

November 2009
Scoping Phase

Tutuka Waste Disposal Site: Proposed extension of the existing General Waste Disposal Site (and associated infrastructure) at the Tutuka Power Station



DEA REF NO: 12/12/20/1553

Proponent: Eskom Generation

DRAFT SCOPING REPORT

Project: 12333

PURPOSE OF THIS DOCUMENT

Eskom is currently operating the Tutuka Power Station as part of its electricity generation fleet. Throughout the operational life of the station, general waste, inclusive of garden waste and building rubble, is being generated at the station. This waste is being disposed of in an authorised general waste disposal site within the Tutuka Power Station premises.

The current waste disposal site provides disposal services to New Denmark Colliery, Thuthukani Township, Tutuka Power Station, selected contractors and some neighbouring farmers. This particular disposal site has, subsequent to its establishment, reached its capacity, and as of the end of October 2008, the waste has been transported to a waste disposal site at Kriel town, which is approximately 200 km away. The associated transportation costs are high and therefore an alternative, sustainable, means of waste disposal needs to be put in place.

To minimise the operational costs of the waste disposal, potential sites have been identified within the Tutuka Power Station premises, one of which is located immediately adjacent (contiguous) to the existing waste disposal site and would result in an extension of the existing domestic waste disposal site. Another proposed alternative to provision of disposal space was an amendment to the height limitation of the current waste disposal site. As a means to comply with the necessary legal requirements, the new / extended waste disposal site and waste disposal activities must be appropriately designed and licensed, in line with the requirements of the EIA and NEMWA legislation..

Eskom Generation has appointed Zitholele Consulting (Pty) Ltd, an independent company, to conduct the appropriate Environmental Impact Assessment (EIA) studies to evaluate the potential environmental and social impacts of the proposed project. The Environmental Assessment Practitioner (EAP) is Mr Konrad Kruger.

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 next phase (the Impact Assessment Phase) of the EIA. This phase also screens the available sites on the grounds of known environmental sensitivities, ensuring that only feasible alternatives are taken to the EIA phase..

According to the EIA Regulations, Interested and Affected Parties (I&APs) must have the opportunity to comment on the proposed project and verify that all the issues raised during the Announcement Phase have been recorded and addressed. This is the main purpose of the Draft Scoping Report (DSR), which will be available for comment for the period 11 November to 11 December 2009. Comments received will be considered in the Final Scoping Report (FSR) which will be submitted to the lead authority, the National Department of Environmental Affairs (DEA) for approval to proceed with the EIA.

I&APs will also have an opportunity to comment on the findings of the EIA, which will be presented in a Draft Environmental Impact Report (EIR). After public review, the Draft EIR will be updated and submitted to the DEA for a decision about the project.

Summary of what the Draft Scoping Report Contains

This report contains the following for comment by stakeholders:

- The background and description to the proposed project, including alternatives
- An overview of the EIA process, including the public participation process
- An overview of the waste licensing 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
- A list of comments raised and responses to date (Issues Trail Report)

AN EIA CONSISTS OF SEVERAL PHASES

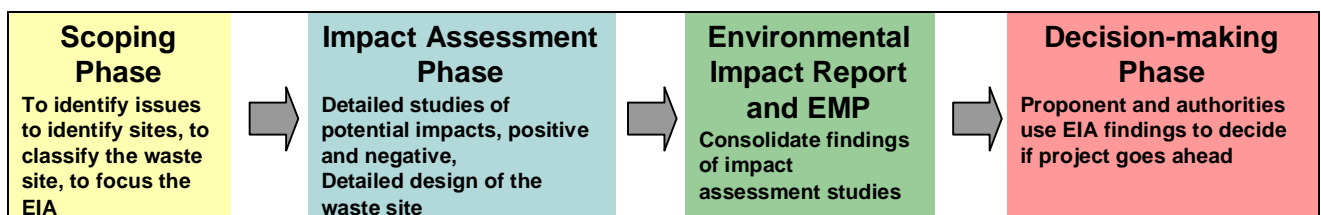


TABLE OF CONTENTS

SECTION	PAGE
1 INTRODUCTION.....	1
1.1 Who is the proponent?.....	1
1.2 Tutuka Waste Disposal Site Project.....	1
1.3 Context of this Report.....	1
1.4 Environmental Impact Assessment Practitioner (EAP) Details.....	1
1.5 Objectives of the Scoping Report	2
2 LEGAL REQUIREMENTS	3
2.1 The Constitution of the Republic of South Africa (Act 108 of 1996).....	3
2.2 National Environmental Management Act (Act 107 of 1998).....	3
2.3 National Environmental Management: Waste Act (NEM:WA) (Act 59 of 2008).....	6
2.4 Environment Conservation Act (Act 73 of 1989)	6
2.5 Additional Acts and Frameworks	6
3 ELECTRICITY PLANNING PROCESSES	9
4 PROJECT DESCRIPTION AND ALTERNATIVES CONSIDERED	12
4.1 Project Description	12
4.2 Alternatives Considered.....	16
5 RECEIVING ENVIRONMENT	24
5.1 Climate	24
5.2 Geology.....	24
5.3 Topography	25
5.4 Surface Water	28
5.5 Land Use.....	28
5.6 Faunal Biodiversity	31
5.7 Floral Biodiversity	31
5.8 Infrastructure	33
5.9 Cultural and historical resources.....	33
6 SCOPING PROCESS	35
6.1 Technical (EIA) Process	35
6.2 Public Participation Process (PPP).....	36
7 ISSUES IDENTIFIED FOR IMPACT ASSESSMENT	42
8 PLAN OF STUDY FOR EIA	45
8.1 Technical Process	45
8.2 Public Participation	51
8.3 Impact Assessment Phase of the EIA: Public participation activities	51
9 CONCLUSION AND WAY FORWARD.....	54

LIST OF FIGURES

Figure 4-1: View of the sides of the existing disposal site.....	12
Figure 4-2: Transport of waste skips to current waste disposal site.....	13
Figure 4-3: Existing waste disposal site with capped and rehabilitated area in the foreground	14
Figure 4-4: Locality of the three disposal site alternatives.	19
Figure 4-5: Waste skips used to store waste for collection of the waste.	23
Figure 5-1: Regional Geology of the area	26
Figure 5-2: Topography of the area.....	27
Figure 5-3: Surface water and drainage features of the area.	29
Figure 5-4: Land Use Map.	30
Figure 5-5: Biodiversity of the area.	32
Figure 5-6: Infrastructure in the area.....	34
Figure 6-1: Technical and public participation process and activities for this project.	37
Figure 6-2: Site notice boards were put up in the study area.....	39

LIST OF TABLES

Table 4-1: Average Waste Volumes for 2008 and 2009.....	13
Table 4-2: Major activities for the proposed project.....	15
Table 4-3: Primary milestones of the Tutuka Waste Disposal Site.....	16
Table 4-4: Fatal Flaws used in the site selection.....	20
Table 4-5: Site Selection Matrix for the Suitable Alternatives.....	22
Table 6-1: Advertisements placed during the announcement phase.....	38
Table 6-2: A stakeholder meeting was advertised and will be held as part of the public review period of the Draft Scoping Report.....	40
Table 6-3: List of public places where the Draft Scoping Report is available.....	40
Table 7-1: Potential Environmental Impacts to be investigated in the EIA Phase.....	42

LIST OF APPENDICES

Appendix A: EAP CV

Appendix B: EIA Application Form and DEA acceptance letter

Appendix C: Newspaper Advertisements and Site Notices

Appendix D: I&AP Database

Appendix E: Issues and Response Report

Appendix F: Background Information Document

Appendix G: Comments to date from I&APs

ABBREVIATIONS

CaSO ₃	Calcium Sulphite
CaSO ₄	Calcium Sulphate
CO ₂	Carbon Dioxide
DC	Direct Current
DM.....	Department of Minerals
DEA.....	Department of Environmental Affairs
DWA.....	Department of Water Affairs
DWEA	Department of Water and Environmental Affairs
EA.....	Environmental Authorisation
EAP.....	Environmental Assessment Practitioner
ECA.....	Environment Conservation Act
EIA	Environmental Impact Assessment
EIR.....	Environmental Impact Report
FGD	Flue Gas Desulphurisation
GNR.....	Government Notice Regulation
HDI	Historically Disadvantaged Individuals
I&APs	Interested and Affected Parties
IEM.....	Integrated Environmental Management
IEP	Integrated Energy Plan
ISEP.....	Integrated Strategic Electricity Planning
kV	Kilo Volts
MVA.....	Mega Volt Ampere
NEMA	National Environmental Management Act
NEM:WA.....	National Environmental Management: Waste Act
NERSA	National Energy Regulator of South Africa
NIRP	National Integrated Resource Plan
OHTE.....	Overhead Traction Equipment
SIA.....	Social Impact Assessment
SO ₂	Sulphur Dioxide
SR	Scoping Report
TFR.....	Transnet Freight Rail
ToR.....	Terms of Reference

1 INTRODUCTION

1.1 Who is the proponent?

Eskom Holdings (Ltd) is the South African utility that generates, transmits and distributes electricity. Eskom supplies ~95% of the country's electricity, and ~60% of the total electricity consumed on the African continent. Eskom play a major role in accelerating growth in the South African economy by providing a high-quality supply of electricity.

1.2 Tutuka Waste Disposal Site Project

Eskom is currently operating the Tutuka Power Station as part of its electricity generation fleet. Throughout the operational life of the station, general waste, inclusive of garden waste and building rubble, is being generated. This waste is being disposed of in an authorised general waste disposal site within the Tutuka Power Station premises.

The current waste disposal site provides domestic waste disposal services to New Denmark Colliery, Thuthukani Township, Tutuka Power Station, selected contractors and some neighbouring farmers. This particular disposal site has reached its capacity, and as of the end of October 2008, the waste has been transported to a waste disposal site at Kriel town, which is approximately 200 km away from the power station. The associated transportation costs are high and therefore an alternative means of waste disposal needs to be put in place.

Two options are available to Tutuka Power Station. The first would be to extendextend the current waste disposal site and to apply for a permit amendment. The second alternative is to establish a new waste disposal site within close proximity to the power station property and the current site. A site selection exercise in line with the Minimum Requirements for the Disposal of Waste by Landfill, Draft 3rd edition 2005 was undertaken to identify the most suitable alternative.

1.3 Context of this Report

This report is the Draft Scoping Report (SR), a key component of the environmental impact assessment process, for the proposed extension of the existing or establishment of a new general waste disposal site, at the Tutuka Power Station.

1.4 Environmental Impact Assessment Practitioner (EAP) Details

In terms of the National Environmental Management Act (NEMA, No 107 of 1998) Environmental Impact Assessment (EIA) regulations, the proponent must appoint an Environmental Assessment Practitioner (EAP) to undertake the environmental assessment of an activity regulated in terms of the aforementioned Act. In this regard, Eskom appointed Zitholele Consulting to undertake the EIA for the proposed extension of the Tutuka General Waste site, in accordance with the EIA Regulations promulgated in April 2006 in terms of the NEMA which became effective on 1 July 2006. This

process will also comply with the NEM Waste Act requirements for licensing of waste disposal facilities.

Zitholele Consulting is an empowerment company formed to provide specialist consulting services primarily to the public sector in the fields of Water Engineering, Integrated Water Resource Management, Environmental and Waste Services, Communication (public participation and awareness creation) and Livelihoods and Economic Development.

Zitholele Consulting has no vested interest in the proposed project and hereby declares its independence as required by the EIA Regulations. The details of the EAP representative are listed below.

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Konrad Kruger

Mr. Konrad Kruger graduate from the University of Pretoria with a BSc. in Environmental Science and BSc Honours in Geography in 2003. Over the past six years Konrad has been involved in a variety of environmental projects and has specialised in environmental management and auditing. Konrad has undertaken environmental authorisations for mining, conservation, residential as well as industrial developments. He is also an experienced ecologist and will provide expertise for this project in terms of soil surveys and wetland delineation.

1.5 Objectives of the Scoping Report

This report addresses the requirements for Scoping and the Plan of Study (PoS) for the EIA as outlined in the NEMA regulations. The aim of this Draft Scoping Report (SR) is to:

- Provide information to the authorities as well as Interested and Affected Parties (I&APs) on the proposed project as well as a description of the baseline environment;
- Indicate how I&APs have been and are still being afforded the opportunity to contribute to the project, verify that the issues they raised to date have been considered, and comment on the findings of the impact assessments;
- Define the Terms of Reference (ToR) for specialist studies to be undertaken in the Impact Assessment Phase of the EIA; and
- 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 Tutuka Waste Disposal Site Expansion Project:

2.1 The Constitution of the Republic of South Africa (Act 108 of 1996)

Section 24 of the Constitution 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 National Environmental Management Act (Act 107 of 1998)

The EIA for this proposed project will be conducted in terms of the EIA Regulations that were promulgated in terms of Section 24 (5) of the NEMA. The National Department Environmental Affairs (DEA) is the competent authority responsible for issuing environmental authorisation for the proposed project. The Mpumalanga Department of Agriculture and Land Administration (MDALA) is a key commenting authorities.

