

**Scoping Report -
East Coast Gas 400kV Power Lines
Richards Bay,
KwaZulu-Natal**

Commissioned by

ESKOM HOLDINGS PTY (Ltd)

Compiled by

ekoInfo CC & Associates

January 2019

DRAFT

ekoInfo CC

P.O. Box 72847
Lynwood Ridge
0040
Pretoria
Gauteng
RSA
<http://www.ekoInfo.co.za>

Member: Willem de Frey
Registration no: CC1995/34111/23

Tel: 012-365-2546
Fax: 012-365-3217
Email: wdefrey@ekoInfo.co.za



20 Years

1995 - 2015

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1 EXECUTIVE SUMMARY

Eskom mandate is to ensure a reliable electricity supply of acceptable quality and it is essential for the economic development of South Africa. In line with this mandate Eskom is currently in the process of obtaining authorisation for the development of the Richards Bay Combined Cycle Power Plant (CCPP).

The development of the CCPP is proposed in the Richards Bay Industrial Development Zone (IDZ) phase 1D. Eskom requires the power generated by the proposed CCPP to be integrated with its current 400kV infrastructure within the Richards Bay area. The proposed powerlines are connecting to existing powerline infrastructure that connects existing substations. These include Impala, Athene and Invubu substations. The construction of these proposed power lines will require Environmental Authorization issued by the National Department of Environmental Affairs (DEA)

The purpose of the CCPP is to ensure the stabilization of the power supply and reduce transmission losses within the Richards Bay and Kwazulu-Natal area. Electricity to be generated in the proposed CCPP will need 4 x 400kV transmission power lines to distribute power from the proposed power plant.

Comment [AS1]: Evacuate

The new proposed 400kV lines are therefore required to ensure the optimal transmission of the generated power into the Eskom grid.

Eskom requires the following associated infrastructure as part of the proposed new power lines:

- Typical 400kV self-supporting and guyed structures.
- 3 or 4 bundle conductors with Aluminium Conductor Steel Reinforced
- Span length typically between 300 m– 600 m;
- Upgrade all applicable 400kV underrated switchgear;
- Install 4 Fault limiting reactors at the 132kV side of the transformers at Athene substation;
- Loop into Athene- Invubu and Athene – Umfolozi 400kV lines and construct 4 x 400kV 12 km lines to the PS substation;
- Establish 400kV double busbar with 2 bus couplers, 4 bus sections and transfer bus at the PS substation;
- Equip 4 x 400kV feeder bays at the PS substation;
- Equip (x) x 400kV transformer bays at the PS substation
- Establish control room and 400kV yard with associated equipment, fencing and earthworks for the 400kV yard

The scoping assessment that pre-seeded the Plan of Study has found two main areas of concern that will be investigated during the EIA phase of the project, see Figure 1. A site visit during the scoping phase indicated that the following specialist studies must be done during the EIA phase:

- Biological – Fauna; Herpetofauna; invertebrates
- Biological - Flora
- Avifauna
- Soil and Land capability
- Geology
- Visual
- Social and Heritage
- Surface water and Wetland Assessment.

The EIA report will assimilate the specialist studies and determine the overall impacts and required mitigation pertaining the proposed power lines. The Plan of Study indicates the methodologies that each speciality will follow during the EIA phase to ensure that the competent authorities have enough information to make an informed decision. The Environmental Impact report will take into consideration various alternatives as well as the following development phases:

- Planning;
- Construction;
- Operational / Maintenance.

It may be required that the impact of decommissioning be determined, as this is one of the alternatives to be investigated.

The impact assessment will take into consideration cumulative impacts including:

- Noise;
- Construction activities and camp;
- Traffic disruption;
- Access to construction sites;
- Construction waste management;
- Waste management if decommissioning takes place;

Throughout the project, including the Scoping and EIA phases, public participation will play a vital role and will adhere to requirements as set out in NEMA. The initial public participation process has already raised concerns. The next engagement will be during the review of the Draft Scoping report. The report was made available for a 30 day review period from 25 January 2019.

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2 INTRODUCTION

Eskom supplies approximately 96% of South Africa's electricity and more than 45% of Africa. Eskom uses various technologies to generate electricity, the combination of which is called the 'plant mix'. The plant mix includes a Coal fired power station, Africa's first nuclear power station - Koeberg, two conventional hydroelectric power stations and three hydro pumped storage schemes. The last of the present mix are four quick reaction gas turbine power stations. Eskom also has a Wind farm as part of the mix.

Eskom Holdings SOC Ltd (Eskom) has appointed EkoInfo CC to conduct the necessary Environmental Authorisation process to obtain authorisation for 4 new 400kV power lines required within the Richards Bay area (~~Figure 1~~~~Figure-4~~). The requirements for the new power lines are due to the proposed construction of the new Richards Bay Combined Cycle Power Plant (CCPP) in the Richards Bay Industrial Development Zone (IDZ) phase 1D. The power plant will generate 3000 MW of electricity. The electricity generated must be transferred to the Eskom grid and therefore the need for the new 4 x 400kV power lines.

In terms of the National Environmental Management Act 107 of 1998, as amended, Eskom requires authorisation from The National Department of Environmental Affairs (DEA) for the proposed new power lines.

3 BACKGROUND OF THE PROJECT

The purpose of the CCPP is to ensure the stabilization of the power supply and reduce transmission losses within the Richards Bay and Kwazulu-Natal (KZN) area. The new proposed power plant will generate enough power to distribute to not only the Richards Bay area, but also to other areas in KZN.

The Environmental Impact Assessment process for this proposed CCPP power plant is currently under way and is managed by Savannah Environmental (Pty) Ltd and the lead consultant is Shaun Taylor, who can be contacted at Tel: +27 (0)11 656 3237, Cell: +27(0)72 779 4899, Fax: +27 (0)86 684 0547.

Eskom, in its holistic approach to project management and impact planning, has initiated the process to determine and obtain the authorisation for the transfer of the electricity generated at the CCPP. NEMA requires that the impacts for the construction of power lines be authorised according to regulations GN R324 and R325 to GN R327. A Scoping and EIA is required as part of the authorization process.

4 LANDOWNER AND FARM BOUNDARIES

Specific land parcels have been identified in the area of concern. During the public participation of the scoping phase these will be confirmed, and any new information added. The area towards the south is used for sugar cane farming.

Mondi Forestry also holds large portions of land in the area as do the local municipality. Towards the west of the southern corridor are farms. There are also various public infrastructures such as roads, railway lines and existing power lines in the area. Refer to ~~Figure 2~~~~Figure-2~~, ~~Figure 3~~~~Figure-3~~, ~~Figure 4~~~~Figure-4~~ and ~~Figure 5~~~~Figure-5~~ for details.

