Second document for comment
July 2008
Scoping Phase

ENVIRONMENTAL IMPACT ASSESSMENT

Bravo Integration Project –Bravo 1: Construction of 2 x 400 kV power lines by-passing Zeus Substation

DEAT REF NO: 12/12/20/1093

Proponent: Eskom Transmission

DRAFT SCOPING REPORT

Project 10637

PURPOSE OF THIS DOCUMENT

The growing demand for electricity is placing increasing pressure on Eskom's existing power generation and transmission capacity. Eskom are committed to implementing a Sustainable Energy Strategy that complements the policies and strategies of National Government. Eskom aims to improve the reliability of electricity supply to the country, and in particular to provide for the growth in electricity demand in the Gauteng and Mpumalanga provinces. For this reason, Eskom obtained environmental authorisation to construct the new 400 kV Bravo Power Station between Bronkhorstspruit and Witbank in 2007. Construction of this power station is scheduled to commence in 2008.

Due to this construction, the new Bravo power station needs to be integrated with the existing Eskom electricity infrastructure. This proposed project is to construct a 400 kV loop-in line from the existing Apollo – Kendal 400 kV line into Bravo power station, and a 400 kV loop-out line from Bravo to Kendal power station. Each of these lines is approximately 10 km in length.

Eskom Transmission has appointed Zitholele Consulting (Pty) Ltd, an independent company, to conduct an EIA to evaluate the potential environmental and social impacts of the proposed project.

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.

According to the EIA Regulations, interested and affected parties must have the opportunity to comment on the proposed project and verify that all the issues raised during the Scoping Phase have been recorded. This is the main purpose of this Draft Scoping Report. The due date for comment on the draft report is **Thursday, 21 August, 2008**.

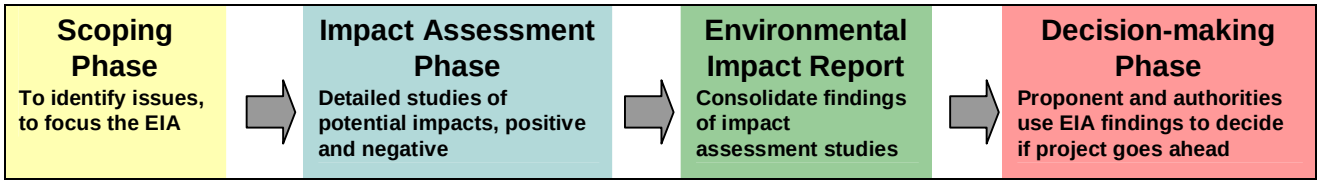
Interested and affected parties will also have an opportunity to comment on the findings of the EIA, which will be presented in a draft Environmental Impact Report (EIR). After public review, the Draft EIR will be updated and submitted to the lead authority, the National Department of Environmental Affairs and Tourism (DEAT) 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
- An overview of the EIA process, including the public participation process
- A description of the existing environment in the project area
- The potential environmental issues and impacts which have already been identified
- The terms of reference for the specialist studies
- A list of comments raised to date.

AN EIA CONSISTS OF SEVERAL PHASES



YOUR COMMENT ON THE DRAFT SCOPING REPORT

The Draft Scoping Report is available for comment from Monday, 21 July 2008 to Thursday, 21 August 2008 (4 weeks). This Draft Scoping Report has been distributed to the authorities, all key stakeholders, all those that have requested a copy and those registered to attend the Key Stakeholder / Authorities Workshop (see below). Copies of the report are available at strategic public places in the project area (see below).

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

PLACE	CONTACT PERSON	TELEPHONE
Blue Valley Golf and Country Estate, HALFWAY HOUSE	Bothma, Lise	(011) 512 0538
City of Johannesburg: Human Development, HALFWAY HOUSE	Kubheka, Kaiser	(011) 203 3419
Delmas Public Library, DELMAS	Mehlape, Lydia	(013) 665 2425
Kungwini Public Library, BRONKHORSTSPRUIT	Smith, Brenda	(013) 665 2425
Leandra Public Library, LEANDRA	Potgieter, A M	(017) 683 0055
Lebogang Public Library, LESLIE	Mosako, Rosina	(017) 683 3000
Midfield Homeowners Association, MIDSTREAM ESTATES	Du Preez, Tarynlee	(012) 661 0456
Midlands Homeowners Association, MIDSTREAM ESTATES	De Wet, Lizette	087 805 3610
Midstream Homeowners Association, MIDSTREAM ESTATES	van der Westhuizen, Durette	(012) 661 0915
Olievenhoutbosch Library, OLIVENHOUTBOSCH	Nkonki, Bongi	(012) 652 1001
Phola Public Library, OGIES	Mabena, Agnes	(013) 645 0094
Secunda Public Library, SECUNDA	Griesel, Tertia	(017) 620 6183

The reports are also available electronically from the Public Participation office.

You may comment on the Draft Scoping Report by:

- completing the comment sheet enclosed with the report
- writing a letter, or producing additional written submissions
- by email or telephone to the public participation office

DUE DATE FOR COMMENT ON THE DRAFT SCOPING REPORT

XXX 2008 TO THE PUBLIC PARTICIPATION OFFICE:

Anelle Odendaal
Public Participation Office
Zitholele Consulting (Pty) Ltd
P O Box 6002
HALFWAY HOUSE, 1685
Tel: (011) 254-4855
Fax: (011) 805-2100
Email: anelleo@zitholele.co.za

TABLE OF CONTENTS

SECTION **PAGE**

LIST OF FIGURES

LIST OF TABLES

LIST OF APPENDICES

1 INTRODUCTION

Eskom Holdings is a South African and vertically integrated utility that generates, transmits and distributes electricity. It supplies approximately 95% of the country's electricity and 60% of the total electricity consumed on the African continent. An electric power system is a complex assemblage of equipment and circuits for generating, transmitting, transforming and distributing electrical energy. Eskom relies on coal-fired power stations to produce approximately 90% of its electricity. Coal is used to heat water and convert it into steam at high temperatures and pressures. Hot steam at temperatures of between 500°C and 535°C is released and turns a large turbine connected to a rotating magnet to convert energy in the fuel into high voltage electric power. In order for the electricity to be transmitted safely and efficiently, it must be at a high voltage (typically 400kV) and a low current. The transmission system carries the electric power in large amounts from generating stations to consumption areas.

Electricity delivered by transmission circuits is then stepped down in facilities called substations to voltages more suitable for use in industrial and residential areas. Among other things, substations are used to transform power from one voltage level to another; interconnect alternative sources of power; connect generators, transmission or distribution lines and loads to each other as well as provide switching for alternate connections and isolation of failed or overloaded lines and equipment. This transmission is also used to interconnect adjacent power systems for mutual assistance in case of emergency. The electricity is transformed down to 11 000 volts for local distribution and then further reduced according to the need - for example, 220 volts for domestic use. The electricity entering consumers' premises and homes has had a complex journey - from the initial high voltage transmission grid to a lower voltage distribution network. It has travelled over ground and (probably) underground for many kilometres and been transformed many times on the way.

As part of the increased electricity supply plan, the construction of the new Bravo power station, a coal-fired power station between Bronkhorstspruit and Witbank, will commence later this year at a cost of around R80-billion. Environmental authorisation for this new power station has been granted by DEAT in 2007. Bravo, which forms part of Eskom's R150-billion expansion plan, is expected to begin delivering electricity around 2013.

Since the Bravo power station will aid in the delivery of additional electricity supply, the proposed Bravo Integration Project (Figure 1) is necessary to integrate and connect Bravo power station into the existing Eskom electricity network. This will ensure that additional electricity supply to areas such as Secunda and Midrand are ensured.

As part of the Bravo Integration project, two lines by-passing Zeus substation is required. This will lead to two new Sol – Camden power lines.