2.2.1 Environmental Impact Assessment Regulations: 385 - 387 of 21 April 2006

A full EIA 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 comparison a Basic Assessment is required for projects with less significant impacts or impacts that can easily be mitigated. The difference between the processes relates to the nature of the proposed development in terms of its potential impact on the environment, and this is reflected in the level of detail that information is collected in as well as the level of interaction with I&APs.

In terms of Government Notice Regulation (GNR) 387, activity 1(e), 2 and 10, a full Environmental Impact Assessment comprising both Scoping and Impact Assessment, is necessary for the proposed

construction of a waste disposal site. The main activities identified under the NEMA are listed as follows:

- Activity 1 (e):** Any process or activity which requires a permit or licence in terms of legislation governing the generation or release of emissions, pollution, effluent or waste which is not identified in Government Notice No. R. 386 of 2006.
- Activity 2:** Any development activity, including associated structures, where the total area of the development is, or is intended to be, 20 ha or more.
- Activity 10:** Any process or activity identified in terms of section 53(1) of the NEM: Biodiversity Act, 2004

The following activities in accordance with Regulation GNR 386 (Basic Assessment activities) are also included in the EIA application, to provide for supporting infrastructure associated with the proposed construction of the waste disposal site.

- Activity 1 (m):** Any purpose in the one in ten year flood line of a river or stream, or within 32 metres from the bank of a river or stream where the flood line is unknown, excluding purposes associated with existing residential use, but including -
- (i) canals;
 - (ii) channels;
 - (iii) bridges;
 - (iv) dams; and
 - (v) weirs.
- Activity 7:** The above ground storage of a dangerous good, including petrol, diesel, liquid petroleum gas or paraffin, in containers with a combined capacity of more than 30m³ (300,000 lt) but less than 1,000m³ (1 Mlt) at any one location or site.
- Activity 15:** The construction of a road that is wider than 4 metres or that has a reserve wider than 6 metres, excluding roads that fall within the ambit of another listed activity or which are access roads of less than 30 metres long.
- Activity 16 (b):** The transformation of undeveloped, vacant or derelict land to residential, mixed, retail, commercial, industrial or institutional use where such development does not constitute infill where the total area to be transformed is bigger than 1ha (10,000 m²).
- Activity 25:** The expansion of or changes to existing facilities for any process or activity, which requires an amendment of an existing permit or license of a new permit or license in terms of legislation governing the release of emissions, pollution, effluent.

Since the project comprises activities that require both a Basic Assessment and EIA levels of investigation, all activities will be assessed to the detail required for a full EIA process.

The NEMA can be regarded as the most important piece of general environmental legislation. It provides a framework for environmental law reform and covers three areas, namely:

- Land, planning and development;
- Natural and cultural resources, use and conservation; and
- Pollution control and waste management.

The law is based on the concept of sustainable development. The objective of the NEMA is to provide for co-operative environmental governance through a series of principles relating to:

- The procedures for state decision-making on the environment; and
- The institutions of state which make those decisions.
- The NEMA principles serve as:
 - A general framework for environmental planning;
 - Guidelines according to which the state must exercise its environmental functions; and
 - A guide to the interpretation of NEMA itself and of any other law relating to the environment.

2.2.2 What are the NEMA principles?

Some of the most important principles contained in NEMA are that:

- Environmental management must put people and their needs first;
- Development must be socially, environmentally and economically sustainable;
- There should be equal access to environmental resources, benefits and services to meet basic human needs;
- Government should promote public participation when making decisions about the environment;
- Communities must be given environmental education;
- Workers have the right to refuse to do work that is harmful to their health or to the environment;
- Decisions must be taken in an open and transparent manner and there must be access to information;
- The role of youth and women in environmental management must be recognised;
- The person or company who pollutes the environment must pay to clean it up;
- The environment is held in trust by the state for the benefit of all South Africans; and
- The utmost caution should be used when permission for new developments is granted.

2.3 National Environmental Management: Waste Act (NEM:WA) (Act 59 of 2008)

With the recent proclamation (July 2009) of the National Environmental Waste Act (NEM: WA) all waste related activities previously listed under the NEMA EIA regulations have been repealed and are now listed in the ambit of the NEM:WA. The minister of Environmental Affairs published Regulation 718 in terms of Section 19 (1) of the NEM: WA. These regulations highlight the waste management activities that require environmental licensing. The regulations comprise two Categories, namely Category A, which identifies activities that require a Basic Assessment process and Category B, which identifies activities that require a full scoping and EIA process to be followed. In terms of these regulations the following activities require authorisation:

Regulation 718 - Category B

Activity 10: The disposal of general waste to land covering an area in excess of 200m².

Activity 11: The construction of facilities for activities listed in Category B of this Schedule.

The two activities listed above both fall into Category B of Section 19 of the regulations, and therefore this development requires a full scoping and EIA process to be undertaken under the NEM:WA in order to receive authorisation.

2.4 Environment Conservation Act (Act 73 of 1989)

The Environment Conservation Act (ECA) is a law that relates specifically to the environment. Although most of this Act has been replaced by the NEMA there are still some important sections that remain in operation. These sections relate to:

- Protected natural environments;
- Special nature reserves;
- Limited development areas;
- Regulations on noise, vibration and shock; and
- EIA.

2.5 Additional Acts and Frameworks

In addition to the ECA, NEMA and NEM: WA, the following Acts have some bearing on the proposed activities:

The National Heritage Resources Act (No. 25 of 1999)

The proposed construction of the waste disposal site comprise certain activities (e.g. changing the nature of a site exceeding 5 000 m² and linear developments in excess of 300 m) that require authorisation in terms of Section 38 (1) of the Act. Section 38 (8) of the Act states that, if heritage considerations are taken into account as part of an application process undertaken in terms of the ECA, there is no need to undertake a separate application in terms of the National Heritage Resources Act. The requirements of the National Heritage Resources Act have thus been addressed as an element of the EIA process, specifically by the inclusion of a Heritage Assessment.

Expropriation Act (No. 63 of 1975)

Eskom has a policy of “willing buyer, willing seller”, and therefore endeavours to purchase land where ever possible or necessary. However, the State and State-owned-enterprises can acquire the rights to use or possess the requisite land through the Expropriation Act (No 63 of 1975). The Expropriation Act requires the determination of compensation based on the principle of market value (i.e. what would the value be in the event of both a willing buyer and a willing seller trading the land). There is a suite of additional legislation, which, in conjunction with the Expropriation Act, would be used to determine the compensation value.

Occupational Health and Safety Act (Act No 85 of 1993)

This Act makes provisions that address the health and safety of persons working at the proposed site. The Act addresses amongst others the:

- Safety requirements for the operation of plant machinery;
- Protection of 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;
- Establishment of an advisory council for occupational health and safety; and
- Provision for matters connected therewith.

The law states that any person undertaking upgrades or developments for use at work or on any premises shall ensure as far as is reasonably practicable that nothing about the manner in which it is erected or installed makes it unsafe or creates a risk to health when properly used.

Department of Environmental Affairs and Tourism¹ Integrated Environmental Management Information Series

The Department of Environmental Affairs (DEA) Information Series of 2002 and 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 the

¹ The Department of Environmental Affairs and Tourism is now referred to as the Department of Environmental Affairs.

NEMA and provides the overarching framework for the integration of environmental assessment and management principles into environmental decision-making. The aim of the information series is to provide general guidance on techniques, tools and processes for environmental assessment and management.

3 ELECTRICITY PLANNING PROCESSES

The following section, although not legislative, provides supplementary information on Eskom's planning processes, which existed at the commencement of this project, and under which the EIA processes for the Kusile power station was undertaken. These planning processes are under review, but the review would not result in the importance of this project being any less, as the rail provides support to the Kusile power station operational regime. The proposed planning process is in line with the new Electricity Regulations Act, 2006, and the Regulation No 32378 of 5 August 2009. The regulations stipulate the following on integrated resource planning for new generation capacity:

1. the process of developing the integrated resource plan shall include the:
 - a. adoption of the planning assumptions;
 - b. determination of the electricity load forecast;
 - c. modelling and scenario planning based on the planning assumptions;
 - d. determination of a base plan derived from a least cost generation investment requirement;
 - e. risk adjustment of the base plan, which shall be based on –
 - i. the most probable scenarios, and
 - ii. government policy objectives for a diverse generation mix, including renewable and alternative energies, demand side management and energy efficiency
 - f. approval and gazetting of the integrated resource plan.
2. The system operator, in consultation with the energy planner and the regulator, shall be responsible for executing regulation the above-mentioned process (1);
3. The energy planner, in consultation with the regulator, shall approve the policy input insofar as the risk adjustment contemplated under regulation 91.e) above;
4. The system operator shall provide the regulator with any information that the regulator might request in relation to the integrated resource plan;
5. The Minister shall provide the integrated resource plan and publish it in the government gazette for implementation;
6. The regulator –
 - a. Must consider applications for licences in accordance with the determination in line with sub-regulation (5) above;
 - b. May, in terms of section 14(1)(q) of the Act, impose a license condition on the buyer to buy all the new generation capacity procured by the system operator in accordance with the approved integrated resource plan;
 - c. Shall issue rules relating to the keeping of relevant information and the rendering of returns by licences pursuant to integrated resource planning.

The integrated resource plan, which is also referred to as the Country Plan is under review and will be approved by the Department of Energy prior to execution.

Integrated Energy Plan (IEP) – 2003

The Department of Minerals (previously Minerals and Energy) commissioned the IEP to provide a framework in which specific energy policies, development decisions and energy supply trade-offs can be made on a project-by-project basis. The framework is intended to create a balance in providing low cost electricity for social and economic development, ensuring security of supply and minimizing the associated environmental impacts. The IEP projected that the additional demand in electricity would necessitate an increase in electricity generation capacity in South Africa by 2007. Furthermore, the IEP concluded that, based on energy resources available in South Africa, coal will be the primary fuel source for the current expansion period.

National Integrated Resource Plan (NIRP) – 2003/2004

In response to the White Paper's objective relating to affordable energy services, the National Electricity Regulator (now NERSA) commissioned a NIRP. The objectives of the NIRP are to determine the least-cost supply option for the country, provide information on the opportunities for investment into new power stations and evaluate the security of supply.

The national electricity demand forecast took a number of factors into account. They are:

- A 2.8% average annual economic growth;
- The development and expansion of a number of large energy-intensive industrial projects;
- Electrification needs;
- A reduction in electricity-intensive industries over the 20 year planning horizon;
- A reduction in electricity consumers – NIRP anticipates people switching to the direct use of natural gas;
- The supply of electricity to large mining and industrial projects in Namibia and Mozambique; and
- Typical demand profiles.

White Paper on the Energy Policy of the Republic of South Africa – 1998

Development within the energy sector in South Africa is guided by the White Paper on the Energy Policy, published by the Department of Minerals and Energy (DME) in 1998. This White Paper sets out five objectives for the further development of the energy sector. The five objectives are as follows:

- Increased access to affordable energy services;
- Improved energy governance;

- Stimulating economic development;
- Managing energy-related environmental and health impacts; and
- Securing supply through diversity.

Furthermore, the Energy Policy identified the need to undertake an Integrated Energy Planning (IEP) process in order to achieve a balance between energy demand and resource availability, whilst taking into account health, safety and environmental aspects. In addition, the policy identified the need for the adoption of a National Integrated Resource Planning (NIRP) approach to provide a long-term cost-effective resource plan for meeting electricity demand, which is consistent with reliable electricity supply and environmental, social and economic policies.

4 PROJECT DESCRIPTION AND ALTERNATIVES CONSIDERED

4.1 Project Description

The proposed project is the extension of a general waste disposal site and associated infrastructure at the Tutuka Power Station. The waste disposal site as well as its' infrastructure are briefly described below.

4.1.1 Proposed Waste Disposal Site

The following components of the waste disposal site are being taken into consideration:

- Footprint of the facility (groundspace);
- Height of the facility (airspace);
- Type of waste to be disposed as well as the volumes (waste stream analysis);
- Geotechnical, hydrogeological conditions and foundation design; and
- Capping of the site.

Footprint of the facility

The existing permitted waste disposal site has an approved footprint of 3.2 ha. It is estimated that the extension / new site will be in the order of 10 – 15 ha depending on the height of the facility. The additional structure like roads and fences etc will increase the footprint. The detailed design on the facility will be completed during the EIA phase.

Height of the facility

The present permitted waste disposal site is restricted to 5 m in height above ground level. Figure 4-1 provides a photograph of the current disposal site from its highest point. The available groundspace will determine the height of the new facility.