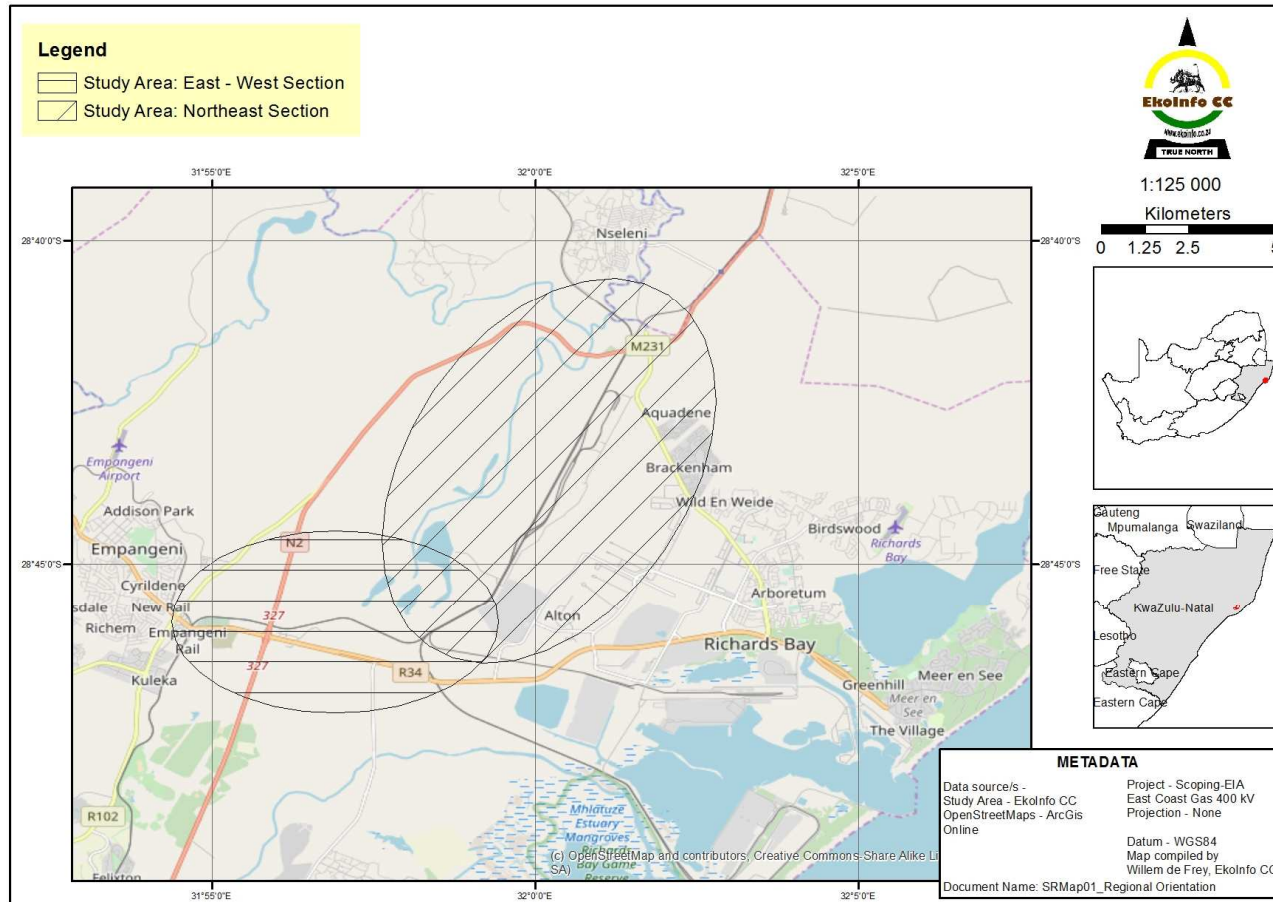


Figure 1: Regional orientation of the study area associated with the proposed four 400kV power lines

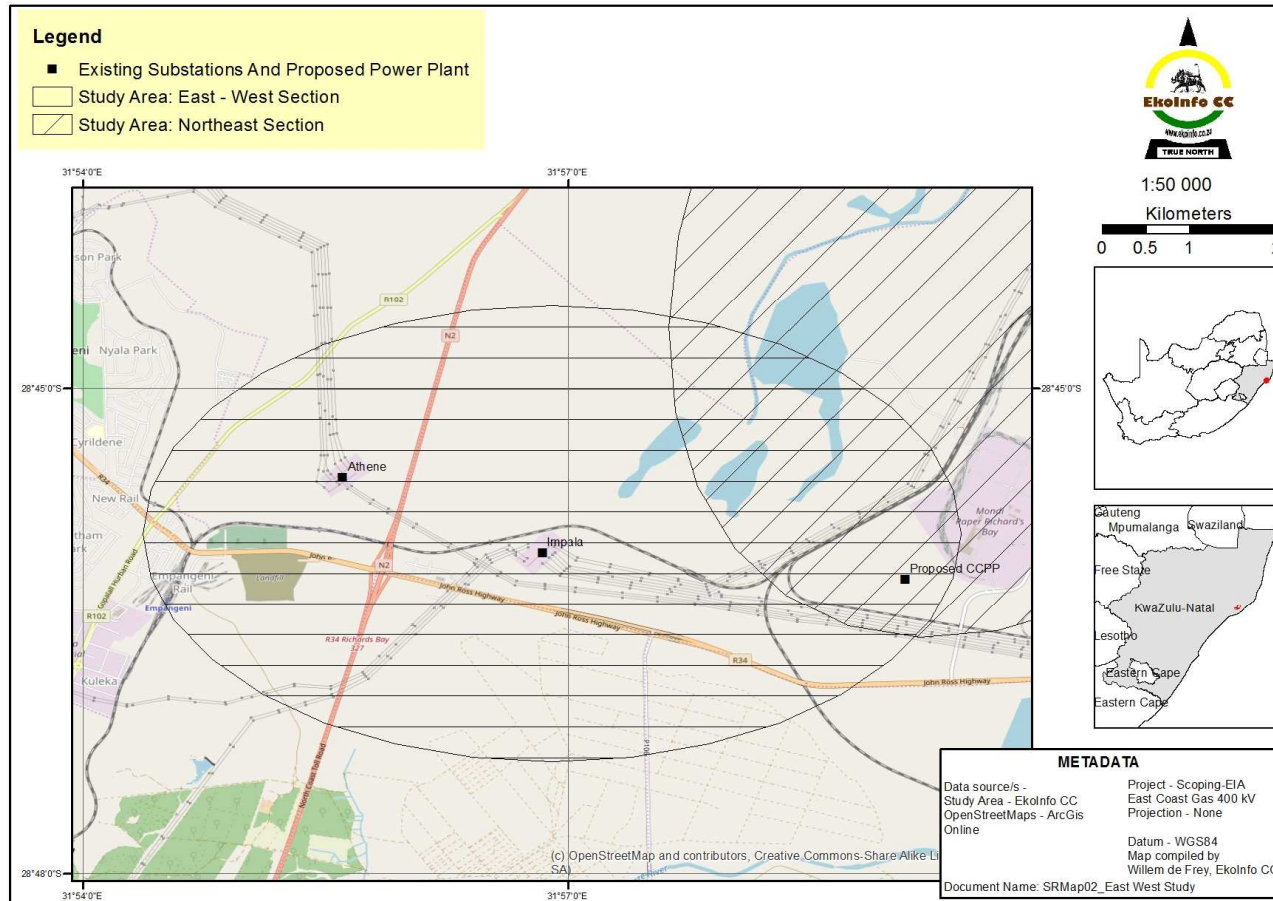


Figure 2: Local orientation of the east – west section of the study area, indicating the infrastructure/ human influences present

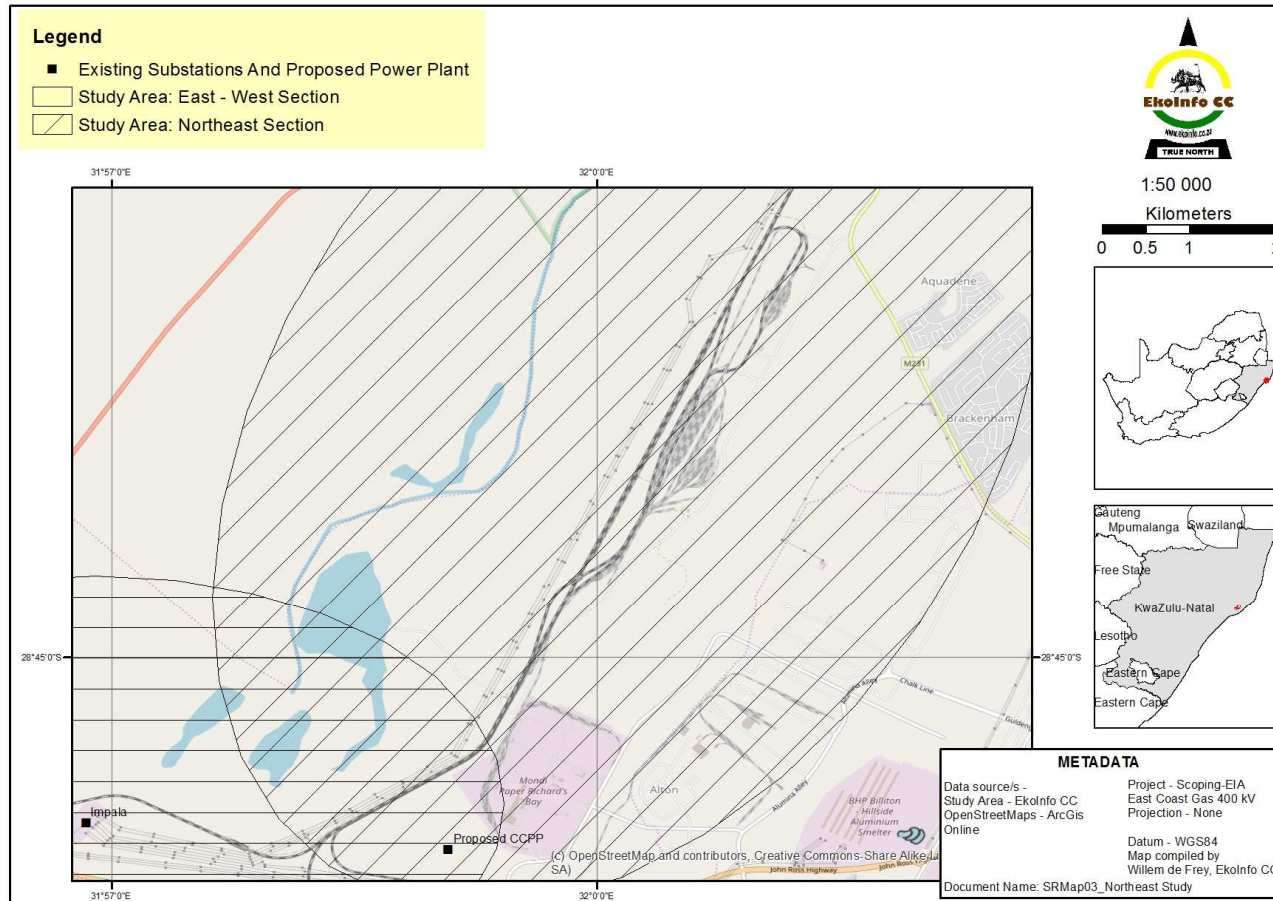


Figure 3: Local orientation of the southern portion of the northeast section of the study area, indicating the infrastructure/ human influences present