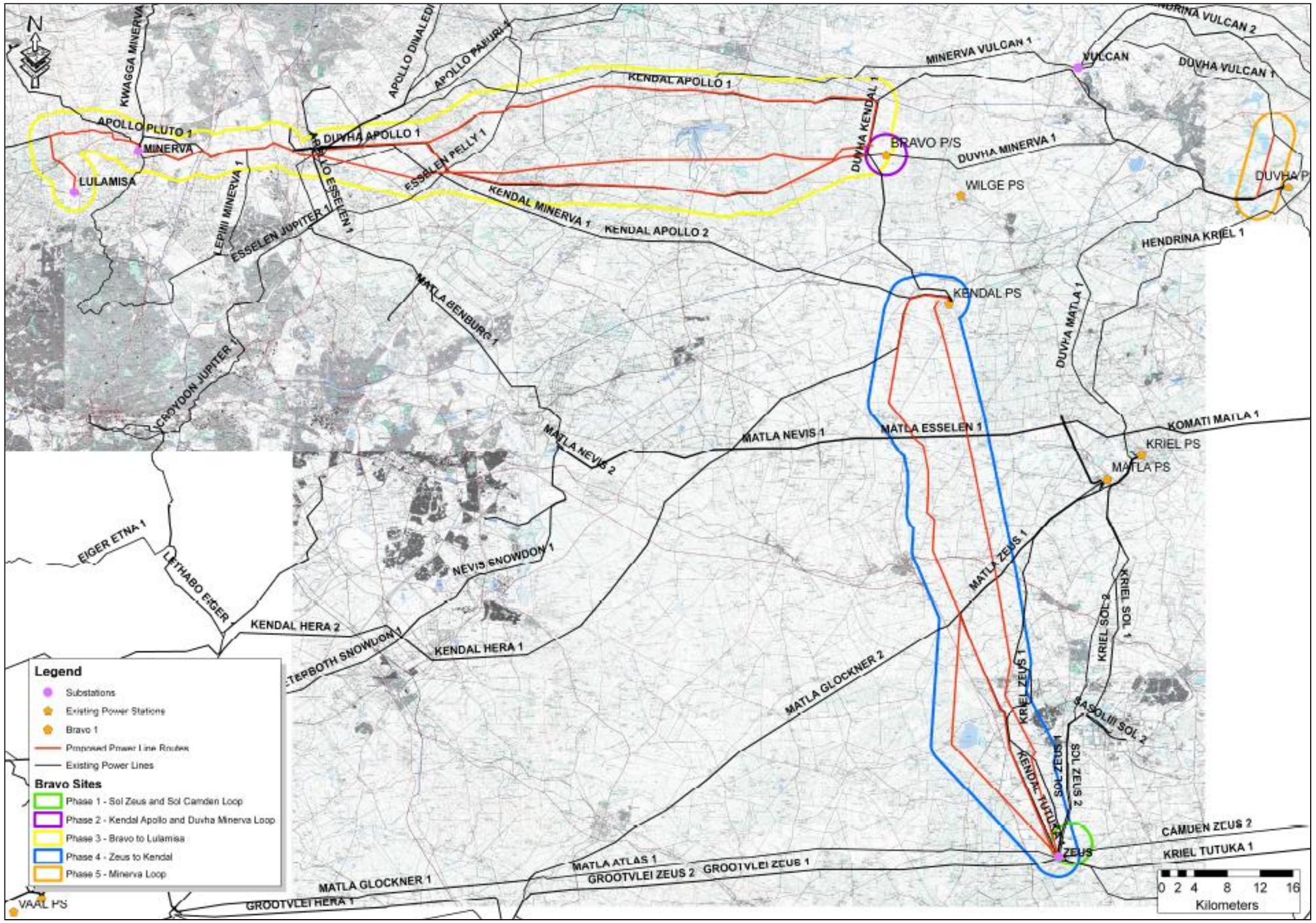


Figure 1. Map indicating an overview of the Bravo Integration Project. This report deals with Bravo 1 where 2 lines by-passing Zeus substation is to be constructed.

1.1 Environmental Impact Assessment Practitioner (EAP)

Eskom Transmission appointed Zitholele Consulting, an independent consultancy, to undertake the Environmental Impact Assessment for the proposed two new Zeus by-pass lines, in accordance with the new EIA Regulations promulgated in April 2006 in terms of the National Environmental Management Act (Act No 107 of 1998). The Regulations became effective on 1 July 2006.

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. The company was established to promote new opportunities for and to increase the level of participation by historically disadvantaged individuals (HDIs) in the ownership, management and control of economic activities.

Mr Johan Hayes from Zitholele Consulting was appointed as Environmental Assessment Practitioner (EAP) to undertake the EIA. Mr Hayes is an Environmental Scientist within the Environmental and Social Division of Zitholele Consulting with 5 years experience. He has an honours degree in Zoology and obtained a MSc degree in Ecological Assessment. He is an environmental practitioner registered with SACNASP and an Associate Environmental Auditor (ISO 14001) with the IEMA. He has a broad base of experience in Environmental Impacts Assessments, Basic Assessments, Strategic Environmental Assessments, Water Quality and Project Management of environmental projects gained through five years of work in the South Africa on various EIA, SEAs and water quality related projects. Johan has worked in the private consulting field as well as in the engineering field lending to experience in various infrastructure related projects.

The EAP have no vested interest in the proposed project and hereby declares its independence as required by the EIA Regulations.

1.2 EAP Contact details:

Company: Zitholele Consulting (Pty) LTD

Contact: Mr Johan Hayes (MSc Ecological Assessment)

Address: P O Box 6002, Halfway House, 1685

Cell: 082 859 9132

Landline: 011 254 4932

Fax: 011 805 2100

E-mail: johanh@zitholele.co.za

1.3 Proponent details

Company: Eskom Transmission: Land and Rights

Contact: Project Manager: Mr Vuledzani Thanyani

Address: Eskom Transmission, Mega Watt Park, Maxwell Drive, Sunninghill

Landline: 011 800 5601

Fax: 011 800 3917

1.4 Legal Requirements

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 National Environmental Management Act (Act No. 107 of 1998). The National Department of Environmental Affairs and Tourism (DEAT) is the competed authority as described in NEMA section 24C (d)(iii).

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 terms of Regulation GNR 387, activity 1(l), a full Environmental Impact Assessment comprising both scoping and impact assessment, is necessary for the proposed new 400 kV overhead power lines. This activity is listed as follows:

- *Activity 1(l): The transmission and distribution of above ground electricity with a capacity of 120 kilovolts or more. ;*

1.4.1 Additional legal requirements and framework

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 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.

Integrated Energy Plan (IEP) – 2003

DME 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.

1.4.2 Legal requirements in terms of other Acts

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

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

The proposed overhead power lines comprise certain activities (e.g. changing the nature of a site exceeding 5 000 m^2 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)

Should Eskom decide to construct the proposed power lines and associated infrastructure, they will need to acquire the requisite land. Eskom has a policy of "willing buyer, willing seller", and therefore endeavors to purchase land where ever possible. However, the State and State-owned-enterprises can acquire the rights to use or possess the requisite land through the Expropriation Act. The 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. As this proposed project will take place on existing Eskom property, this Act would not be applicable.

1.5 Objectives of this report

This report addresses the requirements of the scoping and impact assessment processes as outlined in the EIA regulations. The aim of this Draft Scoping Report (DSR) is to:

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

2 PROJECT DETAILS

2.1 Project Description

In order for the Bravo power station to be integrated within the existing Eskom infrastructure, Eskom propose to construct two 400 kV by-pass lines in the vicinity of the existing Zeus Substation. Currently two 400 kV overhead power lines exist between Sol and Camden Substations. Eskom propose that these two power lines by-pass Zeus substation and create two 400 kV power lines between Sol and Camden substations. Each of these proposed by-pass lines will be approximately 10 km in length.

2.2 Project motivation

Eskom applies an Integrated Strategic Electricity Planning (ISEP) process to identify long-term options regarding both the supply and demand sides of electricity provision in South Africa. The ISEP is informed by the White Paper on the Energy Policy of the Republic of South Africa (1998), the Integrated Energy Plan (2003) and the National Integrated Resource Plan (2003/ 2004).

The latest ISEP (October 2005) has identified the need for increased base load electricity supply by the year 2010, while peaking generation is being attended to in the shorter term. The National Energy Regulator of South Africa (NERSA) is the regulatory authority responsible for the electricity supply industry in South Africa. In its National Integrated Resource Plan (NIRP), NERSA has determined that, while various alternative and renewable electricity generation options should be continually investigated, coal should still provide the main fuel source in South Africa. Accordingly, coal-fired power stations will be required for the expansion of generation capacity during the next 20 years.

As part of the increased electricity supply plan, the construction of the new Bravo power station, a coal-fired power station between Bronkhorstspruit and Witbank, will commence later this year at a cost of around R80-billion. Environmental authorisation for this new power station has been granted by DEAT in 2007. Bravo, which forms part of Eskom's R150-billion expansion plan, is expected to begin delivering electricity around 2013.

Since the Bravo power station will aid in the delivery of additional electricity supply, this proposed Bravo Integration Project is necessary to integrate and connect Bravo into the existing Eskom electricity network. The need for the proposed construction of Zeus by-pass lines, to form the Sol-Camden 400 kV powerlines was identified due to a current frequent shortage of electricity in the areas of Kriel, Delmas and Secunda. This proposed project will ensure that sufficient electricity resources are provided to these areas.