Figure 4-1: View of the sides of the existing disposal site.

Waste to be disposed

The waste that requires disposal on the waste disposal site originates from four main sources:

- Tutuka Power Station domestic and garden waste;
- Tutuka Power Station contractor domestic and building rubble waste;
- Thuthukani township domestic waste; and
- New Denmark Colliery domestic and garden waste.

The volumes of waste vary from month-to-month, however a detailed register of all the waste entering the site is kept at the station. Table 4-1 below illustrates the average volumes of waste received by the existing disposal site for 2008 and 2009 to date. Statistics are available for the total volumes of all wastes received by the waste disposal site to date. It is anticipated that the new site will have to take the same types of waste for the estimated life of the Tutuka Power Station, which is estimated for another 50 years.

Table 4-1: Average Waste Volumes for 2008 and 2009.

Waste Type	2008	2009	Measurement
Domestic Waste	396	425	Monthly Average Tonnes
Garden Waste	256	166	
Building Waste	101	46	

The waste received by the current site is transported via skips and a tractor to the disposal site from the various source areas. The skips (Figure 4-2) are placed strategically throughout the source areas, such as Thuthukani Township. The waste is transported jointly by New Denmark Colliery and Tutuka Power Station.



Figure 4-2: Transport of waste skips to current waste disposal site.

Geotechnical Conditions and Foundation Design

The current site is situated in an area that was previously utilised for the mining of dolerite. The dolerite weathers easily and provides material for road construction. Prior to the establishment of the existing site the area comprised several dolerite borrow pits. The current disposal site was placed inside one of these borrow pits in order to avoid a highly visible waste disposal site. A geotechnical investigation will be undertaken in order to establish whether the extension / 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.

Capping of the Waste Disposal Site

The current permit requires the existing site to be capped with soil material in order to cover the waste and to allow vegetation to re-establish on the site. This process has to date been very successful as illustrated below.



Figure 4-3: Existing waste disposal site with capped and rehabilitated area in the foreground

4.1.2 Proposed Associated Infrastructure

The following associated infrastructure is envisioned for the proposed waste disposal site.

Access Roads and Fencing

The proposed access road will link the site with one of the existing roads in the area. It is envisioned that the access road and the disposal site will be fenced off for safety and security reasons, with appropriate fencing.

Access Control

In order to prevent illegal dumping the site will require access control through a security guard. This person can also be utilised to log the incoming waste volumes.

Storm Water Drainage and Monitoring Boreholes

As part of the site design, ongoing monitoring of the site storm water drainage features will be undertaken and additional monitoring boreholes will be installed for monitoring.

4.1.3 Construction area

The construction area for the disposal site will be the footprint of the disposal site as well as any additional features required as part of the construction i.e. an access road. At this stage the size of the site estimated to be in the order of 10 – 15 ha depending on site specific conditions. The exact size is still to be determined by the design of the facility. Construction activities will be limited to the areas mentioned above.

4.1.4 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 4-2: Major activities for the proposed project.

NO	ACTIVITY	DETAILS
PRECONSTRUCTION PHASE		
1	Screening	As part of the undertaking of an EIA a technical team devised three site alternatives for the proposed project. An environmental team was commissioned to undertake a screening exercise in the area to determine the most feasible alternative from an environmental perspective to take into the EIA.
2	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 Environmental Authorisation from the competent authority in this case the Department of Environmental Affairs (DEA);
3	Consultation with private property owners	All stakeholders and property owners will be engaged in the EIA.
4	Structure foundation investigation	Investigations will be undertaken to ensure that the foundation specifications are in line with the underlying geology.
5	Approval from authorities	
6	Relocation of services	If any infrastructure needs to be relocated for the development it must be undertaken prior to commencement with construction.
CONSTRUCTION PHASE		
1	Structures	Fencing - Provide a safe and secured waste disposal area to restrict access and prevent injuries to livestock.
		Formation - Provide a ground formation compacted to the correct standard on which to build the waste disposal site.

		Drainage - Provide water drainage channels within the site.
REHABILITATION PHASE		
1	Rehabilitate the construction area	The area where construction activities have taken place must be rehabilitated to minimise environmental degradation by following the Environmental Management Plan that is compiled in conjunction to the EIA.
OPERATIONAL PHASE		
1	Commencement of operations	Rehabilitation tasks have to take place progressively during operations.
DECOMMISSIONING AND CLOSURE PHASE		
1	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.

4.1.5 Overall EIA Project Schedule

The primary milestones for the Tutuka Power Station waste disposal site project (prior and through to post construction) are described in Table 4-3 below.

Table 4-3: Primary milestones of the Tutuka Waste Disposal Site.

MILESTONES	DATE
Final Scoping Report	December 2009
Undertake Specialist Studies	November - February 2010
Draft EIR and EMP	February - March 2010
Stakeholder Engagement on EIR / EMP	April - May 2010
Finalise EIR and EMP	June 2010
Submission to Relevant Authorities	July 2010
Environmental Authorisation	September / October 2010
Appeal Period	To be confirmed after the Environmental Authorisation
Construction (including EMP Auditing)	To be confirmed after the Environmental Authorisation

4.2 Alternatives Considered

Alternatives being assessed for the construction of the Tutuka waste disposal site can be divided into the following categories:

- Project alternatives;
- Site alternatives;
- Operation alternatives; and
- The No-Go (no development) alternative.

These are discussed in the sections below.

4.2.1 Project Alternatives

The following project alternatives were assessed during the planning phase due to the cost, accessibility, time and safety implications:

- Alternative sites available to dispose the waste; and
- Permanent road transportation to Kriel.

These project alternatives were considered and the following was concluded:

- There are no other waste disposal sites available in close proximity;
- Transporting the waste to the disposal site at Kriel is not cost effective; and
- The only feasible option is to either extend the existing site or to establish a new site in close proximity to the power station.

It was therefore decided in the planning phase that, for the purposes of this EIA, the required disposal space should be identified in the immediate vicinity of the power station.

4.2.2 Site Alternatives

Initial Site Identification

The Tutuka Power Station, Thuthukani Township and the New Denmark Colliery require a licensed general waste disposal site as the current licensed site at Tutuka Power Station has reached the end of its life. It is proposed to either extend the existing site or to establish a new site within the property of the Tutuka Power Station. A site selection exercise was undertaken in line with the requirements of the Minimum Requirements (draft 3rd edition, 2005).

The requirements that had to be met by the site were:

- It must be located on Eskom Property;
- It cannot interfere with the existing operations at the Tutuka Power Station or the New Denmark Colliery;
- It must be within a 2 km radius of the existing site to minimise travelling distance of the waste;
- Had to have a minimum size of 12 ha to accommodate the calculated waste volume.

Twelve site alternatives were identified as part of the scoping of the project, all within the power station property. The alternatives are illustrated in Figure 4-4 below. The twelve sites were selected following a conceptual design of the space required for the 50 year life of the waste disposal site. It was calculated that using the “worst case²” growth rate in waste volumes the site would be approximately 12 ha in size (footprint) and 10 – 15 m in height. The available space within the power station properties was analysed using the above dimensions that the 12 alternatives resulted. The initial site selection aimed to avoid any water features and existing infrastructures from the power station.

² The “worst case” scenario was calculated by using the current waste volumes and applying a annual growth rate similar to the natural growth rate of the population to all the waste streams.

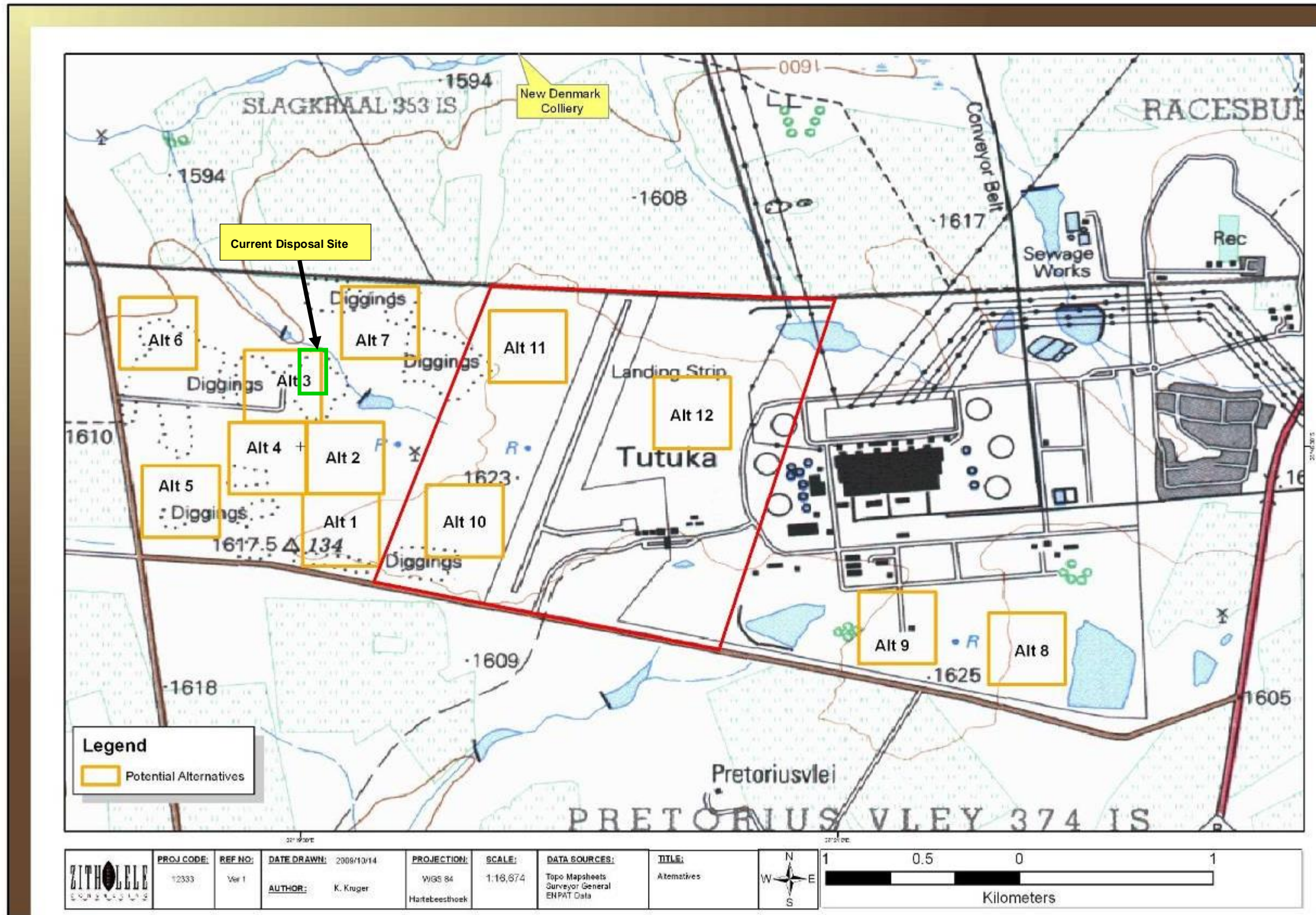


Figure 4-4: Locality of the three disposal site alternatives.

These twelve sites were then subjected to a more detailed site selection exercise according to the Minimum Requirements, where the sites have to be ranked according to selection criteria. The first of these are fatal flaws, followed by economic, environmental and public criteria. Each of these is described in more detail below.

Fatal Flaw Identification

Fatal Flaws

Fatal flaws are features that would prevent the site alternative being utilised for a waste disposal site. These were adapted from the Minimum Requirements and are shown in Table 4-4 below.

Table 4-4: Fatal Flaws used in the site selection

Ranking Component	
Fatal Flaws	500m from an airfield
	Below 1:100 year floodline
	Areas in close proximity to significant surface water bodies
	Unstable areas
	Sensitive ecological and/or historical areas
	Areas of flat gradients, shallow or emergent ground water
	Areas within the secure power station area (National Keystone Infrastructure)
	Areas characterized by shallow bedrock with little soil cover
	Areas in close proximity to land-uses that are incompatible with land filling
	Areas immediately upwind of a residential area in the prevailing wind direction(s).
	Areas over which servitudes are held that would prevent the establishment of a waste disposal facility e.g. Eskom, Water Board

All the fatal flaws shown above would make the alternative site unfeasible for use as a landfill site. These flaws have been identified by the Department of Water Affairs (DWA) in their Minimum Requirements Document. Of the flaws mentioned above Alternative 10 – 12 were within 500 m of the Tutuka Airstrip and Alternatives 8 and 9 were within the secure power station area that cannot be accessed by the public or any waste contractor. Therefore these sites were eliminated from the further selection process.