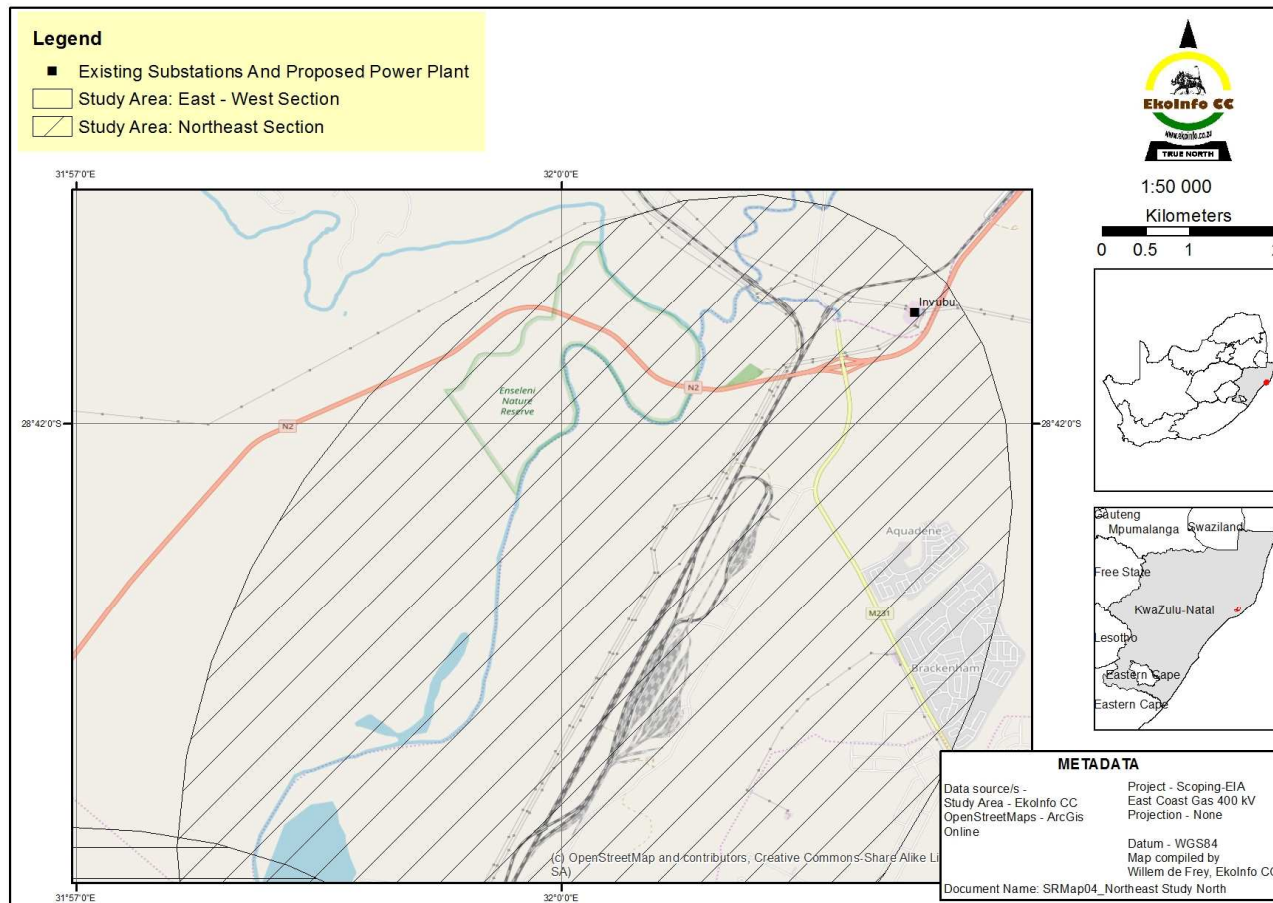


Figure 4: Local orientation of the northern portion of the northeast section of the study area, indicating the infrastructure/ human influences present

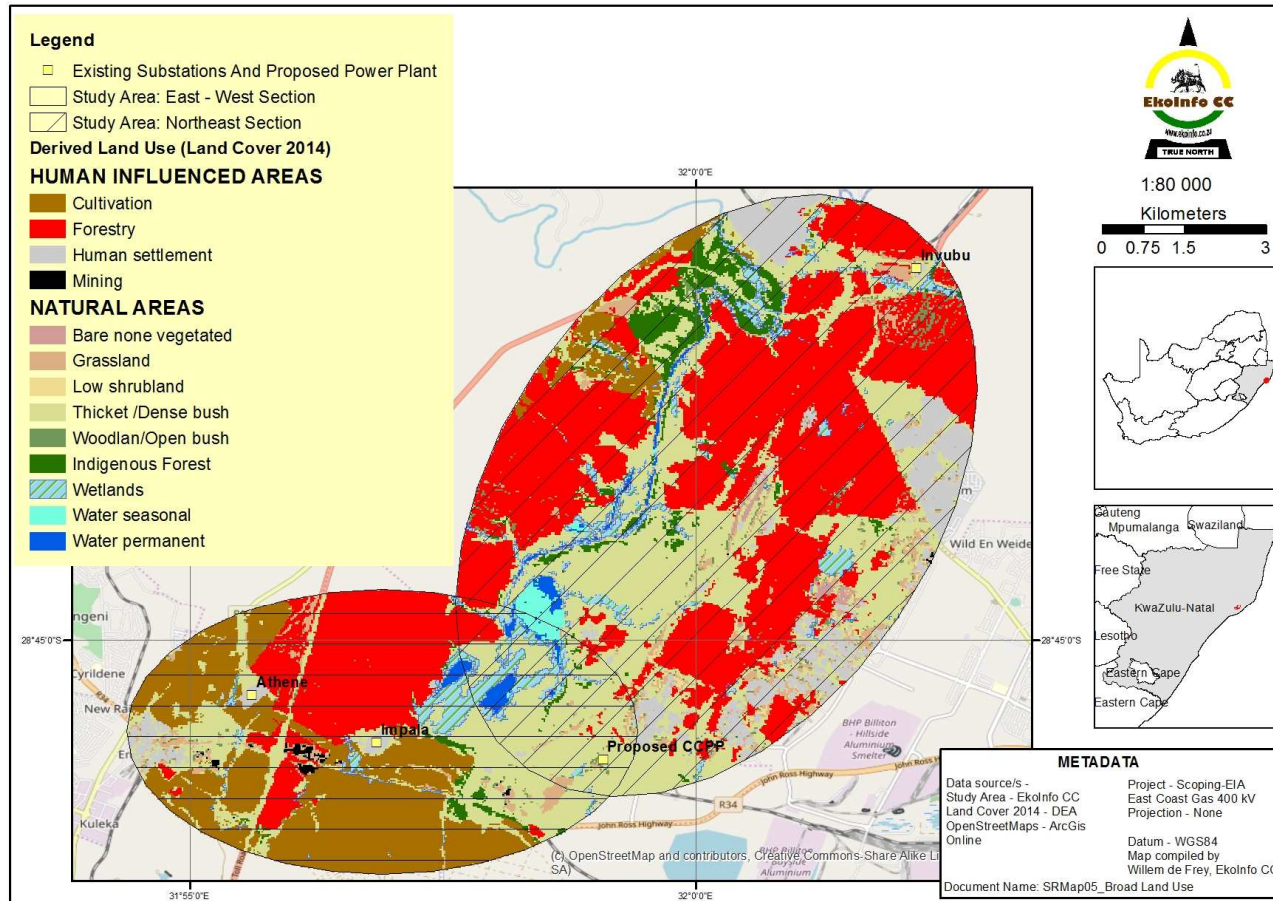


Figure 5: Overview of the broad land use categories within the study area

5 PURPOSE OF THE REPORT

This document is intended to guide stakeholders, specialists and the competent authority by:

- Establishing the applicant’s reason and need for the EIA process
- Providing an overview of the legal requirements
- Setting out the proposed stakeholder engagement process; and
- Setting out the scope of the EIA process and the Plan of Study (POS) for the Environmental Impact Assessment (EIA), which culminates in an Environmental Impact Report (EIR). This will outline the approach and methodologies to be used in the EIA process, e.g. the specialist studies and proposed impact rating methodology.

6 ASSUMPTIONS AND LIMITATIONS

The Scoping report has taken into consideration the following:

- Risks
 - The ~~Record of Decision~~ Environmental Authorization for the CCPP has not been issued therefore if the ~~ROD-EA~~ is negative this projects alignment could be wrong-will have to be suspended due to the fact that these power lines are dependent on construction of the proposed power station.
- Assumption
 - All information supplied by the applicant is true and available for public review and scrutiny;
 - Detailed analysis on impacts and mitigations will be conducted under the EIA phase of the project;
 - The site of the CCPP is fixed and will not change;
- Limitation
 - Access to adjacent properties due to agricultural or other land use practices.

