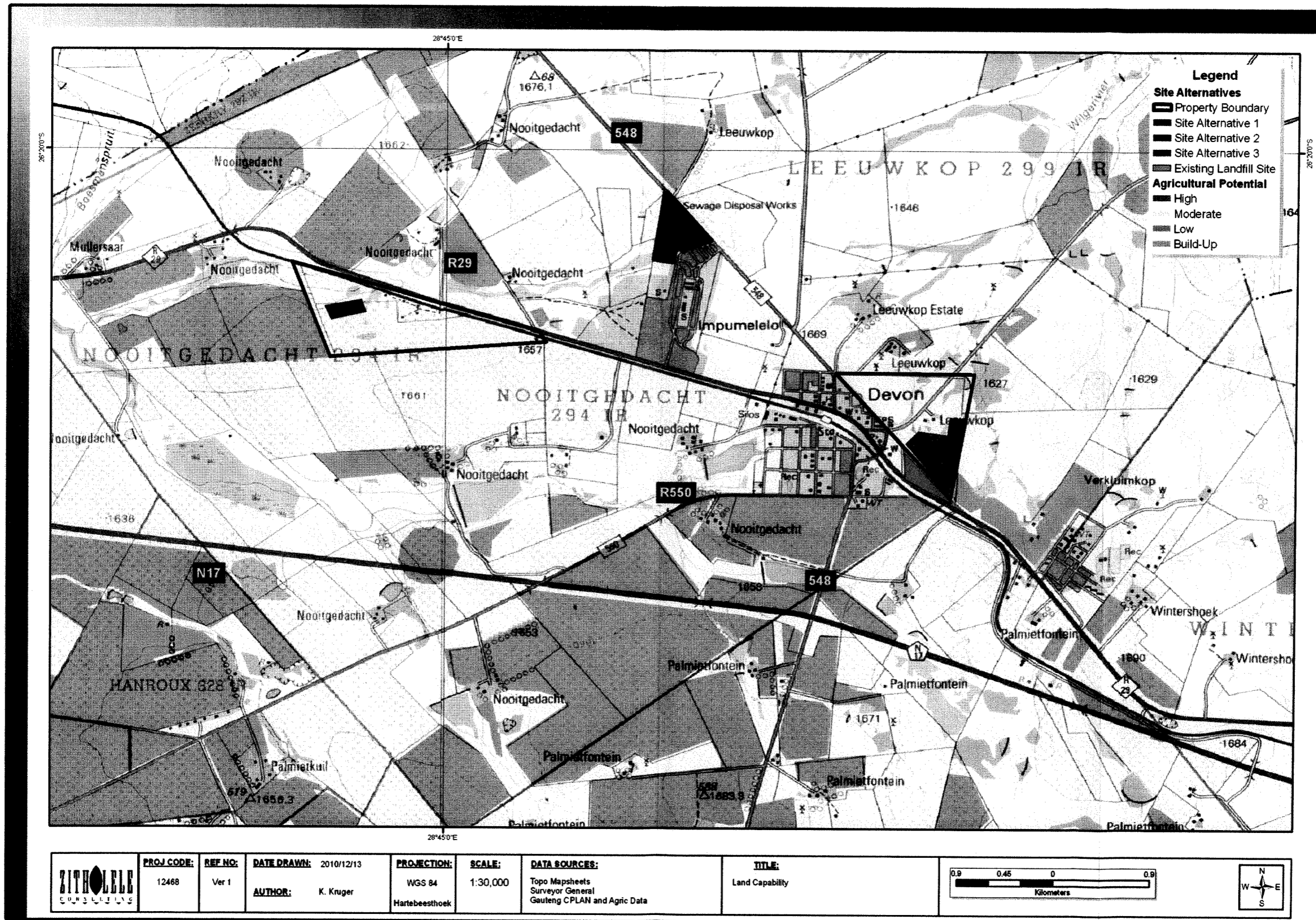


Figure 5-3: Regional Land Capability.