Detailed Site Selection

The detailed site selection was limited to the seven sites that did not have any of the fatal flaws presented above. The analysis was done by undertaking a one-day site investigation and workshop with key Tutuka Power Station personnel. A matrix was compiled to highlight the ranking of the sites and is shown in Table 4-5 below. A rating system of -3 to +3 was used to score the sites as shown in the table below. Furthermore the sites were ranked according to Economic, Environmental and Public criteria, each of which is described in more detail below.

Economic Criteria

The economic criteria area focussed on the cost that the specific site would have to be established and operated. This includes the distance to the site from the waste generators, the accessibility of the site, the ease of operations, the availability of cover material, the cost to establish the site and security concerns.

Under the economic criteria Alternatives 2, 3 & 4 was the most suitable with Alternative 7 being the least suitable. This was expected as Alternatives 2, 3 & 4 are located very close to the existing site, which is within the Alternative 3 boundary.

Environmental Criteria

The environmental criteria that were identified as important ranking components include the distance to ground or surface water features, the depth of the soils on site and the sensitivity of the receiving environment where the site will be established.

When considering the environmental criteria several sites were rated equal top with no apparent distinction between the sites. This is due to the close proximity of the site to each other with only subtle differences in the receiving environment over such short distances.

Public Criteria

The public criteria that were considered during the site selection was the possible displacements of local habitants, the visibility of the site, the sensitivity of the access road and the distance to the nearest residential area.

According to the evaluation of the public criteria, Alternatives 2, 3 & 4 again were the most suitable sites, as these sites will present the least visibility of the disposal facility from the main roads and settlements in the area.

Overall Site Scoring

When all of the abovementioned scores are added a clearer picture of the suitability of the sites emerge. Alternative 3 comes out as the most preferred site, closely followed by Alternative 4 and then Alternative 2. Alternative 3 is located in the proximity of the current site and therefore all the infrastructure and support services are in place including roads, security, monitoring boreholes and some fences. In addition the site carries the existing impact of the current site and therefore would not be as highly impacted upon by the new waste site as any of the other “greenfields” sites.

It was therefore decided on the basis of the site selection exercise to investigate the combined areas of Alternatives 2, 3 & 4 during the EIA phase of the project. This combined area will be assessed for sensitivities and the conceptual design of the facility will be fine-tuned accordingly.

Table 4-5: Site Selection Matrix for the Suitable Alternatives

Ranking Component		Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6	Alt 7
Economic	The distance of the site from the waste generation areas	1	1	1	1	1	1	-1
	Access to the landfill site	3	3	3	3	1	1	-1
	The availability of on-site soil to provide low cost cover material	1	1	1	1	1	1	1
	Ease of operation	1	1	1	1	1	1	1
	Cost to establish infrastructure	1	1	3	1	1	1	-1
	Security Concerns	-1	1	1	1	-1	-1	1
Total Economic		6	8	10	8	4	4	0
Enviro	The distance to ground or surface water	1	-1	-1	1	1	-1	-1
	The depth of soil on the site	1	1	1	1	1	-1	-1
	The sensitivity of the receiving environment e.g. vegetation, conservation areas or sensitive animals	1	1	3	1	1	1	1
Total Environmental		3	1	3	3	3	-1	-1
Public	The displacement of local inhabitants.	1	1	1	1	1	1	1
	Exposed sites with high visibility	-1	1	1	1	-1	-1	1
	The sensitivity of the environment through which the access road(s) passes	1	1	1	1	1	1	-1
	The distance to the nearest residential area	1	1	1	1	1	1	1
Total Public		2	4	4	4	2	2	2
Overall Site Scoring		11	13	17	15	9	5	1
+ 3	Very suitable							
+ 1	suitable							
0	unknown							
- 1	unsuitable							
- 3	very unsuitable							

4.2.3 Operational Alternatives

At present the area is serviced by centrally placed skips that are collected by a tractor that deliver the waste to the existing site. Currently no feasible alternatives are envisaged for the transport and delivery of the waste to the waste site. An example of the skips is shown in Figure 4-5 below.



Figure 4-5: Waste skips used to store waste for collection of the waste.

4.2.4 “No Go” Alternative

The “No-Go” alternative will also be assessed further in the EIA process. This alternative presents that, in the case that the project does not take place, the status quo will remain and the waste will continue to be transported by road to the Kriel waste disposal site, at huge operational costs. Should the “No-Go” alternative be the preferred alternative, Eskom will have to undertake an EIA for the closure of the existing waste disposal site and large costs incurred as a result of the transportation of waste will persist. The environmental and social impacts will be assessed and compared to the aforementioned alternatives

5 RECEIVING ENVIRONMENT

The regional environment is described in the section below. For the context of this report the regional environment refers to a 20 km radius around the Tutuka Power Station.

5.1 Climate

5.1.1 Data Collection

Climate information was attained using the climate of South Africa database.

5.1.2 Regional Description

The climate of the study area is typical of the Highveld region of Mpumalanga, with warm, moist summers and cold, dry winters with frost in places. Average rainfall for the study area ranges from 650 mm to 900 mm per annum. Temperatures range from below zero during winter to above 30°C during summer, with mean daily temperatures of 12 to 25°C in summer and 0 to 20°C in winter. The first incidence of frost usually occurs during the first week of May, where frost can occur until the middle of September. Thunderstorms occur frequently during summer, between October and March, and are usually accompanied by lightning, heavy rain, strong winds and occasionally hail. Storms are mainly localised and rainfall can vary markedly over short distances. Snow falls are recorded most winters in the high-lying areas of the study area's south-eastern portion. Fog occurs on an average of 55 days per annum. Winds in the study area blow predominantly from the north, west and north-west, and may reach speeds of up to 60 km/h in summer.

5.1.3 Air quality

The atmospheric conditions in the Highveld region of Mpumalanga are not conducive to the rapid dispersion of near ground level pollutants, particularly in winter. A high-pressure system prevails over the region and results in high atmospheric stability, clear skies and low wind speeds. Surface inversions occur often in winter and elevated inversions are common. Moist, unstable conditions and rainfall, which promote dispersion and deposition of pollutants, are confined almost exclusively to the summer period. The main sources of pollutants in the Mpumalanga Highveld region are from power stations, petrochemical plants, smaller industries, domestic combustion, motor vehicles, smouldering coal-discard dumps and veld burning. Pollutants emitted by these sources include particulates; sulphur dioxide, nitrogen oxides, carbon monoxide, hydrocarbons and carbon dioxides.

5.2 Geology

5.2.1 Methodology and Data Sources

The geological analysis was undertaken through the desktop evaluation using a Geographic Information System (GIS) and relevant data sources (September 2009). The geological data was taken from the Environmental Potential Atlas Data from the Department of Environmental Affairs (DEA).

5.2.2 Regional Description

The dominant geology in the study area is that of sedimentary rocks of the Ecca Group of the Karoo Supergroup (intercalated shales, mudrocks and sandstones with coal measures). Late Karoo age dolerite intrusives (dykes and sills) are commonplace. The basement geology, below the Karoo and outcropping in places, comprises Bushveld granophyre and felsite rocks. The hard rock geology is overlain by residual and transported soils.

The main rock types found on site are dolerite, sandstone and shale. Alternative 1 and 3 are underlain by dolerite while Alternative 2 is underlain by sandstone. The dolerite and shale weather into high clay content soils, while the sandstone weathers into more sandy soils. The geologies described above are illustrated in Figure 5-1 below.

5.2.3 Sensitivities

No geological features within the study areas are considered to be sensitive.

5.3 Topography

5.3.1 Data Collection

The topography data was obtained from the Surveyor General's 1:50 000 toposheet data for the region, namely 2629CB and CD. Contours were combined from the topographical mapsheets to form a combined contours layer as shown in Figure 5-2 below.

5.3.2 Regional Description

The Highveld plateau characteristically comprises a dissected plain formed by ancient plantation. Erosion of this plain has resulted in a gently undulating landscape in which rock outcrops are most characteristically found in the lower slope positions where the mantle of pre-weathered material has been stripped by erosion. The altitude ranges between 1 520 – 1 680 metres above mean sea level (mamsl). The most common topographical form found on site is gentle sideslopes extending from hillcrests down to streams and occasionally gullies. The streams always have V-or-U-shaped incisions eroded into the stream alluvium and along the actual watercourses. Steeper side slopes flank the major streams and floodplain areas.