Comment [VT2]: Please confirm with Eskom before sending out information to public, some information supplied to the consultant remains confidential and should not be shared with the public

7 ENVIRONMENTAL ASSESSMENT PRACTITIONER DETAILS AND INDEPENDENCE

Details of the Environmental Assessment Practitioner:

Environmental Assessment Practitioner

Company	EkolInfo CC
Established	1995
Address	88 Rubida Street, Murrayfield x1
Postal Address	P O Box 72847, Lynwood Ridge, Pretoria, 0040
Telephone	012 365 2546
Fax	012 365 3217
Email	info@ekolinfo.co.za
Website	www.ekolinfo.co.za
Contact Person	W de Frey
	Lead EAP
Name	Sean Hutcheons
Years’ Experience	13 Years
Contact Number	084 702 7780
Affiliations	EAPSA founder member and IEMA United Kingdom (0012689)
	Assistant EAP
Name	Willem de Frey
Years’ Experience	23 Years

Contact Number
Affiliations

012 365 2546
EAPSA founder member Pr.Sci.Nat. 400100/02

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8 PROPONENT DETAILS

Details of the Proponent

	Applicant
Company	Eskom Holding SOC Ltd
Address - Head Office	Megawatt Park, Maxwell Drive, Sunninghill Ext 3, Sandton
Postal Address	P O Box 1091, Johannesburg, 2000
Telephone	011 800 56044057
Fax	086 662 3583
Email	thanyav <u>Kawadza</u> @eskom.co.za
Website	www.eskom.co.za
Contact Person	Vuledzani Thanyani <u>Annah Kawadza</u> - Senior Advisor Environmental Programme Manager (Acting)

9 EXPERTISE OF THE PROJECT TEAM

EkolInfo has been in the environmental industry for more than 20 years. The company has been associated with various power line projects for Eskom and other parties. Previous projects included project management and specialist studies or just specialist studies.

Most of the members have Master or higher degrees in their field of expertise. There is a younger member in the team who will be coached and lead by senior members.

The main team members for this project are:

Company or Team Member	Years' Experience	Qualification
Project Leader EkolInfo CC Willem de Frey	>20	MSc Wildlife Management
Pachnoda Consulting CC Lukas Niemand Biological – Fauna; Herpetofauna; invertebrates	18	MSc Zoology SACNAPS – Zoological and Ecological
EkolInfo CC Willem de Frey Biological - Flora	>20	MSc Wildlife Management SACNAPS - Botany & Ecology
Pachnoda Consulting CC Lukas Niemand Avifauna	18	MSc Zoology SACNAPS – Zoological and Ecological
Terrasoil Sciences DR Johan v d Waals Soil and Land capability	15	MSc Strata Control SACNAPS Earth Science
Terralogix Consulting K Drescher Visual	15	MSc Strata Control SACNAPS Earth Science
NGT Holdings (PTY) LTD Nkosinathi Tomose Social and Heritage	11	MSc, ASAPA and Amafa KZN registered
EkolInfo CC Sean Hutcheons Public and Stakeholders feedback	13	M.Phil. Wild Life Management, MCOM Business Management
Imperata Consulting CC Retief Grobler Wetland	12	MSc Botany SACNAPS – Botanical and Ecological Science
EkolInfo CC Sean Hutcheons EAP	13	M.Phil. Wild Life Management, MCOM Business Management

Reviewer DR Theo Mostert		
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10 SOUTH AFRICAN LEGISLATION

The following legislation on National, Provincial and Local levels will be taken into account, as well as policies within Eskom:

10.1 National Environmental Management Act, 1998 (Act 107 of 1998)

There are various elements within the National Environmental Management Act that are relevant to the Richards bay power lines. The ‘polluter pays’ concept is enforced to ensure that any party or parties, which undertakes any activity that may cause, causes or caused any pollution, must prevent, mitigate or remedy the effects.

Section 2 set out:

To protect health, well-being and the environment by providing reasonable measures for-

- minimising the consumption of natural resources;
- avoiding and minimising the generation of waste;
- reducing, re-using, recycling and recovering waste;
- treating and safely disposing of waste as a last resort;
- preventing pollution and ecological degradation;
- securing ecologically sustainable development while promoting justifiable economic and social development;
- promoting and ensuring the effective delivery of waste services;
- remediating land where contamination presents, or may present, a significant risk of harm to health or the environment; and
- achieving integrated waste management reporting and planning;

In terms of the Government Notice of 2014 EIA Regulations, several activities are listed that require a full EIA process.

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

The Constitution of South Africa states that everyone has the right to an environment that is not harmful to his or her health or well-being and to have the environment protected for the benefit of present and future generations.

The Act implies that measures must be implemented to:

- Prevent pollution and ecological degradation;
- Promote conservation, and
- Secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development.

In Accordance with Section 32 of the Constitution of South Africa everyone has the right to access –

- any information held by the state; and
- any information that is held by another person and that is required for the exercise or protection of any rights.

10.3 National Water Act (Act 36 of 1998)

The National Water Act (NWA) is the main legislative piece that controls both private and public water use within South Africa.

Chapter 4 sets out the general regulation for water use which include development that could have impacts on water sources.

In accordance with Section 21 of the National Water Act the following are considered as water uses and therefore need to be licensed:

- a) Taking water from a water resource;
- b) Storing water;
- c) Impeding or diverting the flow of water in a watercourse;
- d) Engaging in a stream flow reduction activity contemplated in section 36;
- e) Engaging in a controlled activity identified as such in section 37(1) or declared under section 38(1);
- f) Discharging waste or water containing waste into a water resource through a pipe, canal, sewer, sea outfall or other conduit;
- g) Disposing of waste in a manner which may detrimentally impact on a water resource;
- h) Disposing in any manner of water which contains waste from, or which has been heated in, any industrial or power generation process;
- i) Altering the bed, banks, course or characteristics of a watercourse;
- j) Removing, discharging or disposing of water found underground if it is necessary for the efficient continuation of an activity or for the safety of people; and
- k) Using water for recreational purposes.

10.4 National Heritage Resources Act (Act 25 of 1999)

This Act is concerned with the protection of the archaeological or paleontological sites or meteorites. Furthermore, Section 36 of the National Heritage Resources Act states that:

- Any person who discovers archaeological or paleontological objects or material or a meteorite in the course of development or agricultural activity must immediately report the find to the responsible heritage resources authority, or to the nearest local authority offices or museum, which must immediately notify such heritage resources authority.
- No person may, without a permit issued by South African Heritage Resources Agency (SAHRA) or provincial heritage resources Authority-
 - a. destroy, damage, alter, exhume, or remove from its original position or otherwise disturb the grave of a victim of conflict, or any burial ground or part thereof which contains such graves;
 - b. destroy, damage, alter, exhume, or remove from its original position or otherwise disturb any grave or burial ground older than 60 years which is situated outside a formal cemetery administered by a local authority; or
 - c. bring onto or use at a burial ground or grave referred to in paragraph (a) or (b) any excavation equipment, or any equipment which assists in the detection or recovery of metals.

10.5 National Environmental Management: Biodiversity Act (Act 10 of 2004)

The Biodiversity Act provides for the management and conservation of South Africa's biodiversity within the framework of NEMA and the protection of species and ecosystems that warrant national protection. As part of its implementation strategy, the National Spatial Biodiversity Assessment was established. The Biodiversity Act further requires landowners to manage and conserve South Africa's biodiversity for current and future generations. The National Spatial Biodiversity Assessment classifies areas as worthy of protection based on their biophysical characteristics, which are ranked according to priority levels.

10.6 National Environmental Management: Air Quality Act (Act 39 of 2004)

The Act provides for the management of air quality in South Africa. It also works towards reforming the law regulating air quality in order to protect the environment by providing reasonable measures for the prevention of pollution and ecological degradation and for securing ecologically sustainable development while promoting justifiable economic and social development; to provide for national norms and standards regulating air quality monitoring, management and control by all spheres of government; for specific air quality measures; and for matters incidental there to.

10.7 National Environmental Management: Waste Act (Act 59 of 2008)

The National Environmental Management: Waste Act is the main legislative piece that aims to consolidate waste management within South Africa. Part 2 of the Waste Act details the general duty in respect to the management of waste by the holder of the waste. In accordance to Section 16(1) of the Waste act, 'a holder of waste must, within the holder's power, take all reasonable measures to:

- avoid the generation of waste and where such generation cannot be avoided to minimise the toxicity and amounts of waste that are generated;
- reduce, re-use, recycle and recover waste;
- where waste must be disposed of, ensure that the waste is treated and disposed of in an environmentally sound manner;
- manage the waste in such a manner that it does not endanger health or the environment or cause a nuisance through noise, odour or visual impacts;
- prevent any employee or any person under his or her supervision from contravening this Act; and
- prevent the waste from being used for an unauthorised purpose.'