2.3 Location

The location of the proposed two by-pass lines is within a 1 km radius from the existing Zeus Substation, within the Govan Mbeki Local Municipality, Mpumalanga (Figure 2). The topography of

the region is gently undulating to moderately undulating landscape of the Highveld plateau. Some small scattered wetlands and pans occur in the area, rocky outcrops and ridges also form part of significant landscape features in the area. Land-Use is dominated by maize and sunflower farming, coal mines and power stations.

The region is known for rich deposits of coal reserves and accordingly, several coal mines and associated coal-fired power stations can be found in the area. Mining in the area is supported as long as cognizance is taken of environmental issues, including rehabilitation.

2.4 Project Schedule

Firstly, an EIA needs to be conducted in order to obtain authorisation from DEAT that is required before the proposed project may proceed. As part of the assessment, a Draft Environmental Management Plan (EMP) for the construction of the overhead power lines and associated infrastructure will also be submitted to DEAT for their approval. An EMP provides best-practice guidelines to ensure that construction is done with minimal negative impacts on the environment. Following the EMP during and after construction, will ensure compliance to environmental regulations. Depending on the outcome of the environmental assessment and subsequent decision by DEAT, Eskom anticipates construction to commence in 2009.

2.5 Project Route Alternatives

The study area for the proposed by-pass lines is an approximately 1 km area surrounding the existing Zeus substation (Figure 2). Three alternative proposed route alignments will be investigated in this EIA. These alternatives were chosen based on available environmental information, technical feasibilities as well as existing Eskom 400 kV servitudes.

Alternative 1 is to construct the proposed by-pass line approximately 500 m outside of the existing Zeus substation property. This alternative will lead to a longer length of new power line proposed, and will be outside of Eskom property.

Alternative 2 is to construct the proposed power line within Eskom property, approximately 250 m from the existing Zeus substation. This alternative will lead to a shorter power line length with no landowners being directly affected.

Alternative 3 is to construct the proposed power line along the parameters of the Zeus substation footprint. This alternative will lead to the shortest power line length but is technically not feasible due to existing power lines surrounding Zeus, as well as planning constraints.

The No-Go alternative would also be assessed. In the case that none of the three alternatives is suitable for the proposed by-pass lines, the recommendation would be that the proposed power line not be constructed.

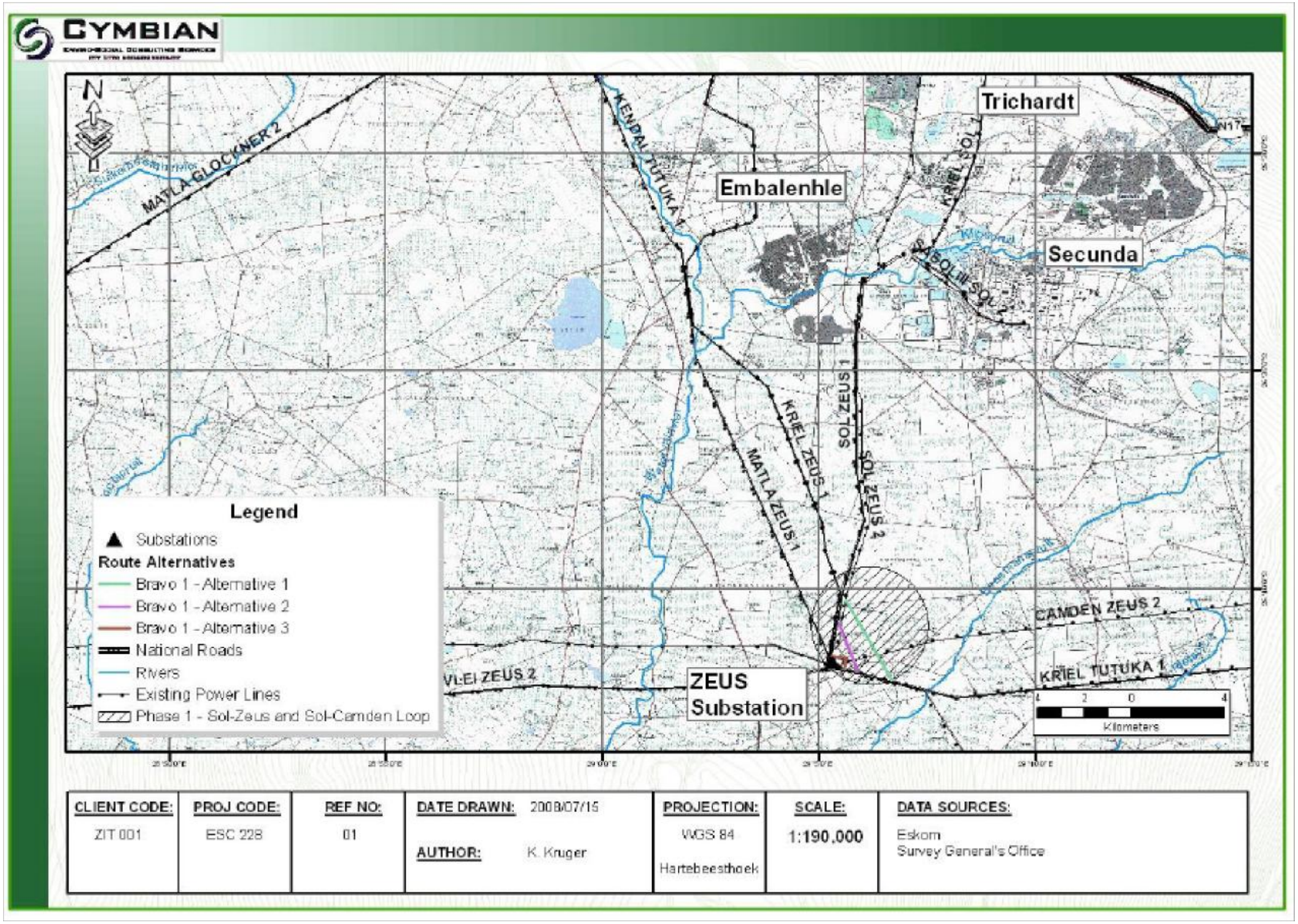


Figure 2. The study area of the proposed Zeus by-pass lines indicating the three alternative route alignments assessed.

3 RECEIVING ENVIRONMENT

3.1 Topography and land-use

3.1.1 Methodology and Data Sources

The topography of the area was taken from the Surveyor General 1:50 000 topocadastral map sheet of the area, namely 2629 CA. Land Use was determined utilizing a GIS desktop study, the data was obtained from the Council for Scientific and Industrial Research (CSIR) Land Cover database.

3.1.2 Regional Description

The topography of the region is gently undulating to moderately undulating landscape of the Highveld plateau. Some small scattered wetlands and pans occur in the area, rocky outcrops and ridges also form part of significant landscape features in the area. Altitude ranges between 1420-1760 mean metres above sea level (mamsl).

Land-Use is dominated by maize and sunflower farming, coal mines and power stations. Land use of the region is grouped into urban, cultivation, grassland / plantations, mines and quarries and waterbodies / wetlands. From the map below (Figure 3) it can be seen that the proposed route traverses only cultivation, grassland / plantation land uses and certain waterbodies. Waterbodies are the only land use regarded as sensitive and as such certain mitigatory measures will be outlined during the EIA.