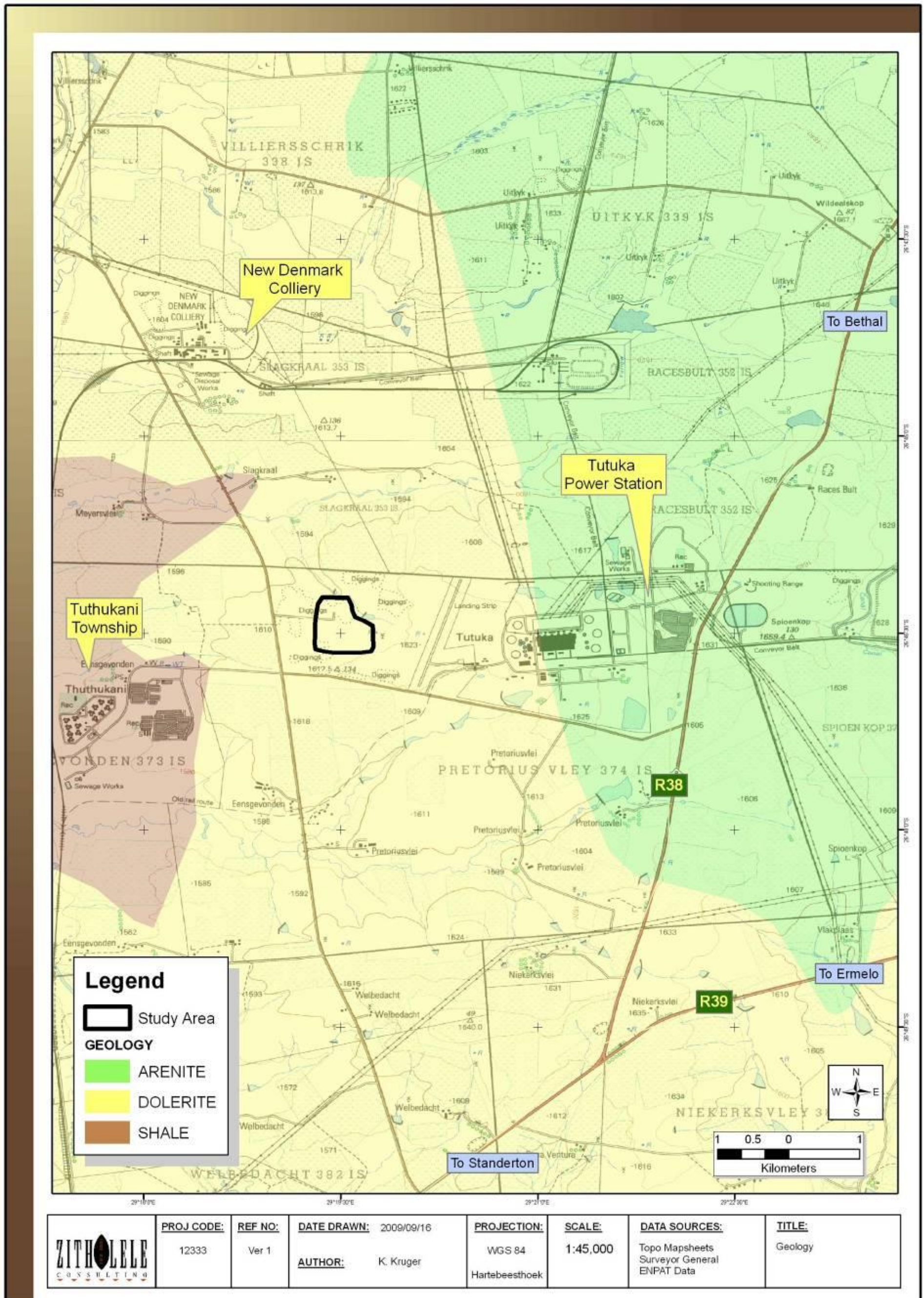


Figure 5-1: Regional Geology of the area

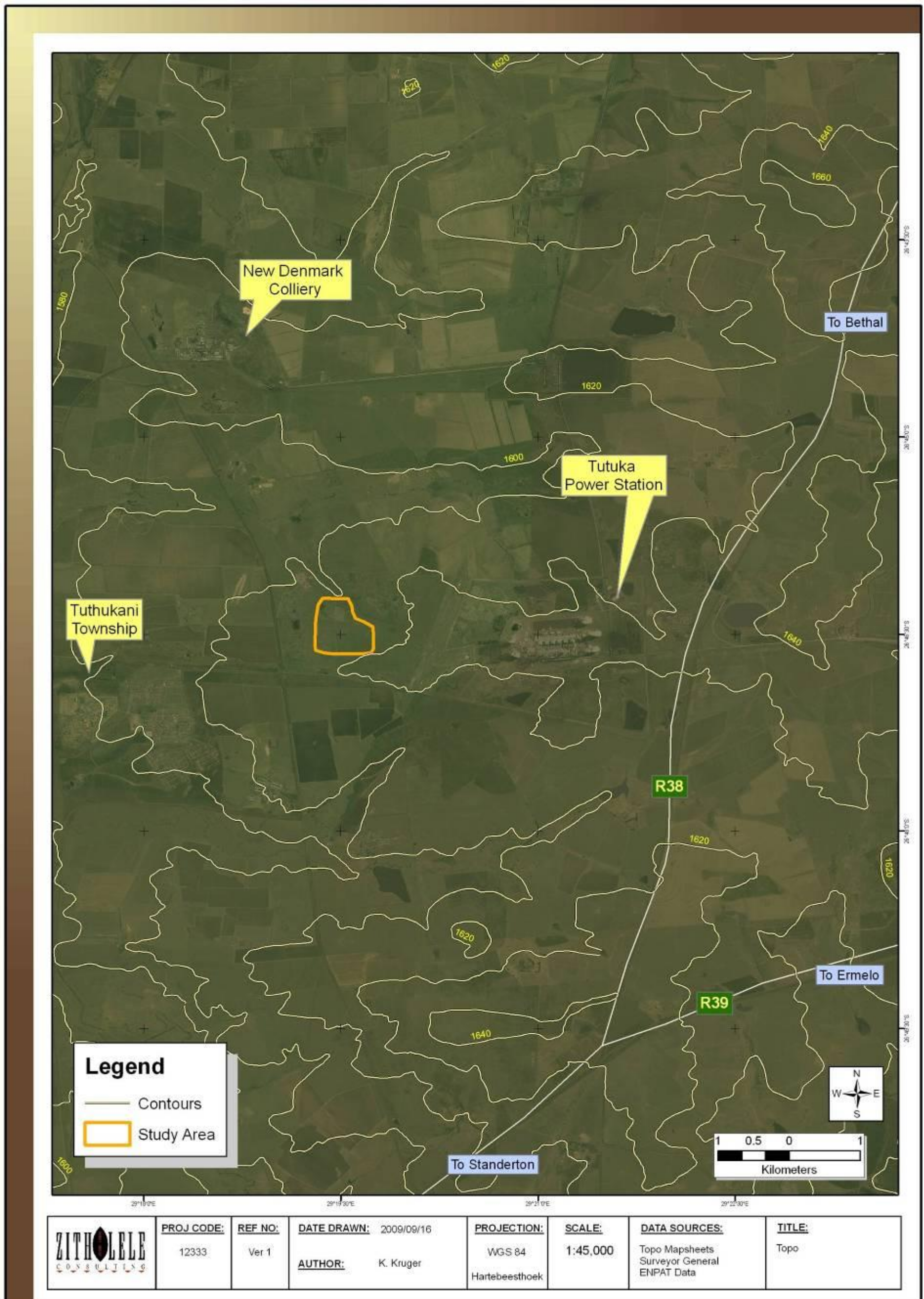


Figure 5-2: Topography of the area.

5.4 Surface Water

5.4.1 Data Collection

The surface water data was obtained from the WR90 database from the Water Research Council. The data used included catchments, river alignments and river names. In addition water body data was obtained from the CSIR land cover database (1990) to show water bodies and wetlands.

5.4.2 Regional Description

The main drainage feature of the area is the Leeuspruit which drains northwards. Several tributaries are also found in the area including several unnamed streams. In addition to the streams, several dams can also be found in the region as illustrated in Figure 5-3 below. The streams and their associated dams support a number of faunal and floral species uniquely adapted to these aquatic ecosystems, and therefore all surface water bodies are earmarked as sensitive features and should be avoided as far as possible.

From Figure 5-3 below, it is evident that there are water bodies or streams in close proximity to the study area. The design and final site layout will have to avoid all these features and also take them into consideration as part of the planning. All the water bodies are seen as sensitive and should be avoided by the waste disposal site, however detailed studies will be undertaken in the EIA phase to determine the buffer zones required around these sites.

5.5 Land Use

5.5.1 Data Collection

The land use data was obtained from the CSIR Land Cover database and supplemented with visual observations on site.

5.5.2 Regional Description

The land use in the region is dominated by maize, grazed fields, coal mines and power stations. From the map below (Figure 5-4) it can be seen that the proposed alternatives are located in areas of cultivation / unimproved grassland and some water bodies. Water bodies are the only land use regarded as sensitive. From Figure 5-4 below it can be seen that the study area is located in an area of unimproved grassland that has been used for cultivation in the past. It should be noted though that these areas are not used for cultivation at present and that the site is covered by grassland with scattered aliens. The map has four main categories of land use namely cultivation, unimproved grassland, waterbodies and lastly mining, industrial and residential.

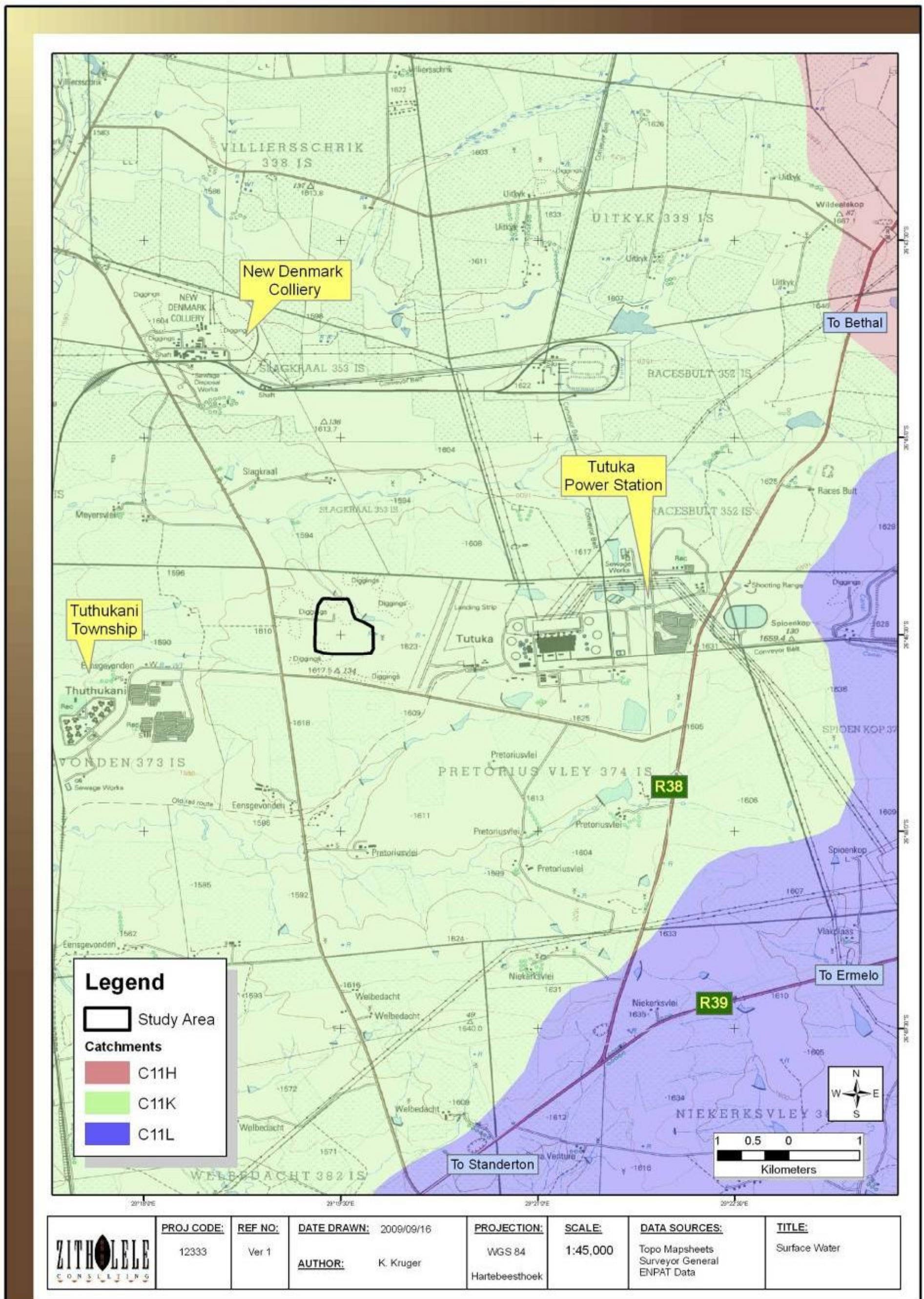


Figure 5-3: Surface water and drainage features of the area.

	PROJ CODE:	REF NO:	DATE DRAWN:	PROJECTION:	SCALE:	DATA SOURCES:	TITLE:
	12333	Ver 1	2009/09/16	WGS 84 Hartebeesthoek	1:45,000	Topo Mapsheets Surveyor General ENPAT Data	Surface Water
	AUTHOR:						
	K. Kruger						

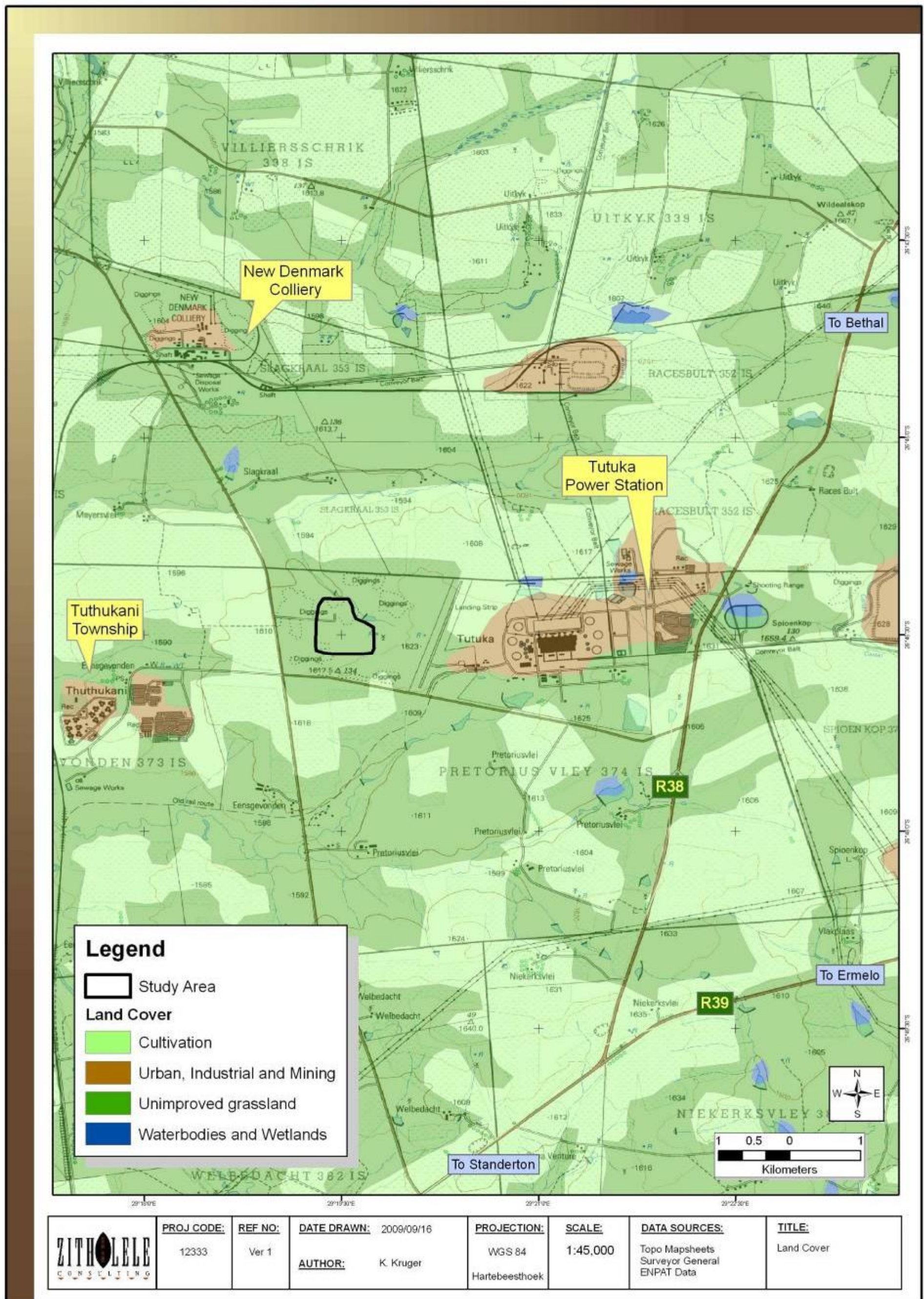


Figure 5-4: Land Use Map.