10.8 National Environmental Management: Protected Areas Act (Act 59 of 2003)

The main objective of this Act is to provide for the protection and conservation of ecologically viable areas representative of South Africa's biological diversity and its natural landscapes and seascapes. It is also for the establishment of a national register of all national, provincial and local protected areas. The act serves as a tool for management of those areas in accordance with national norms and standards; for intergovernmental co-operation and public consultation in matters concerning protected areas.

10.9 Eskom Specific Legislation or Policies

10.9.1 Eskom Act, 1987 (Act No. 40 of 1987)

The Act sets out the objectives of Eskom, being the provision of a system by which the electricity needs of the consumers may be satisfied in the most cost effective manner, subject to resource constraints and the national interest. The National Energy Regulator of South Africa (NERSA) exercises control over the performance of Eskom's functions and the execution of its powers and duties. The functions, powers, and duties of Eskom are set out in Section 12 of the Act.

10.9.2 Eskom Conversion Act, 2001 (Act No. 13 of 2001)

The objective of the Eskom Conversion Act is to convert Eskom into a public company in terms of the Companies Act, and to provide for powers and duties of Eskom.

10.9.3 Electricity Regulation Act, 2006 (Act No. 4 of 2006)

The Act governs the control of the generation and supply of electricity in South Africa, and the existence and functions of the Electricity Control Regulator.

10.9.4 National Energy Act, 2008 (Act No. 34 of 2008)

Policy objectives identified include increasing access to affordable energy services, improving energy governance, stimulating economic development (including the encouragement of cost-effective energy prices which include quantifiable externalities), managing energy related environmental and health impacts, and securing supply through diversity.

10.10 Municipal Development and Planning Frameworks

The area of concern covers two local municipalities, uMhlathuz Local municipality and Mfolozi Local Municipality. However, it is only the area around Invubu substation that falls within Mfolozi local municipality. The objective of the IDP is to promote economic growth in the District and improve the socio-economic conditions of residents (uMhlathuze LM, 2016). The unsustainable use of resources, including energy, will ultimately compromise the Municipality's energy security. Challenges like these prompted the IDP to focus on sustainable solutions to the energy crisis. The following documents will form part of the EIA:

- Local SDF;
- uMfolozi Municipality 2016/2017 IDP;
- uMhlathuze Municipal IDP.

10.11 Nuisance By-laws

The Council of the uMhlathuze Municipality has in terms of section 156 of the Constitution, 1996 (Act No 108 of 1996), read in conjunction with section 11 of the Municipal Systems Act, 2000 (Act No 32 of 2000), the Criminal Procedure Act, 1977 (Act No 51 of 1977) and the National Road Traffic Act, 1996 (Act No 93 of 1996) made by-laws which need to be considered.

10.12 Waste Management By-laws

The Council of the uMhlathuze Municipality has in terms of section 156 of the Constitution, 1996 (Act No 108 of 1996), and the National Environmental Management Act, Act 59 of 2008, read in

conjunction with section 11 of the Municipal Systems Act, 2000 (Act No 32 of 2000), made by-laws which need to be considered.

11 ENVIRONMENTAL ASSESSMENT PROCESS

It is understood that any development can pose various risks to the environment as well as the inhabitants in the surrounding area. These possible risks should be considered during the authorisation process and mitigations provided where impacts cannot be avoided. The purpose of this section is to provide information on how these risks will be determined, assessed and mitigated when required. It provides the competent authority with information so that an informed decision can be made.

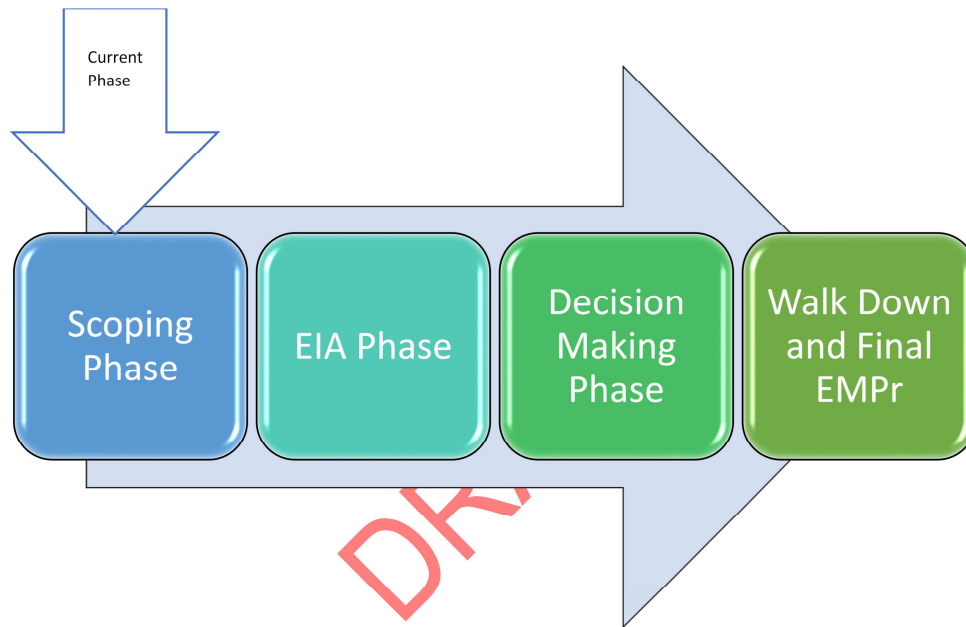


Figure 6: NEMA EIA process to be followed.

The Scoping phase, which includes a proposed Plan of Study, is a high-level evaluation of the proposed project and its possible impacts. This information determines the final Plan of Study for the EIA phase. Once the EIA phase has been completed the competent authority, DEA, will decide on whether to authorise the proposed development. Once the decision has been made there is an appeal period. Once all appeals, if any, has been settled Eskom will finalise the tower placements. After finalisation of the tower placements the environmental specialists will do a walkdown, visiting each tower placement, to determine any adverse impacts and adherence to the authorisation.

11.1 Scoping and Environmental Impact Assessment Process

The approval process is done in two phases. Firstly, the Scoping and secondly the Environmental Impact Assessment phase. NEMA sets out in appendix 2 and 3 what information is required during the Scoping and EIA phases of the authorisation process. The scoping phase is used to determine the project scope, area of concern, specialists required and preliminary impacts and alternatives within the proposed development.

The Scoping phase then develops a Plan of Study (POS). The POS sets out the way forward to be followed in determining the Environmental Impact Assessment, mitigations and preferred alternative. The specialist flags any early unacceptable impacts, if any, as well as how they will be conducting their investigations into their field of expertise during the EIA phase. Throughout the process the public is consulted to obtain their views, objections and concerns regarding the proposed development.

The scoping phase will recognise the issues raised by the public and specialists and will include them for further investigation during the EIA phase.

The Scoping phase includes, but is not limited to:

- Identify potential environmental impacts of the proposed development;
- Examine the sustainability of the proposed development in terms of the biophysical, ecological and socio-economic environment;
- Identify environmental issues that require further investigation;
- Identify Interested and Affected Parties (I&APs), inform them of the proposed development and identify any key concerns to be considered in decision making;
- Provide relevant governmental and non-governmental authorities and agencies with the necessary information to make informed decisions regarding the proposed development at the scoping level;
- Determine alternatives, which could be in terms of: route selection, design etc;
- Propose methodology to be undertaken during the Environmental Impact Assessment (EIA) stage.

Scoping information is obtained by doing the following, but not limited to:

- Site visit;
- Review of baseline desktop survey of existing literature and legislation;
- Correspondence with specialists and residents, stakeholders and authorities such as local municipality and provincial department of environment;
- Geographic Information System (GIS);

11.1.1 Project Description

11.1.1.1 *Introduction and Motivation*

The development of the Richards Bay Combined Cycle Power Plant (CCPP) is proposed in the Richards Bay Industrial Development Zone (IDZ) phase 1D.

Eskom requires the power generated by the proposed CCPP to be integrated with its current 400kV infrastructure within the Richards Bay area. The proposed powerlines are connecting to existing power line infrastructure that connects existing substations. These include Impala, Athene and Invubu substations. The construction of these proposed power lines will require Environmental Authorization issued by the National Department of Environmental Affairs (DEA)

The purpose of the CCPP is to ensure the stabilization of the power supply and reduce transmission losses within the Richards Bay and Kwazulu-Natal area. Electricity to be generated in the proposed CCPP will need 4 x 400kV transmission power lines to distribute power from the proposed power plant. The power will be transmitted to the existing power line and substation infrastructure.

Comment [AS3]: Evacuate

The new proposed 400kV lines are needed to ensure the optimal transmission of the generated power into the Eskom grid.

11.1.1.2 Location and Area of Concern

The proposed power lines will start at the CCPP on Portion 2 and Portion 4 of Erf 11376 which is situated within Phase 1D of the RIDZ located approximately 6km south west of Richards Bay and 4km south west of Alton.