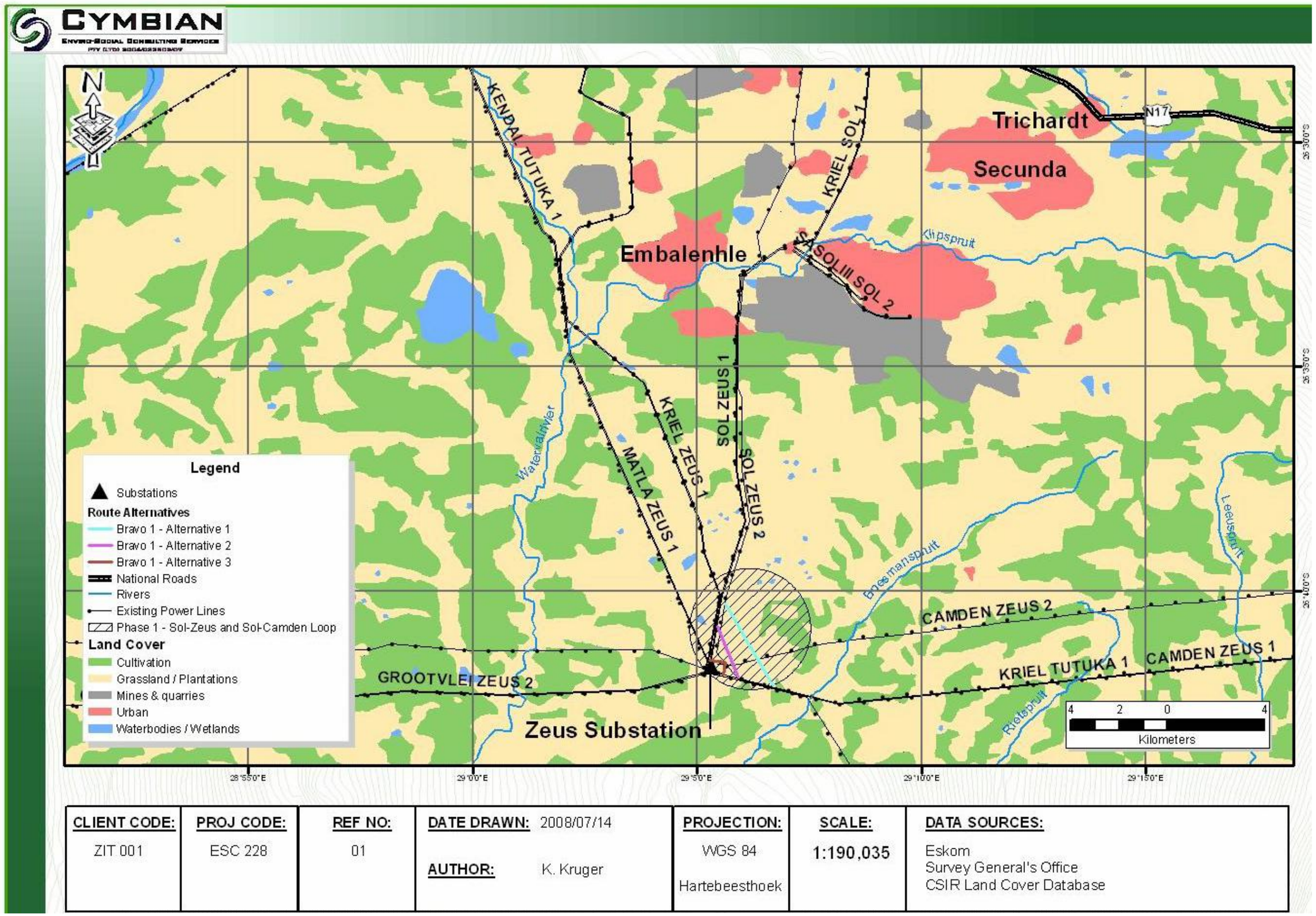


Figure 3. Land Cover of the surrounding area

3.1.3 Sensitivities

As mentioned above, wetlands and ridges occur in the area. Wetlands provide important ecosystem goods and services such as flood attenuation, regulating water flow, recharging groundwater and purifying and removing pollutants from water. Wetlands also provide habitat to a large number of species, many of which are important economically.

Ridges are considered sensitive because ridges and the area immediately surrounding them provide habitat for a wide variety of fauna and flora, some of which are Red List, rare or endemic species. Ridges also perform functions that are necessary for the sustainability of ecosystems such as the recharging of groundwater, wetlands and rivers, wildlife dispersal and habitat for essential pollinators. Ridges also fulfill a socio-cultural role in that they provide aesthetically pleasing environments or ecosystems.

3.2 Geology and Drainage Features

3.2.1 Methodology and Data Sources

The geological analysis was undertaken through the desktop evaluation using a Geographic Information System (GIS) and the relevant data sources. The geological data was taken from the Environmental Potential Atlas Data from the Department of Environmental Affairs and Tourism as well as geological data supplied by the Gauteng Department of Agriculture, Conservation and Environment (GDACE). Surface water data was taken from the WR90 Data supplied by the Department of Water Affairs and Forestry (DWAF) as well as data supplied by GDACE.

3.2.2 Regional Description

The underlying geology is shale, sandstone or mudstone of the Madzaringwe Formation (Karoo Supergroup), or the intrusive Karoo Suite dolerites which feature prominently in the area. The area falls within the catchments C12D, E, F and while C12D does not directly fall within the area of the proposed powerline it froms part of the drainage area for the Waterval River, the Klipspruit draining into the Waterval River (Figure 4).

There are five major coal seams in the vicinity of the site, in varying degrees of exploitation. Other minerals and metals found in the area are flint, iron, gold, molybdenite, cobalt, and malachite (Emalahleni Local Municipality Spatial Development Framework, 2005).

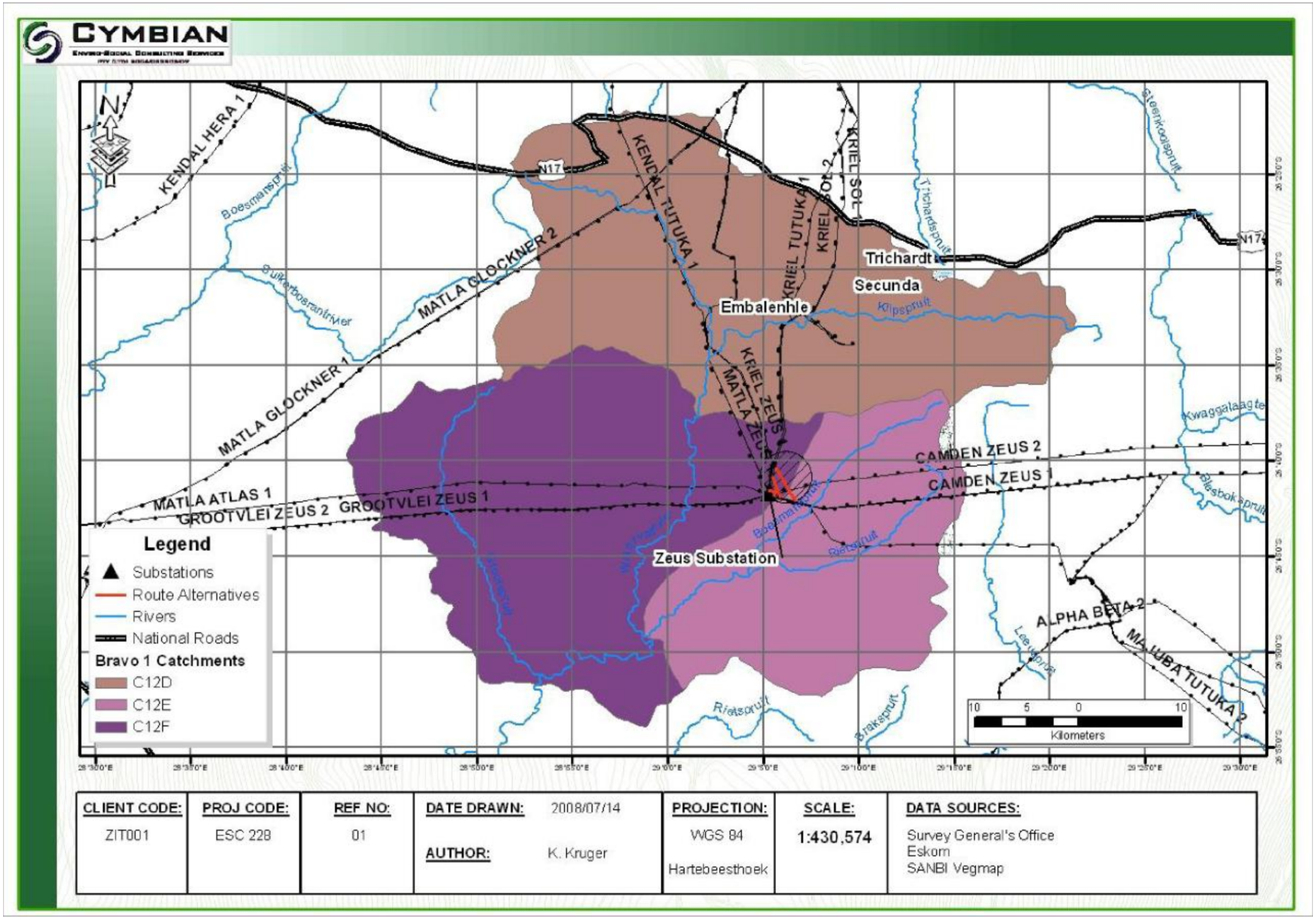


Figure 4. Surface water and drainage features of the area

3.3 Climate

3.3.1 Methodology and Data Sources

Climate information was attained using the climate of South Africa database, as well as from The Vegetation of South Africa, Lesotho and Swaziland (Mucina and Rutherford 2006).