5.6 Faunal Biodiversity

5.6.1 Data Collection

A literature review of the faunal species that may occur in the area was conducted. C-Plan data provided by the Mpumalanga provincial department was used to conduct a desktop study of the area. This data consists of terrestrial components; ratings provide an indication as to the importance of the area with respect to biodiversity.

5.6.2 Regional Description

Fauna associated with the natural grasslands in the study area has been forced into decreasing areas of their original habitat due to the grasslands having been largely depleted by cultivation, grazing and some infrastructure development.

The biodiversity rating was obtained from the Mpumalanga Biodiversity Conservation Plan, 2006 and the sites are shown in Figure 5-5. From the figure it can be seen that the Alternatives 1 and 2 sites are rated as important to least concern. Alternative 3 is rated as no natural habitat remaining.

5.7 Floral Biodiversity

5.7.1 Methodology and Data Sources

The floral data below is taken from The Vegetation of South Africa, Lesotho and Swaziland (Mucina and Rutherford 2006)¹.

5.7.2 Regional Description

According to the South African National Biodiversity Institute (SANBI), the study area falls within the Grassland Biome, where most of the country's maize production occurs. The vegetation of the area is classified as Soweto Highveld Grassland as classified by Mucina and Rutherford³. 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 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.

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

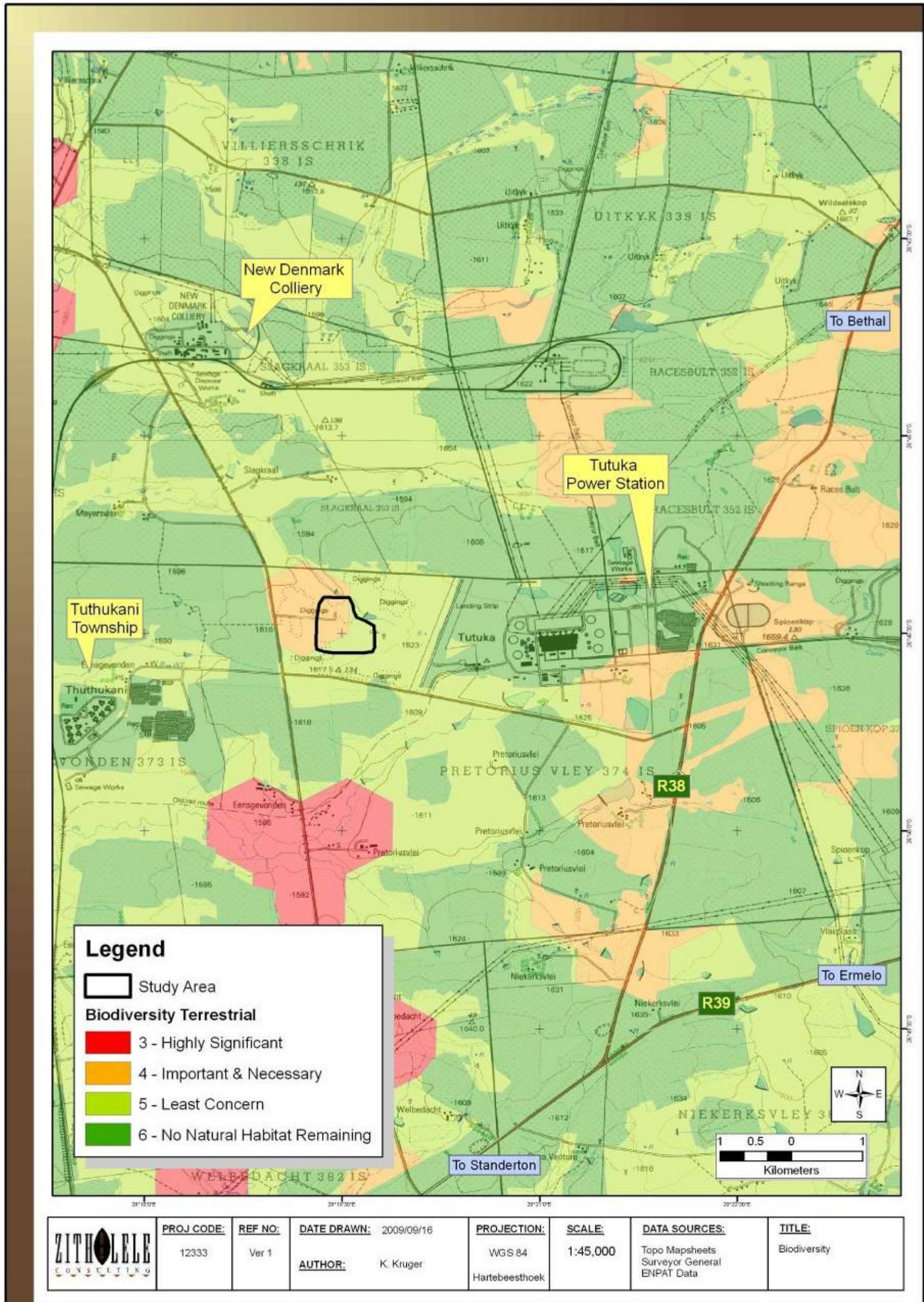


Figure 5-5: Biodiversity of the area.

5.8 Infrastructure

5.8.1 Methodology and Data Sources

Infrastructure was identified using the 1:50 000 topocadastral maps of the area, and information provided by Eskom regarding existing services. A site visit to the area was undertaken to verify this information.

5.8.2 Regional Description

Access to the proposed project area is via the R 38 regional road east of the study site. The primary infrastructure within a radius of 20 km from the study area is:

- Tutuka Power Station, substations and cooling towers;
- The R 38 regional road between Bethal and Standerton;
- The R 39 road between Standerton and Ermelo;
- The R 546 between Standerton and Evander;
- The Tutuka tar road linking Thuthukani and Tutuka with the R 38;
- The existing conveyor belts between the Tutuka Power Station and New Denmark Colliery and between Tutuka and the Tutuka ash dump;
- Numerous 400 kV power lines traversing the area;
- Several dirt farm roads;
- Thuthukani township;
- Tutuka air strip; and
- The New Denmark Colliery.

5.8.3 Sensitivities

All the services linking the power station, the coal mine and the existing power grid are seen as sensitive features that should be avoided. Therefore all conveyors, power lines, substations, roads and the air strip are seen as sensitive features.

5.9 Cultural and historical resources

There are no known heritage resources present within the proposed project area, however the occurrence of cultural and historical resources will be investigated during the EIA phase.

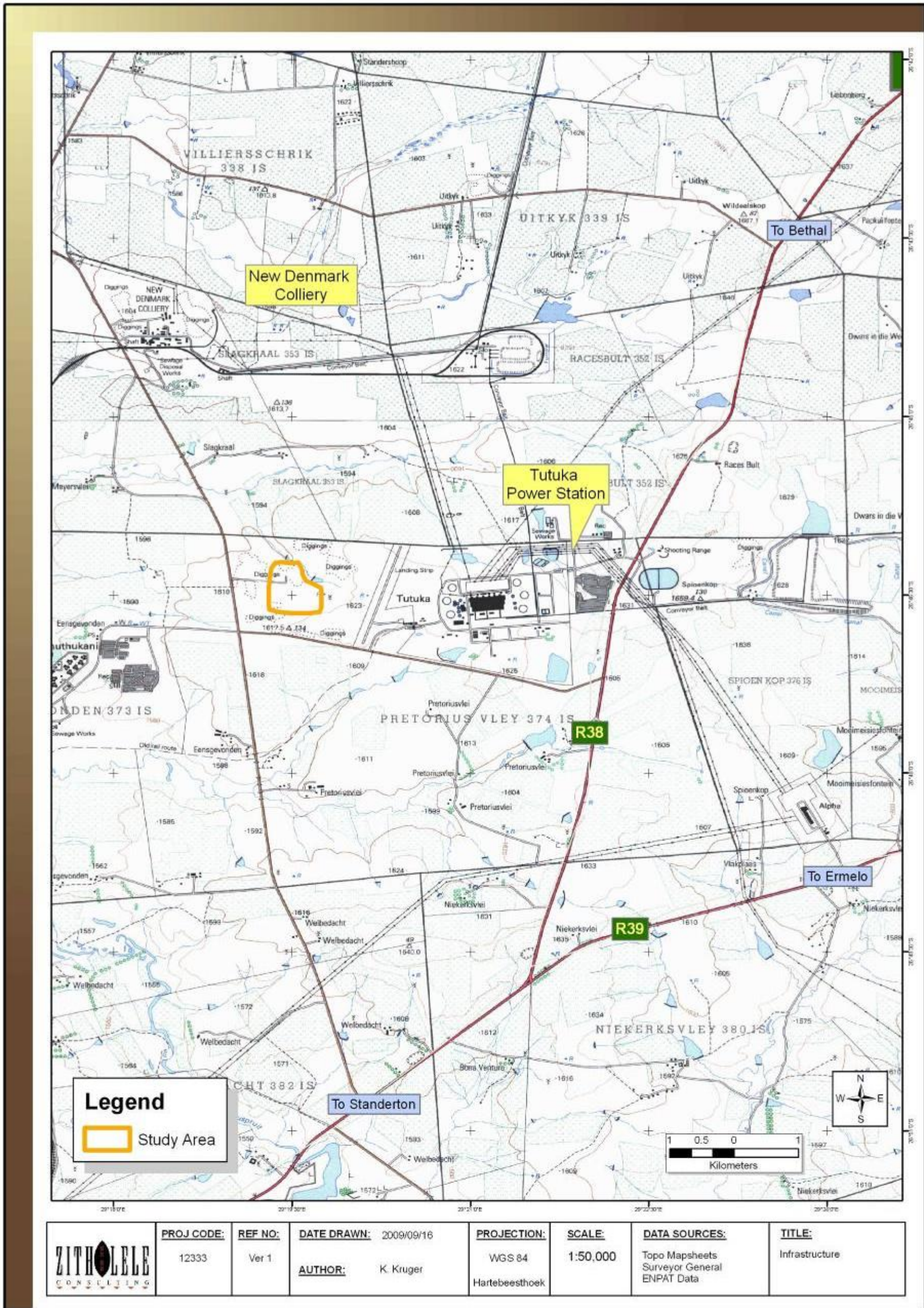


Figure 5-6: Infrastructure in the area

6 SCOPING PROCESS

6.1 Technical (EIA) Process

For the Scoping Phase of this EIA, the following technical process is being followed:

6.1.1 Consultation with client

On notification and receipt of the appointment letter from Eskom, a project inception meeting was held on 3rd July 2009 between Eskom and the Zitholele Consulting Project Team. During this project kick-off meeting the following was discussed:

- Project Scope and Requirements;
- Project Schedule;
- Identification of key stakeholders and role players; and
- Analysis of the preliminary waste disposal sites.

6.1.2 Consultation with authorities, application forms and landowner consent

The DEA EIA application form (**Appendix B**) for the proposed project was submitted to the DEA on 6th July 2009. Copies of the application form and notification of this application form were forwarded to the MDALA as a commenting authority. As a point of departure, the I&AP database available from the Tutuka Power Station was used for initial project notification and groundtruthed by the Zitholele team to identify additional I&APs. As the development will fall entirely on Eskom property no external landowners will be directly affected.

6.1.3 Site Visit

A site visit was conducted on 14th of July 2009 with the objective of familiarising the project team with the area.

6.1.4 Draft Scoping Report and Plan of Study for EIA

The Draft Scoping Report (SR) (this report) is prepared with information and issues identified during the Scoping Phase activities. The Plan of Study (PoS) for EIA and the Terms of Reference (ToR) for the envisaged specialist studies are included in Chapter 8 of this report. The Draft SR and PoS for EIA will be updated based on comments from key commenting authorities, public review and comments obtained from I&APs.

6.1.5 Final Scoping Report and PoS EIA

The Final Scoping Report (FSR) and PoS for EIA was compiled once stakeholders have been afforded to comment of the Draft Scoping Report. These comments are then included into the report, the report is finalised and then submitted to the authorities for decision-making.

6.2 Public Participation Process (PPP)

The Public Participation Process (PPP) 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 National Environmental Management Act (Act 107 of 1998, Chapter 1), South Africa's overarching environmental law. In addition, Section 24 (5), Regulation 56 of GNR 385 under the National Environmental Management Act, guides the public participation process that is required for an EIA process.

The public participation process for the proposed expansion and licensing of the waste disposal site at the Tutuka Power Station, near Standerton has not only been designed to satisfy the requirements of the afore-mentioned legislation and guidelines, but also adhere to best practice, and consult as widely as possible. Figure 6-1 provides an overview of the EIA technical and public participation processes, and illustrates 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.