The power lines are required to loop into the following currently approved power lines:

- Athene- Invubu;
- Athene – Umfolozi.

The loop into is proposed at either:

- Athene Substation which is approximate 6km due West of the start point or;
- Invubu Substation which is approximate 10km due North of the start point. Which falls within uMhlathuze Local Municipality and Mfolosi Local Municipality. Both Local municipalities falls within the jurisdiction of the King Cetshwayo District Municipality, KwaZulu-Natal Province. Please refer to Local Municipalities and Wards (figure 6)

11.1.2 Project Alternatives

According to NEMA, determining alternatives forms a key part of the Scoping and EIA process. It is also recognised as best practice in environmental management worldwide. During the Scoping Phase, the Environmental Assessment Practitioner (EAP), specialists and the Interested and Affected Parties (I&APs) investigate and raise possible alternatives and try to find out if there are any impacts that will render an alternative a NO GO. The alternatives that are not eliminated at this stage are taken forward to the EIA Phase.

The following alternatives are to be investigated:

- Technological Alternative;
- Alignment Alternatives;
- Design Alternative;
- Recycling Alternative;
- No-Go Alternative.

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Comment [VT4]: I don't think this alternative will be viable.

11.1.2.1 Technological Alternative

Capacity

The capacity of the required power lines will be investigated but the smallest is 400kV lines. Lower capacity lines will not be sustainable or efficient enough to transfer the generated power from the CCPP. The EIR will look at higher capacity lines such as 500kV.

Comment [AS5]: This seems to imply that if the capacity can be bigger, then few lines may be required. This is not the case as we will always require 4 lines due to N-2 requirements.

Quantity

The number of power lines from the CCPP to the substation will be investigated. Eskom has indicated they require four power lines to distribute the power from the CCPP. This is to adhere to best practise and maintenance requirements.

Comment [VT6]: Eskom has conducted studies and approval for construction of a 400kV powerline has been approved, we will not be building a 500kV powerline. This voltage does not exist in the country.

Overhead vs. Underground Power Lines Alternative

The EIA will consider the two different types of alternatives, overhead or underground power lines. This will include the risk posed by both types of power lines, possible impacts and mitigations.

Comment [AS7]: Reference can be made to the Grid code which specifies the N-2 requirement for power stations.

Comment [AS8]: Eskom does not do underground cables above 132kV. It is extremely unfeasible as it can cost 5 – 10 times as much as overhead lines. It is also tedious and expensive to maintain.

Associated Infrastructure

Eskom requires the following associated infrastructure as part of the proposed new power lines:

- Typical 400kV self-supporting and guyed structures.
- 3 or 4 bundle conductors with Aluminium Conductor Steel Reinforced
- Span length typically between 300 m– 600 m;
- Upgrade all applicable 400kV underrated switchgear;
- Install 4 Fault limiting rectors at the 132kV side of the transformers at Athene substation;
- Loop into Athene- Invubu and Athene – Umfolozi 400kV lines and construct 4 x 400kV 12 km lines to the PS substation;
- Establish 400kV double busbar with 2 bus couplers, 4 bus sections and transfer bus at the PS substation;
- Equip 4 x 400kV feeder bays at the PS substation;
- 4 x 400kV transformer bays at the PS substation;
- Establish control room and 400kV yard with associated equipment, fencing and earthworks for the 400kV yard

The EIA phase will investigate the sustainability of the associated infrastructure and whether alternatives are required. This could include substation expansion or recycling of current infrastructure

Comment [VT9]: Which substation are we expanding?

11.1.2.2 Alignment Alternatives

All the proposed route alignments being investigated for the project will have a 1km wide corridor. Eskom requires a 55m servitude, per power line. The following sections contain descriptions of the current proposed alternative routing under investigation (Figure 8~~Figure 8~~ to Figure 13~~Figure 13~~).

Each route will be investigated during the EIA phase with the goal of finding the best route with the least impact and least required mitigation.

Overall, specialist findings and inputs from I&APs play a vital role in the investigation of the alternatives. Information that plays a role in the alternative investigation are:

- Length of proposed alignment;
- Current Eskom power lines in the area;
- Substations that can accommodate 400kV power;
- Number of power line crossings;
- Number of "bend points" in the alignment;
- Existing infrastructure (roads, railways, gas pipe lines, etc.)
- Existing land use and their sustainability;
- Topography and Ecological sensitivity such as wetlands
- Accessibility.

There are currently four alternatives or options being proposed for the POS. The current proposed alignment alternatives do not represent the final scenarios. Further alignments can be proposed by I&APs, government departments and local municipalities in an attempt to find the best possible route for the construction of the proposed power line.

The area of concern is already saturated with existing power lines and part of the investigation will be to determine if some of these lines can be recycled and used within this project. Also, current Eskom servitudes will be investigated to determine possible route alignments.

Comment [VT10]: This is not part of the scope of work, lets first confirm if this is a feasible option, as indicated before, recycling of a powerline means a line must be put down and rebuilt. this will require the load to be off for a long time and we are not confident that the rea can do without power for such a long time. The other option being building the power line and connect on the existing end. This requires an EA.

Alternative One: 4 x 400kV from the CCPP to Athena Sub Station (Figure 8).
 This alignment avoids most of the current Eskom power lines and allows for the least amount of crossing of other power lines. It does however go through agricultural land use areas and will impact on these areas. The alignment is also technically challenging with the number of bends involved.

Comment [AS11]: Athene
Comment [AS12]: substation

Alternative Two: 2 x 400kV from CCPP to Athena Sub Station (Figure 9).
 This alignment is the shortest of all and allows for 2 x 400kV lines to run from the CCPP to Athena substation. The available space, in between current Eskom lines, are very limited and the lines will impact on current forestry areas.

Comment [AS13]: This is not a technical challenge. The crossings are more of a technical challenge.
Comment [AS14]: Athene
Comment [AS15]: substation
Comment [AS16]:

Alternative Three: 1 x 400kV from CCPP to Athena Sub Station and 2 x 400kV to Invubu Sub Station (Figure 10, Figure 11).
 Other than Athena substation, the only other substation in the area that can accommodate 400kV power is in Invubu, towards the North of the CCPP. This alternative considers the limited space between the CCPP and Athena. All the lines will impact forestry in the area. The lines to Invubu will possibly impact on the wetlands that is associated with the Nseleni river. There is also Transnet railway lines that will likely be crossed by the proposed power lines.

Comment [AS17]:
Comment [AS18]:
Comment [AS19]:
Comment [AS20]:
Comment [AS21]: delete
Comment [AS22]: isn't this true for all options?

Alternative Four: 2 x 400kV from CCPP to Athena Sub Station and 2 X 400kV from CCPP to Invubu Sub Station (Figure 12, Figure 13).
 This alternative will have similar impacts as Alternative three but accommodates Eskom's requirement for 4 x 400kV power lines. Impacts on forestry and wetlands can be expected as well as crossing of current Transnet railway lines.

Comment [AS23]:
Comment [AS24]:
Comment [AS25]: All options accommodate Eskom's requirement for 4 lines.

All the alternatives will cross the N2 highway, and possibly other road infrastructure.

Comment [AS26]: With different number of crossing per option.