Figure 5-2: Regional Topography.

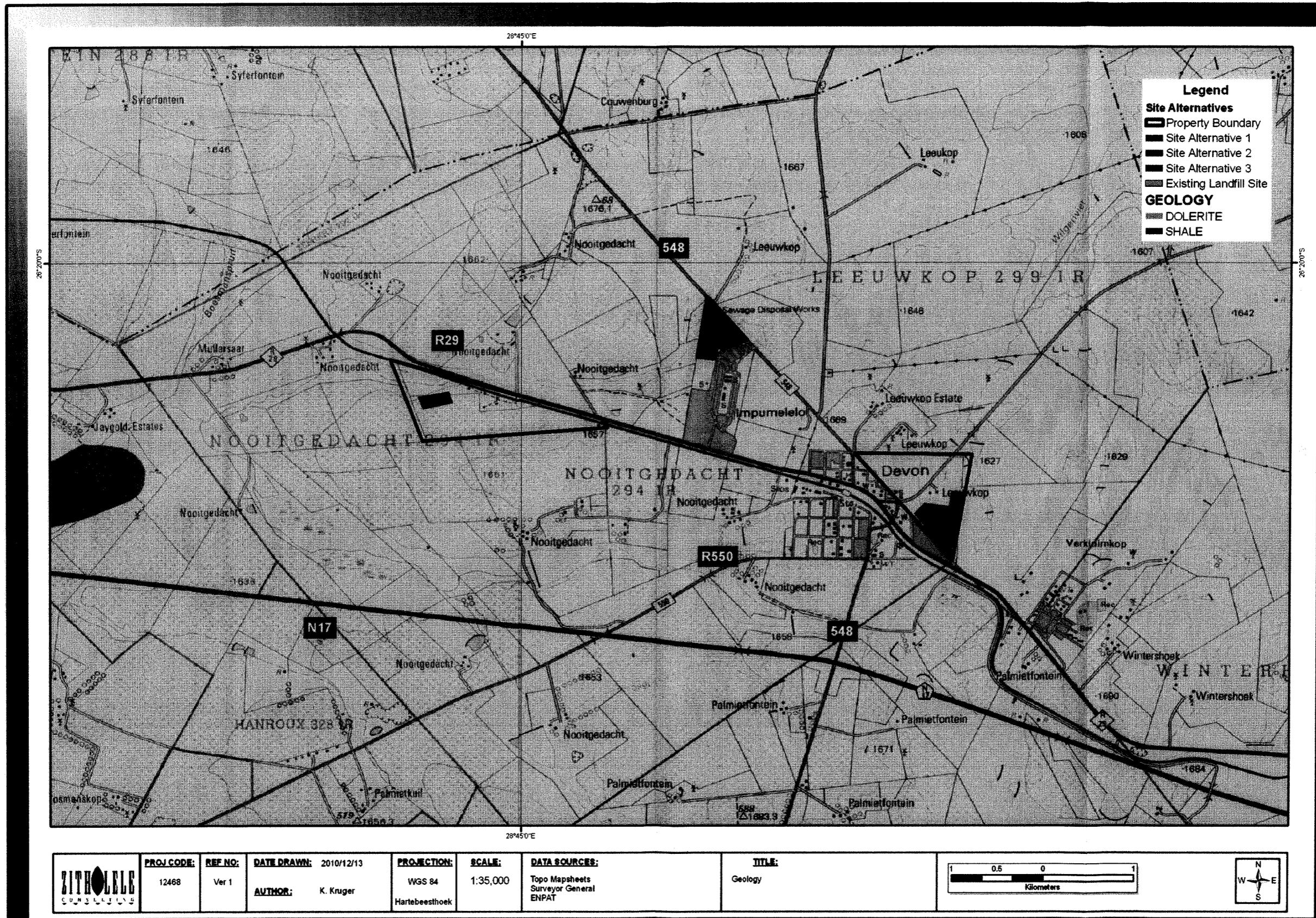


Figure 5-1: Regional Surface Geology.