6.2.1 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 so as to:

During Scoping:

- Assist I&APs to identify issues of concern, and provide suggestions for enhanced benefits and alternatives.
- Contribute their local knowledge and experience.
- Verify that their issues have been considered and to help define the scope of the technical studies to be undertaken during the impact assessment phase.

During Impact Assessment:

- Verify that their issues have been considered either by the EIA specialist studies, or elsewhere.
- 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 is to ensure transparency throughout the process and promote informed decision making.

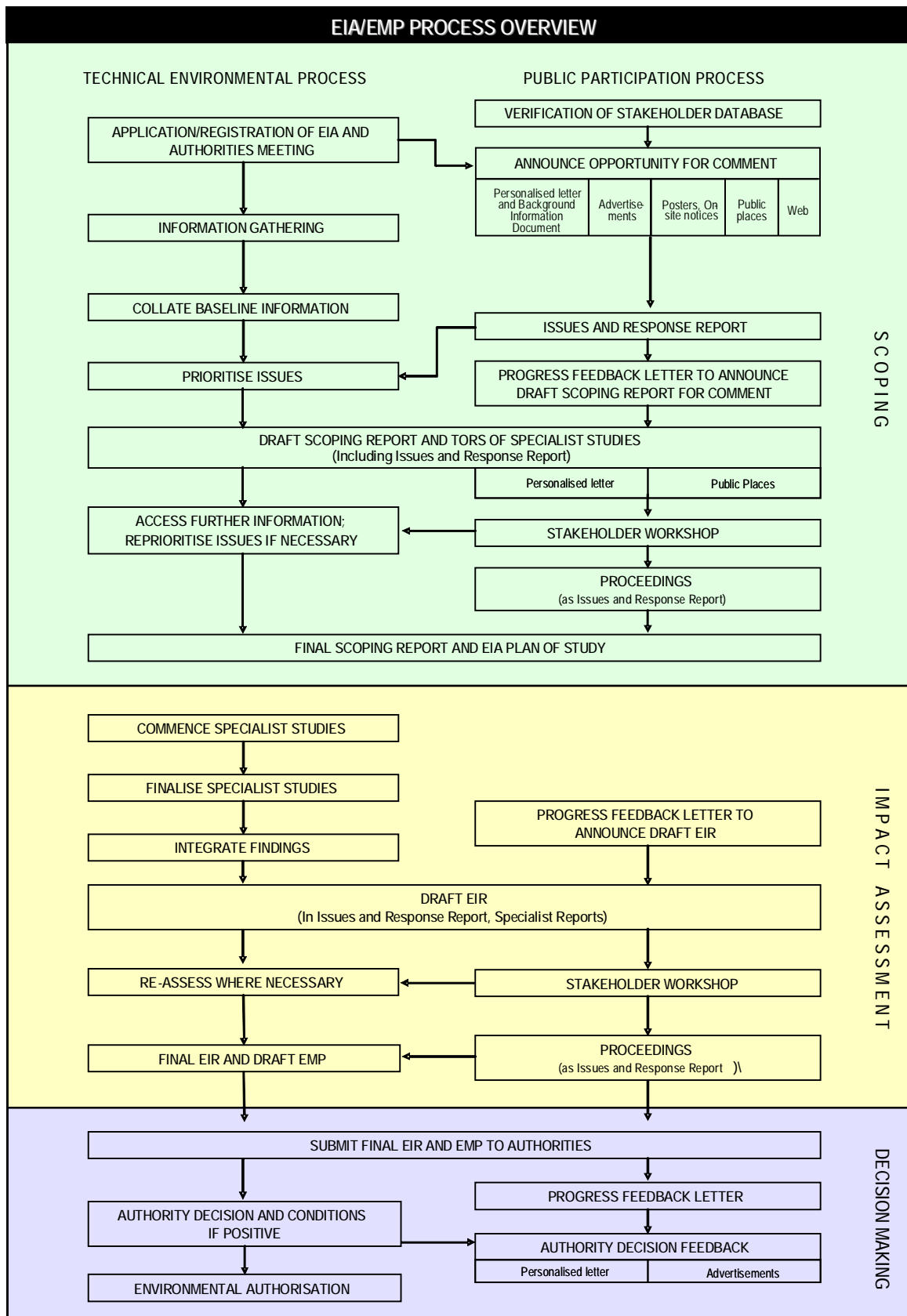


Figure 6-1: Technical and public participation process and activities for this project.

6.2.2 Identification of Interested and Affected Parties (I&APs)

The identification of stakeholders is ongoing and is refined throughout the process, and these details are captured in an I&AP database. As the on-the-ground understanding of affected stakeholders improves through interaction with various stakeholders in the area the database is updated. The identification of key stakeholders and community representatives (land owners and occupiers) for this project is important as their contributions are valued. The identification of key stakeholders was done in collaboration with Eskom (through the management of Tutuka Power Station), the local municipalities and other organisations in the study area.

The 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 NEMA EIA Regulations under Section 24(5) of NEMA, 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 (See Appendix D).

6.2.3 Announcement of opportunity to become involved

The opportunity to participate in the EIA was announced in August/September 2009 as follows:

- Distribution via e-mail and the postal services of a letter of invitation to become involved, addressed to individuals and organisations, accompanied by a Background Information Document (BID) containing details of the proposed project, including a map of the project area and the alternative sites, and a registration sheet (Appendix F)). Copies of the BID were placed (with officers?) at the entrance of the existing waste disposal facility, at the power station's reception area as well as at the community centre in Thuthukani Village.
- Advertisements were placed in the following newspapers (Appendix C)

Table 6-1: Advertisements placed during the announcement phase

NEWSPAPER	DATE
Beeld	25 August 2009
Citizen	27 August 2009
Standerton Advertiser	28 August 2009
Highveld Tribune	1 September 2009

- Notice boards were positioned at prominent localities (the main road intersections from New Denmark, Tutuka and Tutukani) during June 2009. These notice boards were placed at conspicuous places and at various public places (Appendix C).

- Site notices were placed prominently to invite stakeholder participation (Figure 6-2).



Figure 6-2: Site notice boards were put up in the study area.

6.2.4 Obtaining comment and contributions

The following opportunities are available during the Scoping phase for contribution from I&APs:

- Completing and returning the registration/comment sheets on which space is provided for comment.
- Providing comment telephonically or by email to the public participation office.
- Attending the stakeholder meeting on the 18th November 2009 at the Thuthukani Community Centre that was widely advertised (see table below) and raise comments there. The minutes of the meeting will be attached to the Final Scoping Report (SR).

6.2.5 Issues and Response Report and acknowledgements

The issues raised thus far, are captured in an Issues and Response Report Version 1, appended to this Draft SR (Appendix E). This report will be updated to include any additional I&AP contributions that are received as the Scoping phase process proceeds, and as the findings of the EIA become available. The issues and comments raised during the public review period of the Draft SR will be added to the Final SR as Version 2 of the Issues and Response Report. Issues relevant to the project configuration will be considered and carried forward into the Impact Assessment phase.

6.2.6 Draft Scoping Report

The purpose of the Public Participation Process (PPP) in the Draft SR is 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 for the Specialist Studies that will be conducted during the Impact Assessment Phase. A period of 30 days is available for public review of the Draft SR (from 11 November to 11 December 2009).

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

- In the Background Information Document (August 2009).
- In advertisements published (see Table 6-2 below and Appendix C) to announce the review of the Draft SR and inviting stakeholders to attend a stakeholder meeting.
- In a letter sent out in September 2009, and addressed personally to all individuals and organisations on the stakeholder database.

Table 6-2: A stakeholder meeting was advertised and will be held as part of the public review period of the Draft Scoping Report

NEWSPAPER	DATE
Standerton Advertiser	13 November 09
Highveld Tribune	12 November 09
Citizen	9 November 09
Beeld	9 November 09

The Draft SR, including the Issues and Response Report Version 1, has been distributed for comment as follows:

- Left in public venues within the vicinity of the project area (these are listed in Table 6-3 below);
- Published on the Eskom and Zitholele websites;
- Mailed to key stakeholders;
- Mailed to I&APs who requested the report; and
- Copies have been made available at the stakeholder meeting.

I&APs can 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.

Table 6-3: List of public places where the Draft Scoping Report is available

PLACE	CONTACT PERSON	TELEPHONE
Ms Ntombithini Ngubo	Thuthukani Public Library, Thuthukani Village	073 723 3678 073 135 8047
Mr Claude Naicker	Tutuka Power Station	(017) 749 5823 (017) 749 5413

6.2.7 Final Scoping Report

The Final SR will be updated with additional issues raised by I&APs and may contain new information that may be generated as a result of this process. The Final SR will be submitted to the relevant authorities and key I&APs, and to those individuals who specifically request a copy. I&APs will be notified of the availability of the report.

In the Impact Assessment Phase of the EIA specialist studies will be conducted 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 with these studies.

6.2.8 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 a Draft Environmental Impact Report (EIR), the Draft Environmental Management Plan (EMP) and the volumes of specialist studies.

I&APs will be advised in good time of the availability of these reports, how to access them, and the dates and venues of public and other meetings where the contents of the reports will be presented for comment.

7 ISSUES IDENTIFIED FOR IMPACT ASSESSMENT

The proposed Tutuka waste disposal site is anticipated to impact on a range of biophysical and socio-economic aspects of the environment. The main purpose of the EIA process is to evaluate the significance of these potential impacts and to determine how they can be minimized or mitigated.

It should be noted that a comprehensive Environmental Management Plan (EMP) will be developed and implemented to regulate and minimize the impacts during the construction and operational phases. Furthermore an Operational Management Plan (OMP) will be compiled to manage the operations of the waste disposal site. 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 7-1 below.

Table 7-1: Potential Environmental Impacts to be investigated in the EIA Phase.

Environmental Element	Potential Environmental Impact
Topography and Land Use	<p>Visual Environment</p> <ol style="list-style-type: none"> 1.) Construction of the waste disposal site and associated infrastructure may alter the visual environment. A decrease in the quality of the visual environment may affect land uses. 2.) The presence of a waste disposal site throughout operation may decrease the quality of the visual environment.
Geology, Soil and Land Capability, and Drainage Features	<p>Geotechnical</p> <ol style="list-style-type: none"> 1.) A geotechnical investigation / professional opinion input is required due to the nature of the development. <p>Drainage Features (Groundwater and Aquatic Ecology)</p> <ol style="list-style-type: none"> 1.) Insufficient rehabilitation during and post construction may result in erosion of the landscape. Eroded materials may enter the surface water environment contributing to sedimentation of the local surface water resources. Furthermore, leachate from the site could enter the ground water system if the site is not properly lined. 2.) Streams and / or rivers are sensitive habitats and impacts on them should be avoided. <p>Soil and Land Capability (Agricultural Potential)</p> <ol style="list-style-type: none"> 1.) Insufficient control measures during the construction phase may result in erosion, compaction, and sterilisation of soil resources. 2.) A consequence of impacts to the soil resource is a reduction in land capability. 3.) Poor soil amelioration measures during the rehabilitation phase may result in a lack of vegetation establishment. Thus contributing to the failure of rehabilitation measures.
Climate	<p>Air Quality</p> <p>Local climate conditions do not appear to be of a significant concern to the project. The project will not contribute to local or global climate change.</p> <p>However there is a potential to propagate dust during the construction and operation of the site.</p>

Environmental Element	Potential Environmental Impact
Infrastructure	<p>Conveyor Belts</p> <p>1.) Cognisance must be taken of existing conveyor belts.</p> <p>Power Lines</p> <p>1.) Cognisance must be taken of existing power lines, and potential temporary power line deviations.</p> <p>Roads</p> <p>1.) Cognisance must be taken of existing roads, and potential temporary road deviations.</p> <p>Construction Camp</p> <p>1.) The construction camp, although temporary, may negatively impact several environmental elements as a result of:</p> <ul style="list-style-type: none"> a. Hydro-carbon storage and handling on site; b. Handling, storage, and management of dangerous / hazardous goods on site i.e. welding, paints, cleaning solvents etc; c. Vegetation clearing and site establishment; d. Vehicle maintenance; e. Transportation and handling of construction materials; and f. Cement batching in the batching plant.
Flora	<p>Vegetation Clearing (Terrestrial Ecology)</p> <p>1.) Vegetation clearing at the construction camp, along access roads, and at the approved waste disposal site will result in negative impacts to the flora on site.</p> <p>Alien Invasive Species</p> <p>1.) Disturbed areas will be prone to Alien Invasive species infestation.</p>
Fauna	<p>Terrestrial Ecology</p> <p>The impacts to vegetation will negatively impact on habitat, and consequently the faunal elements of the receiving environment.</p>
Cultural and Historical Resources	<p>Heritage</p> <p>Based on currently available information no impacts are expected to the cultural and historical environment however a Heritage Impact Assessment will be undertaken in case of the presence of graves in the study area.</p>
Socio-Economic Environment and Safety and Security	<p>Traffic and Risk</p> <ul style="list-style-type: none"> 1.) During the construction phase increased heavy vehicle traffic should be expected. Without management, such increased traffic loads may negatively impact existing traffic flow. 2.) Unmanaged construction vehicles may decrease road safety to other road users. 3.) Uncontrolled movement of construction vehicles may result in unnecessary impacts to the environment through vegetation and habitat destruction. <p>Noise</p> <p>1.) Uncontrolled construction activities may negatively impact on the ambient noise levels in the area.</p> <p>Consultation</p> <p>1.) Unmanaged and insufficient consultation with communities and land owners often generates negative sentiment towards</p>

Environmental Element	Potential Environmental Impact
	developments that persist beyond the construction phase of a project. 2.) Insufficient consultation may result in unnecessary impacts to local inhabitants and land owners.