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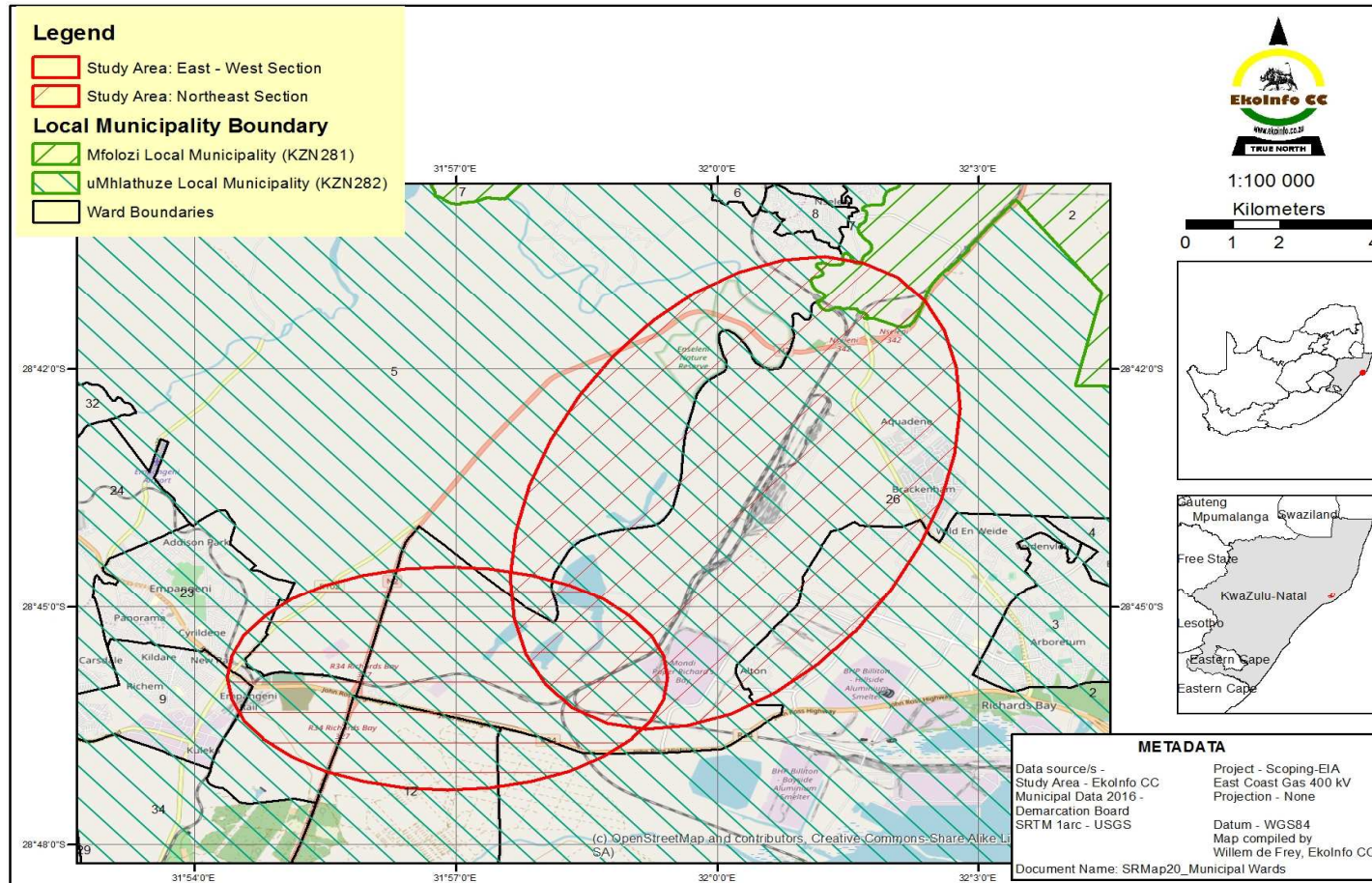


Figure 7: Local Municipalities and Wards

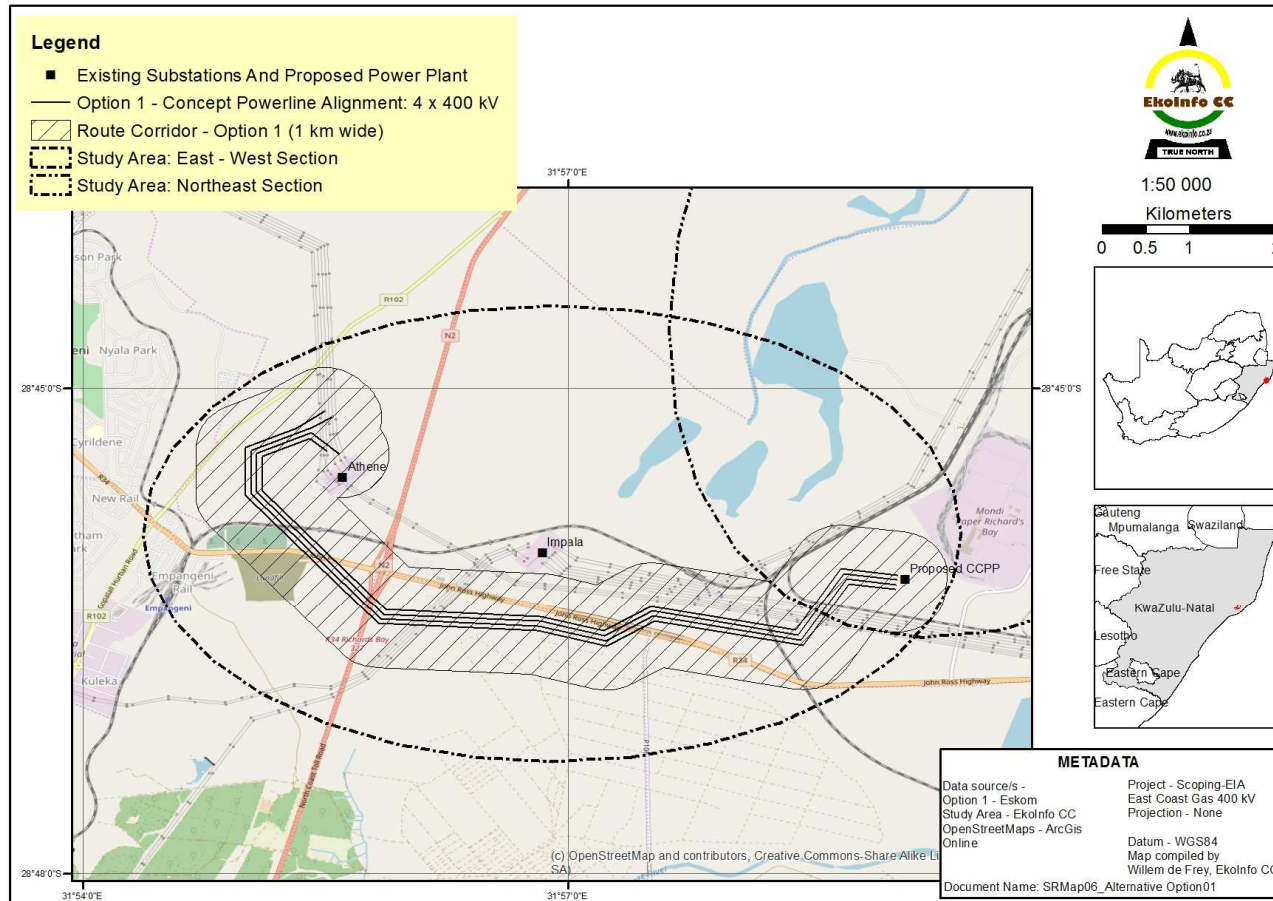


Figure 8: Overview of the proposed alternative route option one, consisting of 4 x 400kV powerlines in an east – west orientation, south of existing infrastructure

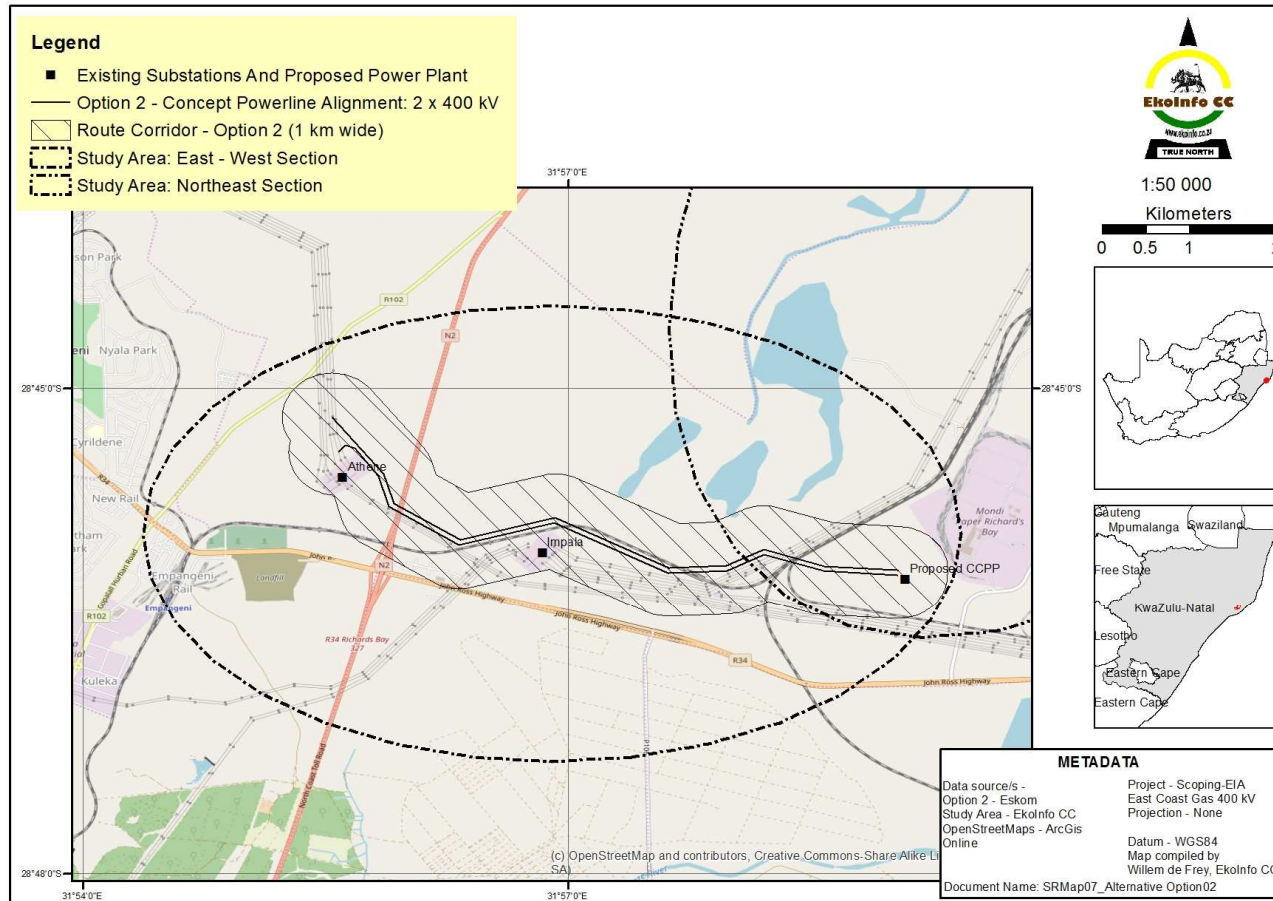


Figure 9: Overview of the proposed alternative route option two, consisting of 2 x 400kV powerlines in an east – west orientation, north of existing infrastructure