3.3.2 Regional Description

The study area displays warm summers and cold winters typical of the Highveld climate. The average summer and winter daytime temperatures (AVD) are 25°C and 20°C, respectively. The region falls within the summer rainfall region of South Africa, rainfall occurs mainly as thunderstorms (Mean Annual Precipitation 662mm) and drought conditions occur in approximately 12% of all years. Mean annual potential evaporation of 2060mm indicates a loss of water out of the system. The region experiences frequent frosts, with mean frost days of 41 days, winds are usually light to moderate with the prevailing wind direction is north-westerly during the summer and easterly during winter.

3.3.3 Sensitivities

The Highveld is well known for seasonal thunderstorm that can produce incidents of hail and strong winds. The storms in themselves do not pose a potential threat to the proposed power lines, however the lightning associated with these storms does have potential to disrupt power transmission.

3.4 Infrastructure

Access to the proposed project area is via the N17 national road. From the N17, the R346 south by-passes the existing Zeus substation on the left.

3.5 Ecology

3.5.1 Flora

3.5.1.1 Methodology and Data Sources

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

3.5.1.2 Regional Description

According to the South African National Biodiversity Institute, the proposed route falls within the Grassland Biome, where most of the county's maize production occurs. The vegetation of the area is classified as Eastern Highveld Grassland (Figure 5**Error! Reference source not found.**), extending from Mpumalanga to Gauteng and to a very small extent into Free State and North West.

Soweto Highveld Grassland supports short to medium-high, dense, tufted grassland dominated almost entirely by *Themeda triandra* and accompanied by a variety of other grasses such as Elionurus

muticus, *Eragrostis racemosa*, *Heteropogon contortus* and *Tristachya leucothrix*. Vegetation in the vicinity of rocky outcrops is, to some extent, still intact, i.e. consisting of indigenous vegetation, but is becoming degraded due to grazing pressures. *Acacia karroo, Diospyros lycioides* and *Rhus pyroides* are the dominant indigenous shrubs found in low-lying areas, drainage lines and seasonal streams. In areas of rocky outcrops, shrubs such as *Diospyros lycioides*, *D. austro-africana, Ziziphus mucronata, Celtis africana* and *Rhus pyroides* are present. Patches of exotic black wattle (*Acacia mearnsii*) and blue gums are found in the project area.

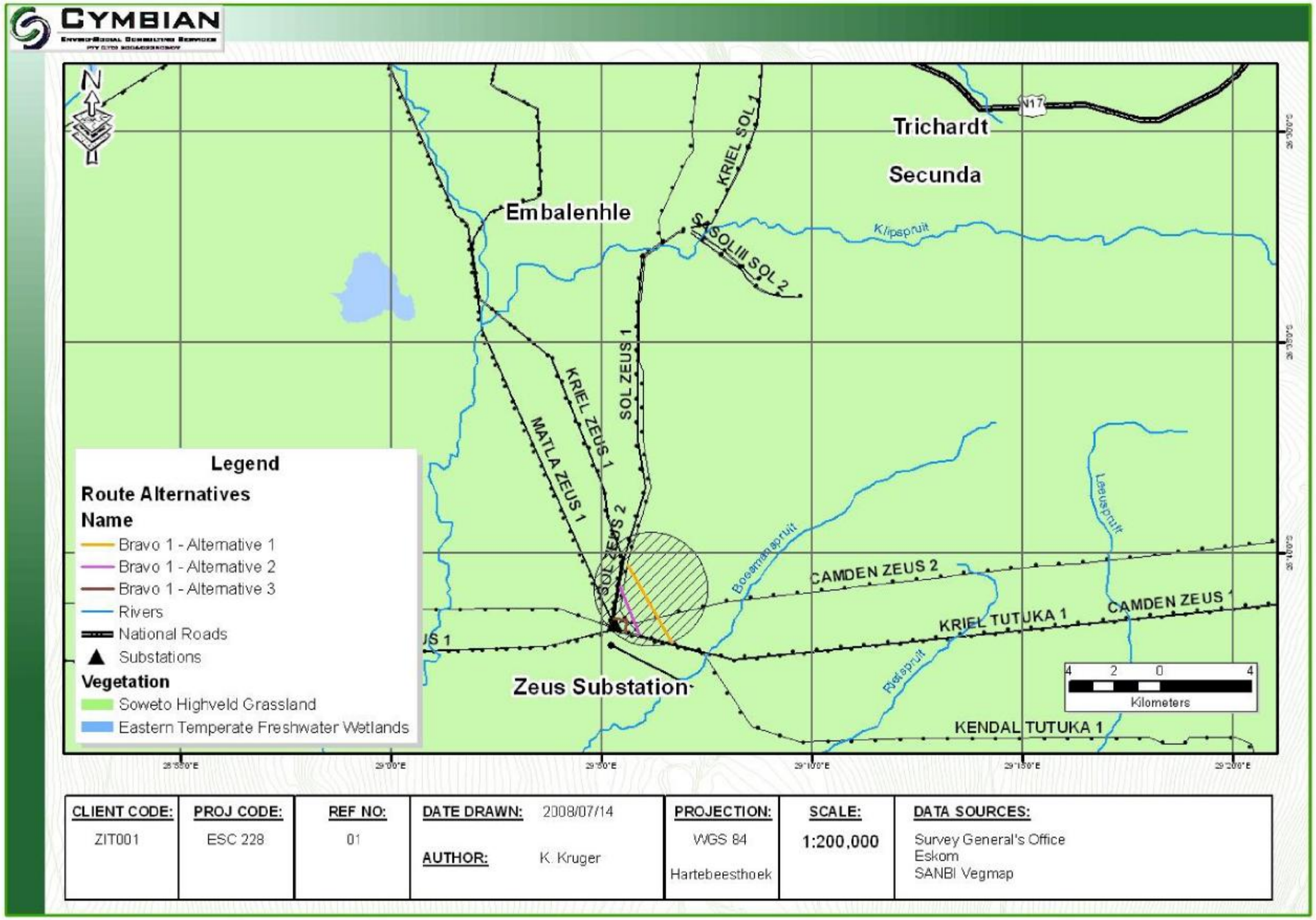


Figure 5. Vegetation of the area

3.5.1.3 Sensitivities

The Soweto Highveld Grassland is endangered and has a target conservation status of 24%, however only a handful of patches are conserved in statutory conservation areas and privately conserved areas. Almost half the area has been transformed by cultivation, urban sprawl, mining and road infrastructure. The presence of Red Data floral species will be investigated during the EIA and if necessary mitigatory measures will outlined as part of the EIA.

3.5.2 Fauna

3.5.2.1 Methodology and Data Sources

A literature review of the faunal species that could occur in the area was conducted. C-Plan data provided from the Mpumalanga provincial department was used to conduct a desktop study of the area. This data consists of terrestrial and aquatic components, ratings provide an indication as to the importance of the area with respect to biodiversity. A detailed avifauna study will be conducted in the summer months as part of the final report.

3.5.2.2 Regional Description

As a consequence of mining and farming in the area, it appears that only small animals are to be found at the site. Small mammals known to occur in the area include hedgehog, rabbits, polecat, meerkat and the ubiquitous rats and mice. Given the habitat, it is likely that korhaans, grass owls, larks, longclaws, species of *Euplectes* (bishops and widows), weavers, starlings and sparrows occur in the grassveld.

The area surrounding the proposed loop in lines does include areas of highly significant terrestrial and aquatic habitats (Figure 6and Figure 7. These areas will should be treated as sensitive and should therefore be managed accordingly; if feasible they should be avoided. Details of said management procedure will be outlined as part of the EIA and contained in the EMP.