8 PLAN OF STUDY FOR EIA

8.1 Technical Process

8.1.1 Prepare Specialist Investigations

The scoping phase investigations have reviewed a range of potential environmental impacts associated with the proposed development. This assessment, which was informed by authorities input, interested and affected parties and various professionals, provided a shortlist of potentially significant environmental impacts which were identified for detailed specialist assessments during the Impact Assessment phase. The specialist investigations to be conducted during the EIA-phase of this project will consist of the following studies:

- Waste Site detailed Design and Review of Operational Manual;
- Waste Permit Application;
- Heritage and Archaeological Assessment;
- Soils and Land Capability Assessment;
- Groundwater Assessment;
- Traffic Impact Opinion;
- Air Quality Assessment;
- Noise Impact Assessment;
- Geotechnical Investigations;
- Topographical Survey;
- Terrestrial Ecology (Fauna and Flora);
- GIS; and
- Visual Assessment.

The findings of these studies will be reflected in the EIA Report. The proposed Terms of Reference (ToR) for each of these specialist investigations is indicated in Section 8.1.2 below.

8.1.2 Specialist Studies: Terms of Reference (ToR)

ToR: Waste Site Design and Operating Manual

A specialist waste disposal site design engineer will be appointed to complete the detailed design of the waste disposal site, included in this scope is:

- Site visit of the project area;

- Oversee the Topographical Survey of the site;
- Prepare conceptual design drawings of the site based on preliminary site selection, survey and waste volume calculations;
- Compile detailed design drawings for the proposed waste disposal site for the 50 year life of the site in line with the Minimum Requirements for Waste Disposal by Landfill and to the requirements of the DWEA;
- Submit drawings to the department for review and make any alternations required;
- Include any mitigatory measures prescribed by specialist into the design for example storm water drainage; and
- Review and amend current site operating manual to be relevant for the new site.

ToR: Waste Permit Application

- Classify the site according to the Minimum Requirements;
- Provide guidance regarding the amendment of the existing ECA 20 permit for the site;
- Determine the future of the existing facility;
- Compile end-use plan, site monitoring plan and permit application report for inclusion in the draft EIR.

ToR: Heritage and Archaeological

A Heritage Impact Assessment will be conducted to comply with Section 38 of the National heritage Resources Act (No 25 of 1999). Specific objectives of this study will be:

- Desktop study (consulting heritage data banks and appropriate literature);
- Site visit of the project area;
- Determine whether any of the types and ranges of heritage resources as outlined in Section 3 of the Act (No 25 of 1999) do occur in the project area;
- Determine what the nature, the extent and the significance of these remains are;
- Determine whether any heritage resources (including graves) will be affected by the development project; and
- If any heritage resources are to be affected by the development project mitigation measures has to be undertaken and management proposals have to be set for heritage resources which may continue to exist unaffected in or near the project area.
- Compile a report which would
 - Clearly identify possible archaeological, cultural and historical sites within the study area;
 - Identify the potential impacts of construction and operation of the proposed development on such resources, with and without mitigation;

- Offer an opinion on a preferred site in terms of this specialist field;
- Provide mitigation measures to ameliorate any negative impacts on areas of heritage significance;
- Include a map illustrating the salient aspects of the report

ToR: Soils and Land Capability

A soil and land capability investigation will be conducted for the Tutuka waste disposal site. The objectives of this study will be:

- Review existing information available;
- An aerial photographic study to assess the accessibility, vegetation cover, drainage lines, slope aspects and percentage outcrop of each of the three sites;
- A field visit to verify the aerial photographic study observations. Additionally, during the visit, the depth and properties of regolith will be judged from natural exposure (dongas) and hand augering where applicable;
- A map will be compiled of each of the alternative sites, indicating the features observed; and
- Assess the potential impacts and their significance on the agricultural potential of each alternative;
 - Propose mitigation measures to reduce or mitigate potential impacts;
- A short report will be compiled, in which the alternatives will be prioritized based on the results of the study.

ToR: Groundwater Review

A groundwater review of existing information will be conducted for the proposed Tutuka domestic waste disposal site. The objectives of this study will be:

- Review of all existing groundwater information available from the power station;
- Compilation of a groundwater review report that is sufficient to address the requirements of a waste license application, the EIR and management practices;
- Review current groundwater monitoring regime and make recommendations on any amendments required; and
- Highlight the current trends in the groundwater regime that could influence the design of the new waste disposal site.

ToR: Traffic Impact Opinion

An opinion will be obtained from a specialist with regards to the impact of the construction and operation of the site on the surrounding traffic movements.

ToR: Air Quality Assessment

An air quality impact assessment will be conducted for the Tutuka waste disposal site. The objectives of this study will be:

- To assess impacts on the air quality during the construction and operational phases of the project, especially pertaining to dust (construction) and natural gas (operations);
- Quantify emissions from the construction operations and operational phase using US-EPA emission factors based on the process description and information available. The dispersion model (i.e. AERMOD) will be applied;
- Simulate ambient air pollutant concentrations for short-term impacts (i.e. highest hourly average), with extrapolations to long-term exposures (i.e. annual averages);
- Comparison of emissions with ambient air quality guidelines/standards/goals and dose-response thresholds as well as baseline conditions;
- Provide mitigation measures to prevent and/or mitigate any environmental impacts that may occur due to the proposed project;
- Compile an air quality impact assessment report in which alternatives are prioritised based on the findings of the study.

ToR: Noise Impact Assessment

A noise impact assessment will be conducted for the Tutuka waste disposal site. The objectives of this study will be:

- To assess the impact of the construction and operation of a waste disposal site on the existing ambient noise climate of the area;
- Take noise measurements at the three sites to confirm the baseline noise levels in the area and compare typical noise levels for this type of construction and operation;
- Determine the expected response from the community and all other receptors (e.g. livestock) to the noise impact, i.e. the change in ambient noise of the area taking into account sociological factors as well as the noise climate based on the relevant SANS document.
- Reflect on input from traffic impact during construction and operation of the development;
- Provide mitigation measures to prevent and/or mitigate any environmental impacts that may occur due to the proposed project;
- Determine details of planned operations (when waste will be delivered etc.);
- A noise impact assessment report in which alternatives are prioritised based on the findings of the study.

ToR: Geotechnical Investigations

A Geotechnical Investigation is required for the Tutuka waste disposal site. The following scope will be covered:

- Review of existing and available geological and geotechnical information;
- A site visit to verify available aerial photographs and to investigate the depth and properties of regolith which will be judged by assessing natural exposure (dongas) and with the aid of hand augering where applicable;
- A map will be compiled indicating features observed;
- Identify and assess significance of potential geotechnical constraints to the proposed development;
- Propose mitigation measures that could reduce or eliminate the identified constraints; and
- A short report will be compiled based on the findings of the study.

ToR: Terrestrial Ecology

An ecological investigation will be conducted on the Tutuka waste disposal site. 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, determine the occurrence of any red data and/or 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;
- Compile an ecological report, indicating findings, recommendations and maps indicating sensitive and/or no-go areas.

ToR: Visual Assessment

A Visual Assessment will be conducted on the Tutuka waste disposal site. Specific objectives of this 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 development;
- Suggest any recommendation / mitigation measures that can be done to decrease the impacts of the proposed development;
- Provide a ranking assessment of the suitability of the proposed development; and

- Compile a visual assessment report, indicating findings, fatal flaws, recommendations and maps indicating sensitive and/or no-go areas.

8.1.3 Impact Analysis

The significance (quantification) of potential environmental impacts identified during scoping and identified during the specialist investigations will be determined using a ranking scale, based on the following:

Occurrence

- Probability of occurrence (how likely is it 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 on the following basis:

- More than 60 significance points indicates high environmental significance.
- Between 30 and 60 significance points indicates moderate environmental significance.

- Less than 30 significance points indicates low environmental significance.

8.1.4 Draft Environmental Impact Report and Environmental Management Plan

Findings and/or recommendations of the specialist studies will be integrated into the Draft Environmental Impact Report (EIR). This report will be updated as comments are received from I&APs. The Final Environmental Impact Report (EIR) together with a draft construction and operation Environmental Management Plan (EMP) will be submitted to DEA for environmental authorisation.

8.2 Public Participation

After the Scoping Phase, a detailed Impact Assessment will be carried out and the Draft EIR will be prepared. This report will contain descriptions of the study area to the process under consideration, an assessment of the environmental impacts of these alternatives, determination of the significance of the impacts, mitigation measures proposed to lessen the impacts. There will also be a section addressing the issues raised during scoping and a comparative assessment of the feasible alternatives.

The purpose of the public participation process during the Impact Assessment Phase is to present the findings of the EIA phase and to avail the Draft EIR to the public for comments. I&APs will be afforded an opportunity to verify that their issues have been considered either by the EIA specialist studies, or elsewhere. Also, I&APs will comment on the findings of the Draft EIR, including the measures that have been proposed to enhance positive impacts and reduce or avoid negative ones. Once the review is completed, the authority may decide to request additional information on matters that may not be clear from the report, authorise the application with certain conditions to be complied with by the applicant or reject the application. An Environmental Authorisation reflecting the decision of the authority as well as any conditions that may apply will be issued to the applicant.

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.

8.3 Impact Assessment Phase of the EIA: Public participation activities

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

- Announcement of the availability and public review of the Draft EIR;
- Host a public meeting for the stakeholders to review the DEIR;
- Announcement of the availability of the Final EIR;
- Notification of the authorities' decision with regard to Environmental Authorisations

Below information is provided about each step.

8.3.1 Announcing the availability of the Draft EIR, its summary and the EMP

A letter will be circulated to all I&APs, informing them in terms of progress made with the study and that the Draft EIR and EMP are available for comment. The report will be distributed to public places and also presented at a stakeholder meeting. Advertisements will be placed in the same newspapers used in the scoping phase to announce the public review period of the Draft EIR.

8.3.2 Public review of Draft EIR and EMP

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 assessment will be integrated into the Draft EIR. The report will be written in a way accessible to stakeholders in terms of language level and general coherence. The Draft EIR will have a comprehensive project description, motivation and alternatives being considered and also the findings of the assessment and recommended mitigation measures. It will further include the Issues and Responses Report, which will list every issue raised with an indication of where the issue was dealt with in the EIR. The findings of the assessment and recommended mitigation measures will also be incorporated into the EIR.

As part of the process to review the Draft EIR and EMP, one stakeholder workshop 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 EIR.

8.3.3 Announcing the availability of the Final EIR and EMP

A letter will be circulated to all I&APs, informing them in terms of progress made with the study and that the Final EIR and EMP are available for comment. The reports will be distributed to the same public places (See section 6 with the venues) as the previous reports for I&APs to review.

8.3.4 Progress feedback

After comments from I&APs have been incorporated, all stakeholders on the database will receive a personalised letter to report on the status of the process, to thank those who commented to date and to inform them that the Final EIR and EMP have been submitted to the lead authority for consideration. They will be advised on the next steps in the process.

8.3.5 Announce authorities' decision on Environmental Authorisation

Registered I&APs will be notified by individual letters of the results from the authorities. Based on the contributions by the stakeholders, environmental authorisation will be advertised through the following methods:

- Personalised letters to individuals and organisations on the mailing list;
- Advert in local or regional newspapers

9 CONCLUSION AND WAY FORWARD

Eskom appointed Zitholele Consulting to undertake the EIA and waste permit application for the proposed Tutuka general waste disposal site and associated infrastructure. This Scoping study is being undertaken with the aim of identifying feasible sites; identifying potential aspects of concern (both positive and negative) on the biophysical environment and identifying issues, concerns and queries from I&APs. This Draft Scoping 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 made available for public review of four weeks;
- All issues and comments received during the public comment period will be documented and responded to in the Issues and Response Report (version 2);
- All issues and comments received from the public will be considered and integrated in the Final Scoping Report and 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 before 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.

ZITHOLELE CONSULTING (PTY) LTD

Konrad Kruger

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