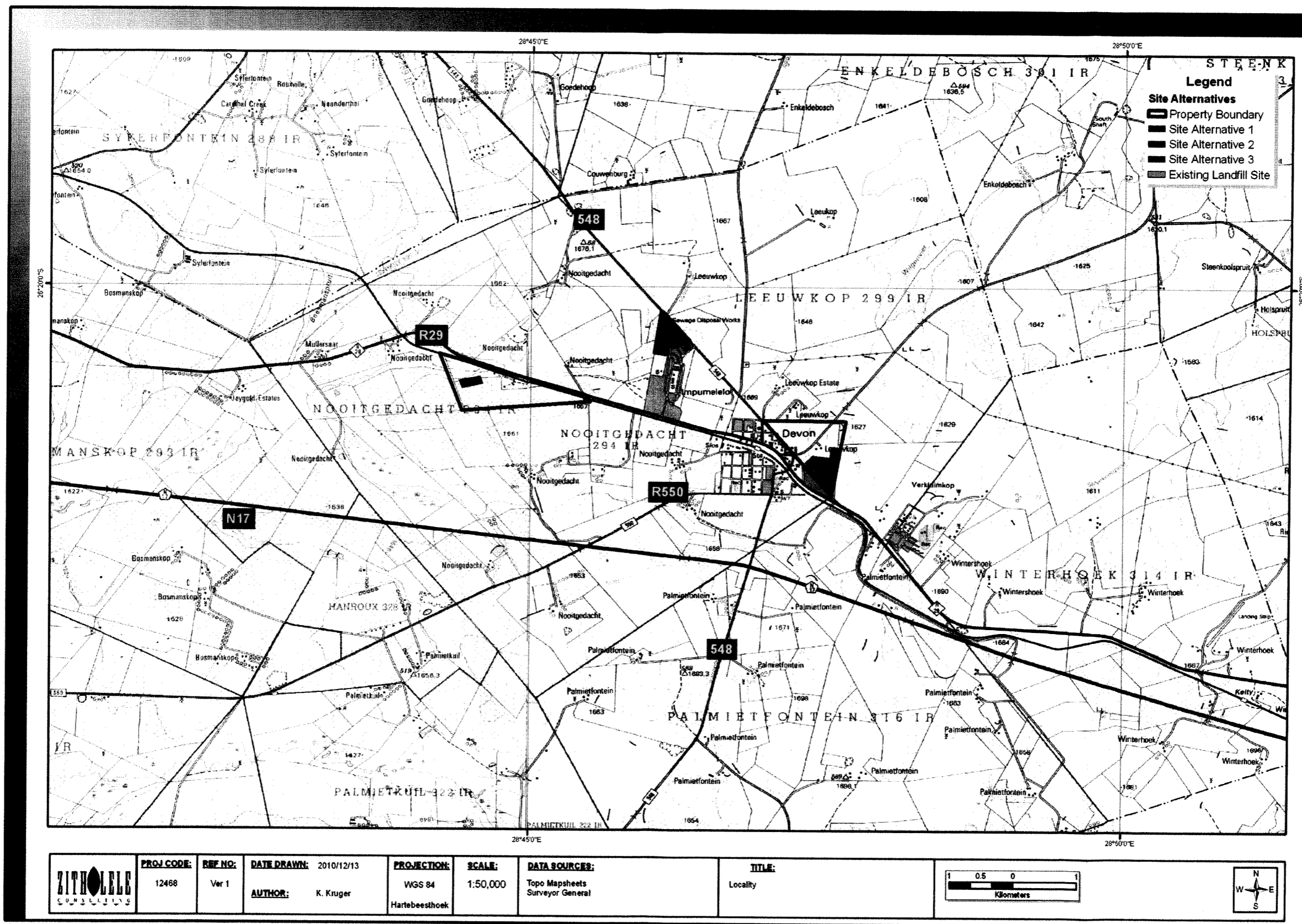


Figure 4-1: Site Locality Map.