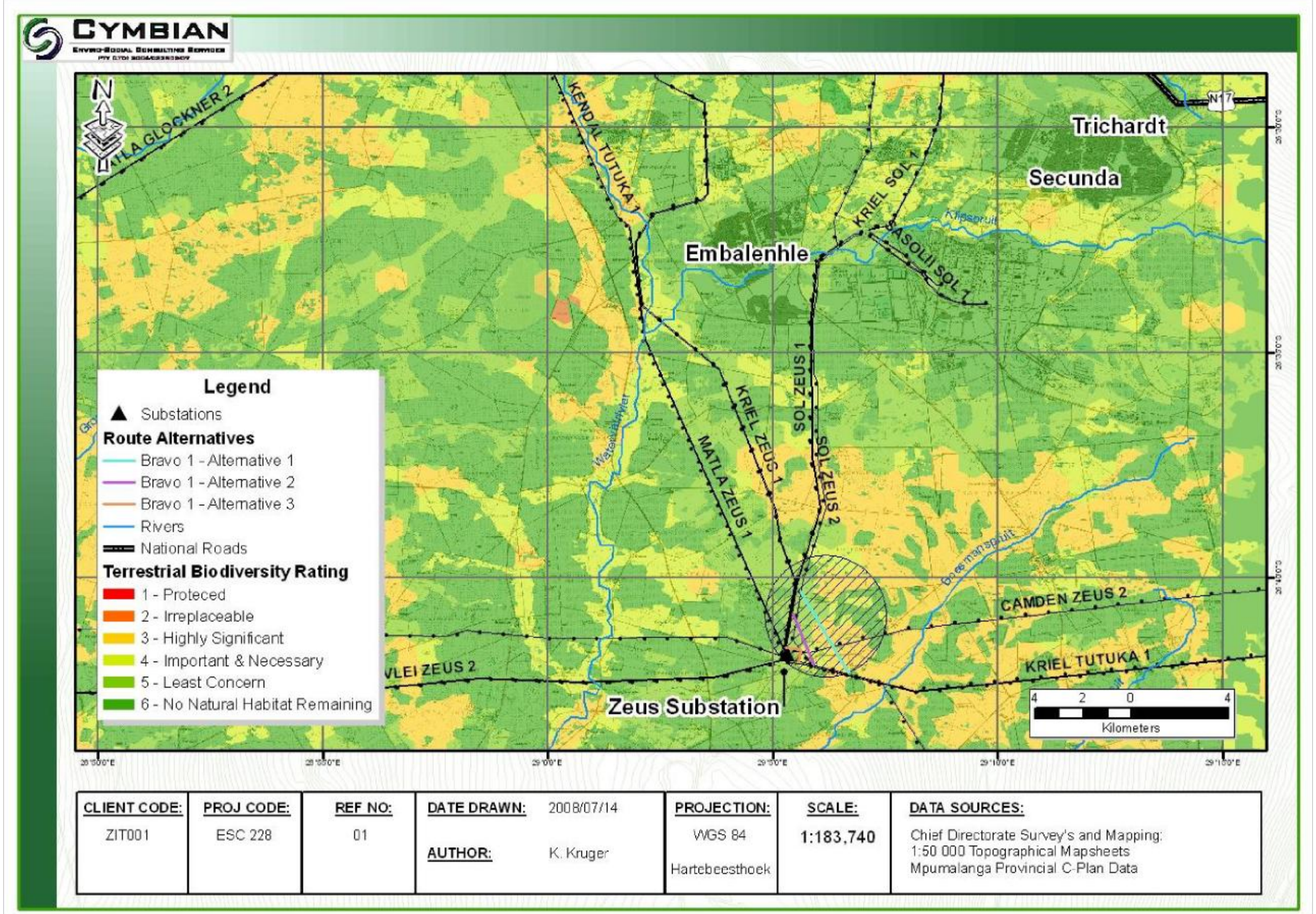


Figure 6. Sensitive fauna and flora (Terrestrial Diversity)

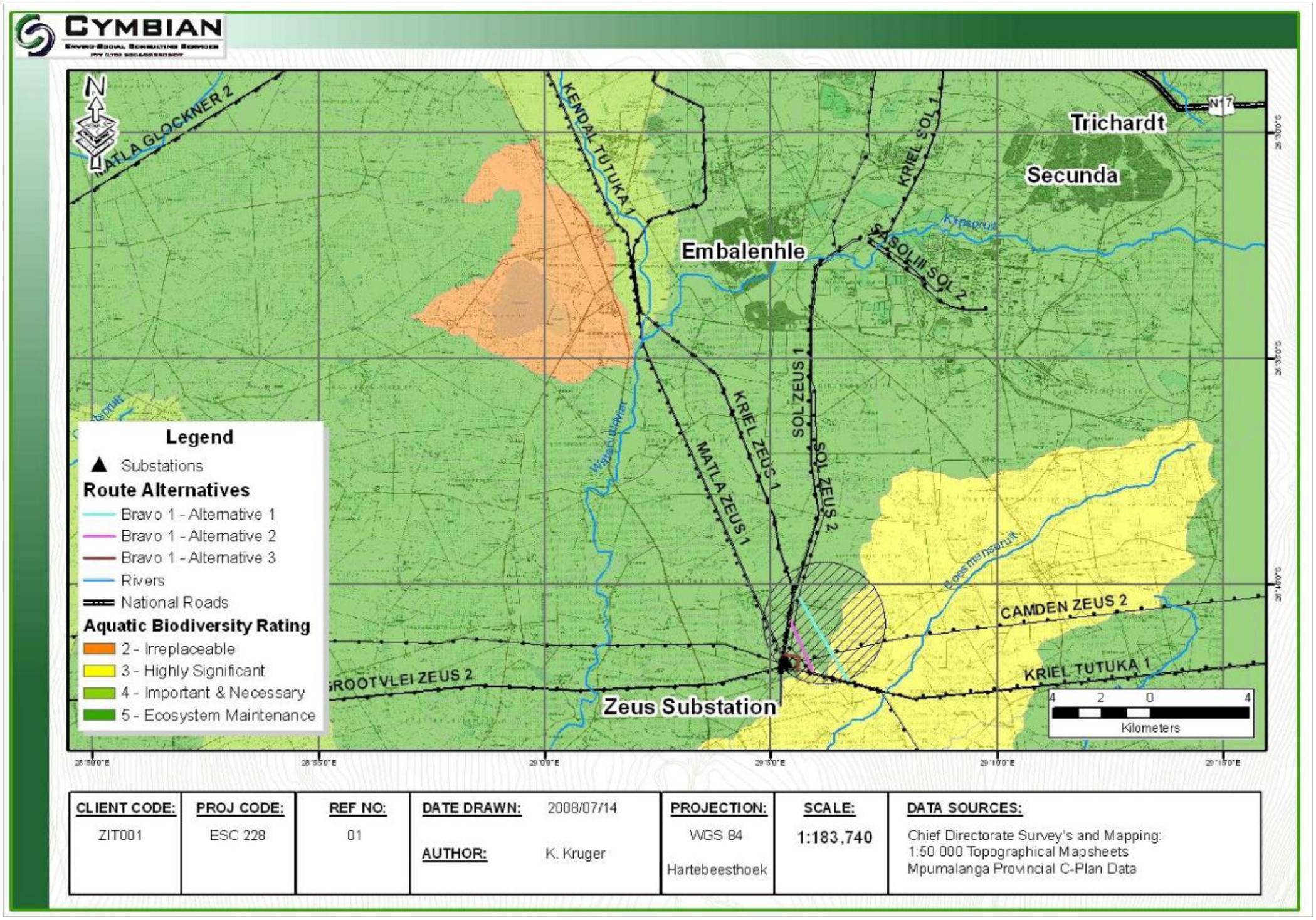


Figure 7. Sensitive fauna and flora (Aquatic Biodiversity)

3.5.2.3 Sensitivities

As mentioned above, a detailed avi-faunal assessment will be conducted. Sensitive areas should be avoided and managed according to the EMP as outlined in the EIA.

3.6 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.

4 SCOPING PROCESS

4.1 Technical Process

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

4.1.1 Pre-consultation meeting with client

On notification and receipt of the appointment letter from Eskom, a project inception meeting held on 13 November 2007 between Eskom and 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;
- Analyse the preliminary substation locations and power line route alignments.

4.1.2 Consultation with authorities

A pre-application consultation with Mr. Wayne Hector of DEAT was held on 21 April 2008. During this meeting the proposed project was presented to the authorising authority and the project-specific requirements for environmental authorisation were discussed and finalised.

4.1.3 Application forms and landowner consent

Since the property on which the proposed power lines are to be constructed already belongs to Eskom, no Landowner consent forms are necessary. The EIA application form (Appendix A) for the proposed project was submitted to DEAT on 7 January 2008.

4.1.4 Site Visit

A site visit was conducted by Mr Johan Hayes and Mr Andre Joubert from Zitholele Consulting on 24 April 2008. The objective of this site visit was to familiarise the project team with the area.

4.1.5 Draft Scoping Report and Terms of Reference for Specialist Studies

This Draft Scoping Report (DSR) was prepared on the basis of information and issues identified during the Scoping Phase of this EIA. The Terms of Reference (ToR) for the envisaged specialist studies during the Environmental Impact Assessment Phase and a Plan of Study for EIA are included in Section 6 of this report. The DSR will be updated based on public review and comments obtained from the I&APs. After the public review period, the Final DSR will be submitted to DEAT for approval to commence the Environmental Impact Phase.

4.2 PUBLIC PARTICIPATION PROCESS

Public participation is an essential and legislative requirement for environmental authorisation. The principles that demand communication with society at large are best embodied in the principles of the National Environmental Management Act (Act 107 of 1998, Chapter 1), South Africa's overarching environmental law. In addition, Section 24 (5), Regulation 56 of GN R385 under the National Environmental Management Act, guides the public participation process that is required for an EIA.

The public participation process for the proposed overhead power lines has been designed to satisfy the requirements laid down in the above legislation and guidelines. Figure 8 provides an overview of the EIA technical and public participation processes, and shows how issues and concerns raised by the public are used to inform the technical investigations of the EIA at various milestones during the process. This section of the report highlights the key elements of the public participation process to date.

4.2.1 Objectives of public participation in an EIA

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

- During Scoping:
  - Identify issues of concern, and provide suggestions for enhanced benefits and alternatives.
  - Contribute local knowledge and experience.
  - Verify that their issues have been considered.
- 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 during Scoping is to help define the scope of the technical studies to be undertaken during the Impact Assessment.

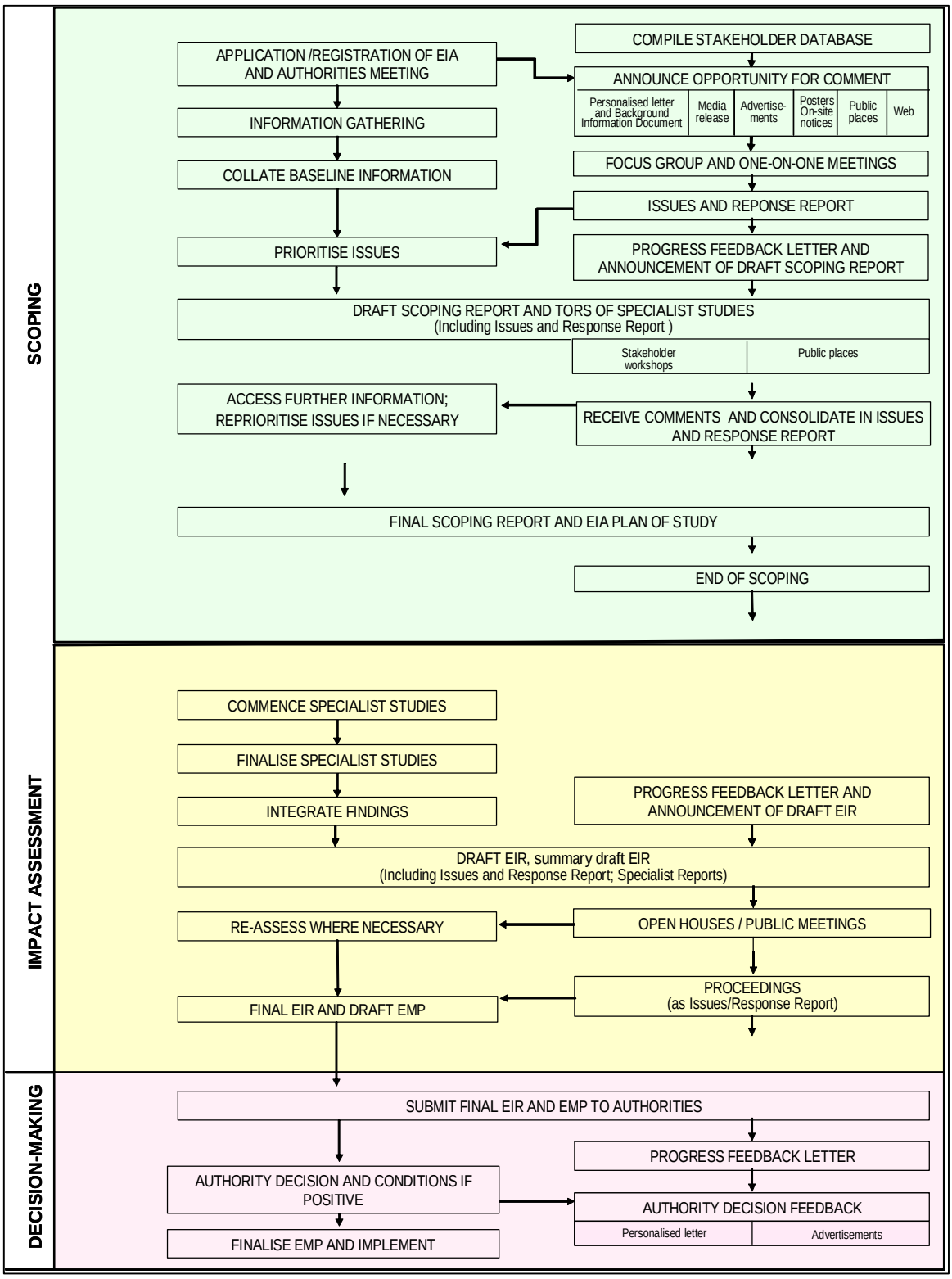


Figure 8. Technical and public participation process and activities that comprise the Environmental Impact Assessment for the proposed new Kappa Substation.

4.2.2 Identification of interested and affected parties

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

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

According to the new 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).

4.2.3 Announcement of opportunity to become involved

The opportunity to participate in the EIA was announced in April 2008 as follows:

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

City Press	27 April
Pretoria News	22 April
Beeld	23 April
The Star	24 April
Citizen	25 April
Pretoria Record Central	25 April
Tshwane Sun West	30 April
Tembisan	25 April
Middelburg Herald	25 April
Witbank News	25 April
Springs Advertiser	23 April
Streeknuus	23 April
Ekasi News	25 April
Ridge Times	25 April
The Echo	25 April

- Notice boards were placed at prominent localities at each alternative site during May and June 2008 at conspicuous places at various public places and on route (Appendix B). Site notices were placed prominently to invite stakeholder participation.

4.2.4 Obtaining comment and contributions

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

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

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

Table 1. List of stakeholder meetings that were advertised as part of the public review period of the Draft Scoping Report.

DATE	VENUE
Monday, 28 July 2008 at 18:00	Midrand
Tuesday, 29 July 2008 at 18:00	Bronkhorstspruit
Wednesday, 30 July 2008 at 18:00	Kendal
Thursday, 31 July 2008 at 18:00	Leandra

Advertisements were placed in the following newspapers to advertise the public review period and stakeholder meetings:

City Press	13 July
Pretoria News	10 July
Beeld	10 July
The Star	10 July
Citizen	10 July
Pretoria Record Central	11 July
Tshwane Sun West	11 July
Tembisan	11 July
Middelburg Herald	11 July
Witbank News	9 July
Springs Advertiser	9 July
Streeknuus	11 July
Ekasi News	11 July
Ridge Times	11 July
The Echo	13 July

4.2.5 Issues and Response Report and acknowledgements

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

The contributions made by I&APs are acknowledged in writing.

4.2.6 Draft Scoping Report

The purpose of the DSR was to enable I&APs to verify that their contributions have been captured, understood and correctly interpreted, and to raise further issues. At the end of Scoping, the issues identified by the I&APs and by the environmental technical specialists, were used to define the Terms of Reference for the Specialist Studies that will be conducted during the Impact Assessment Phase of the EIA. A period of four weeks is available for public review of this report (from Monday 21 July to Thursday, 21 August 2008).

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

- In the Background Information Document of April 2008 (Appendix F).
- In advertisements published (see table above and Appendix B) to advertise the public review period
- In a letter sent out on 7 July 2008, and addressed personally to all individuals and organisations on the stakeholder database.

The Draft Scoping Report, including the Issues and Response Report Version 1, was distributed for comment as follows:

- Left in public places in the project area. The public places where documents are available is listed in the table below:
- Mailed to key stakeholders (Appendix D).
- Mailed to I&APs who requested the report.

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 2. List of public places where the Draft Scoping Report is available

PLACE	CONTACT PERSON	TELEPHONE
Blue Valley Golf and Country Estate, HALFWAY HOUSE	Bothma, Lise	(011) 512 0538
City of Johannesburg: Human Development, HALFWAY HOUSE	Kubheka, Kaiser	(011) 203 3419
Delmas Public Library, DELMAS	Mehlape, Lydia	(013) 665 2425
Kungwini Public Library, BRONKHORSTSPRUIT	Smith, Brenda	(013) 665 2425
Leandra Public Library, LEANDRA	Potgieter, A M	(017) 683 0055
Lebogang Public Library, LESLIE	Mosako, Rosina	(017) 683 3000
Midfield Homeowners Association, MIDSTREAM ESTATES	Du Preez, Tarynlee	(012) 661 0456
Midlands Homeowners Association, MIDSTREAM ESTATES	De Wet, Lizette	087 805 3610
Midstream Homeowners Association, MIDSTREAM ESTATES	van der Westhuizen, Durette	(012) 661 0915
Olievenhoutbosch Library, OLIVENHOUTBOSCH	Nkonki, Bongi	(012) 652 1001
Phola Public Library, OGIES	Mabena, Agnes	(013) 645 0094
Secunda Public Library, SECUNDA	Griesel, Tertia	(017) 620 6183

4.2.7 Final Scoping Report

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

Once the lead authority for the EIA has approved the Final Scoping Report, the Impact Assessment Phase of the EIA will commence. This will comprise various Specialist Studies to assess the potential positive and negative impacts of the proposed project, and to recommend appropriate measures to enhance positive impacts and avoid or reduce negative ones. I&APs will be kept informed of progress with these studies.

4.2.8 Public participation during the Impact Assessment

Public participation during the impact assessment phase of the EIA will mainly involve a review of the findings of the EIA, presented in the Draft Environmental Impact Report, a Summary Report of the Draft EIR, and the volume of Specialist Studies.

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

5 ENVIRONMENTAL IMPACT ASSESSMENT

5.1 Impacts Identified

The proposed overhead power lines are anticipated to impact on a range of biophysical and socio-economic aspects of the environment. One of the main purposes of the EIA process is to understand the significance of these potential impacts and to determine if they can be minimized or mitigated. The Scoping Phase describes the full range of potential impacts and then proposes, based on a clear motivation, which impacts should be considered in detail in the EIA Phase.

Based on the duration of construction, negative impacts can be readily predicted and mitigated. It should be noted that a comprehensive construction phase Environmental Management Plan (EMP) would be developed and implemented to regulate and minimize the impacts during the construction phase. The impacts identified during the Scoping Phase of this EIA are included in Table 3.

Table 3. Impacts identified during the Scoping Phase of this EIA.

Impact	Description
Ecology and Avi-fauna	The proposed power lines may impact on the existing fauna and flora within the parameter of the proposed power line route. These impacts may occur due to the construction activities of the power line.
Soils and Geology	The construction of the proposed power lines may impact on the soils and geology of the study area as top soil will be removed.
Noise impacts	Noise impacts may occur during the construction of the proposed power lines.
Visual	The proposed by-pass lines may have visual impacts on surrounding areas.
Historical	The construction of the proposed power lines may negatively impact on historical and archaeological resources occurring within the proposed route.
Human and Animal Health	There are perceptions that power lines may negatively affect human and animal health

5.1.1 Ecology (Fauna and Flora) and Avi-Fauna

The construction of the proposed power lines will have a direct impact on the fauna and flora of the project area, as the clearance of vegetation would occur for and during construction of the proposed power lines. If present, the loss of red data and environmentally significant floral species may thus

occur if no mitigation measures are implemented. During this EIA study, a Draft Environmental Management Plan (EMP) will be developed to guide the proposed construction process, and to recommend mitigation measures to minimise and/or prevent negative impacts occurring.

5.1.2 Visual

Although existing power lines may already exist in the area, the proposed additional 400 kV power lines may have an additional impact on the visual aesthetics of the project area. The cumulative impacts from a visual perspective need to be assessed.

5.1.3 Historical and Archaeological

The location and construction of the proposed power lines may have an impact on the historical and archaeological qualities of the area. If any historical resources are found to occur within the proposed alternative corridors investigated, the Draft Environmental Management Plan (EMP) will guide the proposed construction process, and recommend mitigation measures to minimise and/or prevent negative impacts occurring.

5.1.4 Geology and Land Capability

The location and construction of the proposed power lines will lead to a loss of land for agricultural purposes, and a loss of top soil will occur during construction of the proposed power line. Furthermore, the geology of the proposed routes should be investigated since the geology of the area may pose technical infeasibilities during the construction of the proposed power lines.

5.1.5 Human and Animal Health

There is an ever increasing misconception with regard to health risks associated with Electric Magnetic Fields (EMFs) and Electric Transmission power lines. The EMFs to which people and animals are exposed to due to power lines and EMFs are well within the International Radiation Association (IRPA) recommended guidelines.

6 PLAN OF STUDY FOR EIA

6.1 Technical Process

6.1.1 Prepare Specialist Investigations

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

- Historical and Archaeological Assessment;
- Soils and Geology Assessment;
- Land capability;
- Ecology (Fauna and Flora) and Avi-fauna Assessment;
- GIS and Visual Assessment

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

6.1.2 Specialist Studies: Terms of Reference (ToR)

ToR: Soils and Geology

A Geotechnical investigation would be conducted for the proposed overhead power lines. The objectives of this study will be:

- Review existing geological information available;
- An aerial photographic study to assess the accessibility, vegetation cover, drainage lines, slope aspects and percentage outcrop of each of the tree sites.
- A field visit to verify the aerial photographic study observations. Additionally, during the visit, the depth and engineering properties of regolith will be judged from natural exposure (dongas) and hand augering (in case of sandy soils) where applicable. The rock types of outcrop will be identified and the engineering properties thereof assessed.
- A map will be compiled of each of the alternative terrains, indicating the features observed.
- A short report will be compiled, in which the alternatives will be prioritized based on the results of the study.

ToR: Ecology and Avi-fauna

An Ecological and avi-fauna investigation would be conducted on the alternative power lines routes for the proposed project. 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 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 three proposed alternative routes;
- Compile an ecological report, indicating findings, recommendations and maps indicating sensitive and/or no-go areas.

ToR: Historical and Archaeological

This Heritage Impact Assessment would 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 (Phase II studies) 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.

ToR: GIS and Visual Assessment

This GIS and Visual Assessment would be conducted on the alternative routes for the proposed overhead power lines. 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 on each of the three alternative sites;
- 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 three proposed alternative sites;

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

6.1.3 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 (terminology has been taken from the Guideline Documentation on EIA Regulations, of the Department of Environmental Affairs and Tourism, April 1998):

- **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:

***Probability**:* 5 – Definite/don't know 4 – Highly probable 3 – Medium probability 2 – Low probability 1 – Improbable 0 – None	***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
***Scale**:* 5 – International 4 – National 3 – Regional 2 – Local 1 – Site only 0 – None	***Magnitude**:* 10 - Very high/don't know 8 – High 6 – Moderate 4 – Low 2 – Minor

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

Significance Points (SP) = (Magnitude + Duration + Scale) x 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.

6.1.4 Draft EIA Report and EMP

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

6.2 Public Participation

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

- Announcement of the availability and public review of the draft Environmental Impact Report;
- Announcement of the availability of the final Environmental Impact Report; and
- Notification of the authorities' decision with regard to Environmental Authorisation.

Information about each step is provided below.

6.2.1 Announcing the availability of the Draft EIR and EMP

At this point, specialist assessments would have been conducted and the Draft EIR and EMP would be ready for public review. A letter will be circulated to all registered I&APs, informing them 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 workshop / open house.

6.2.2 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 assessments 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 description of alternatives 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, stakeholder workshops with an open house component will be arranged to afford stakeholders the opportunity to obtain first-hand information from the project team members and also to discuss their issues and concerns.

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

6.2.3 Announcing the availability of the Final EIR and EMP

After comments from I&APs have been incorporated, all stakeholders on the database will receive a personalised letter to report on where we are in 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.

6.2.4 Announce authorities' decision on Environmental Authorisation

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

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

7 CONCLUSION AND RECOMMENDATIONS

Eskom appointed Zitholele Consulting to undertake the Environmental Impact Assessment for the proposed two 400 kV by-pass lines, by-passing Sol substation. This scoping study was undertaken with the aim of investigating potential negative impacts on the biophysical environment and identifying issues, concerns and queries from I&APs.

The following key conclusions and recommendations are made from the scoping study:

- There are no environmentally sensitive areas close to the proposed route location and the proposed power line is unlikely to have significant environmental impacts.
- Specialist studies, as indicated in Section 6 should be conducted to provide additional information on potential environmental impacts of the proposed landfill upgrade.
- A construction EMP must be developed and effectively implemented by the contractor under the supervision of the engineer and/or Environmental Practitioner.

ZITHOLELE CONSULTING (PTY) LTD

Johan Hayes Etienne Roux

APPENDIX A

EIA Application Form, Minutes if Inception Meeting, DEAT letter requesting exemption from certain activities

APPENDIX B

Newspaper Advertisements and Site Notices

APPENDIX C

Project Location Map

APPENDIX D

I&AP Database

APPENDIX E

Issues and Response Report

APPENDIX F

Background Information Document