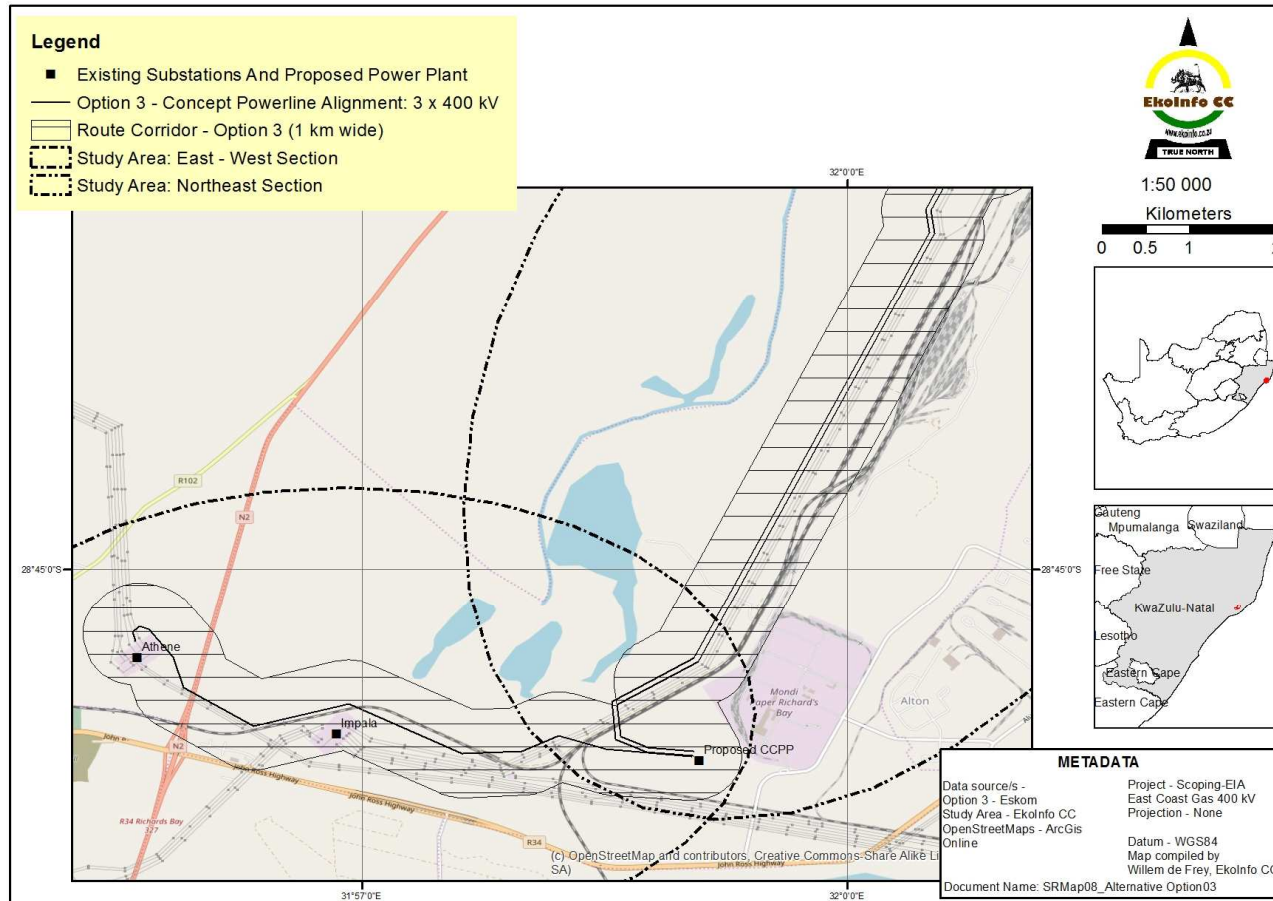


Figure 10: Overview of the proposed alternative route option three, consisting of 3 x 400kV powerlines in an east – west and northeast orientation, following existing infrastructure (southern portion)

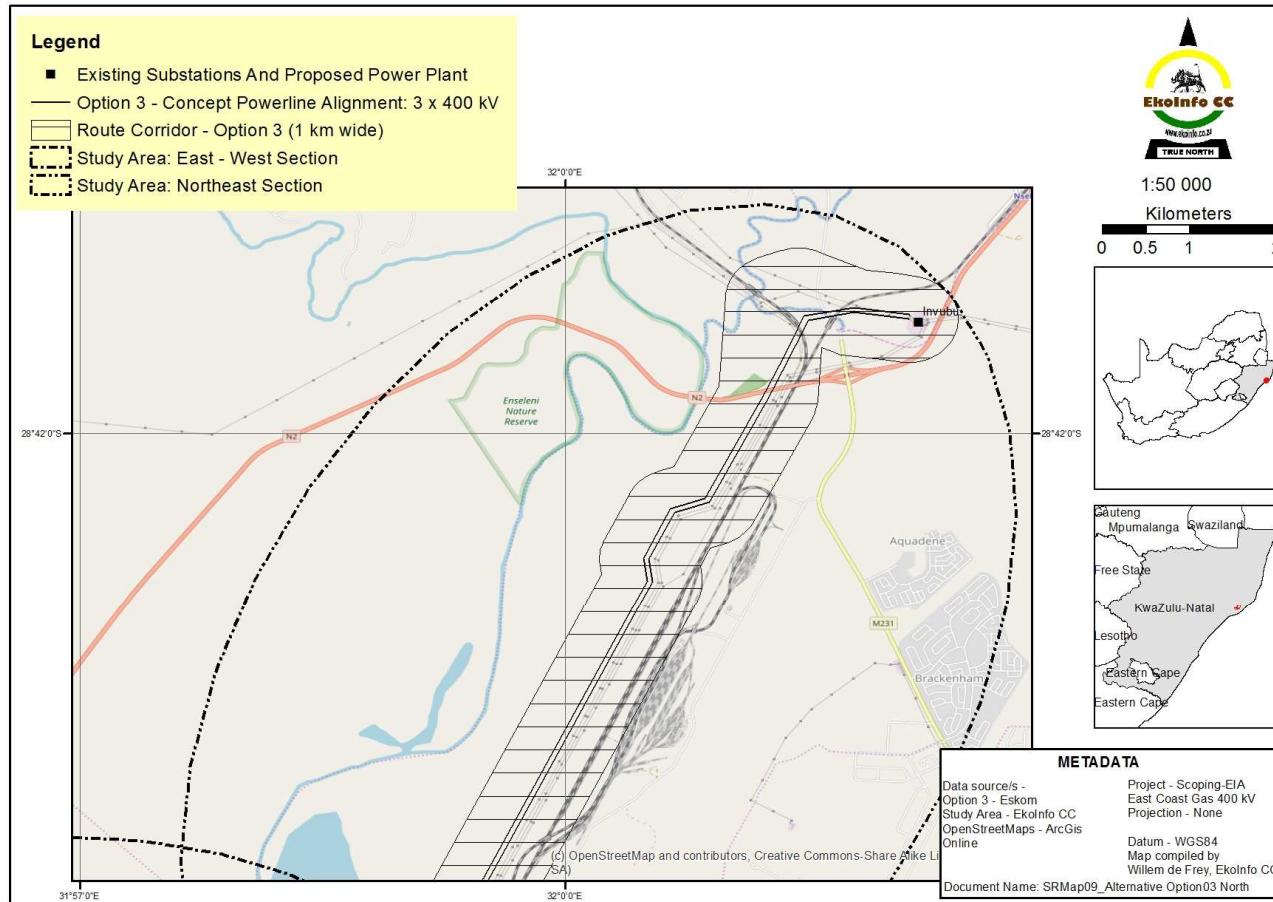


Figure 11: Overview of the proposed alternative route option three, consisting of 3 x 400kV powerlines in an east – west and northeast orientation, following existing infrastructure (northern portion)

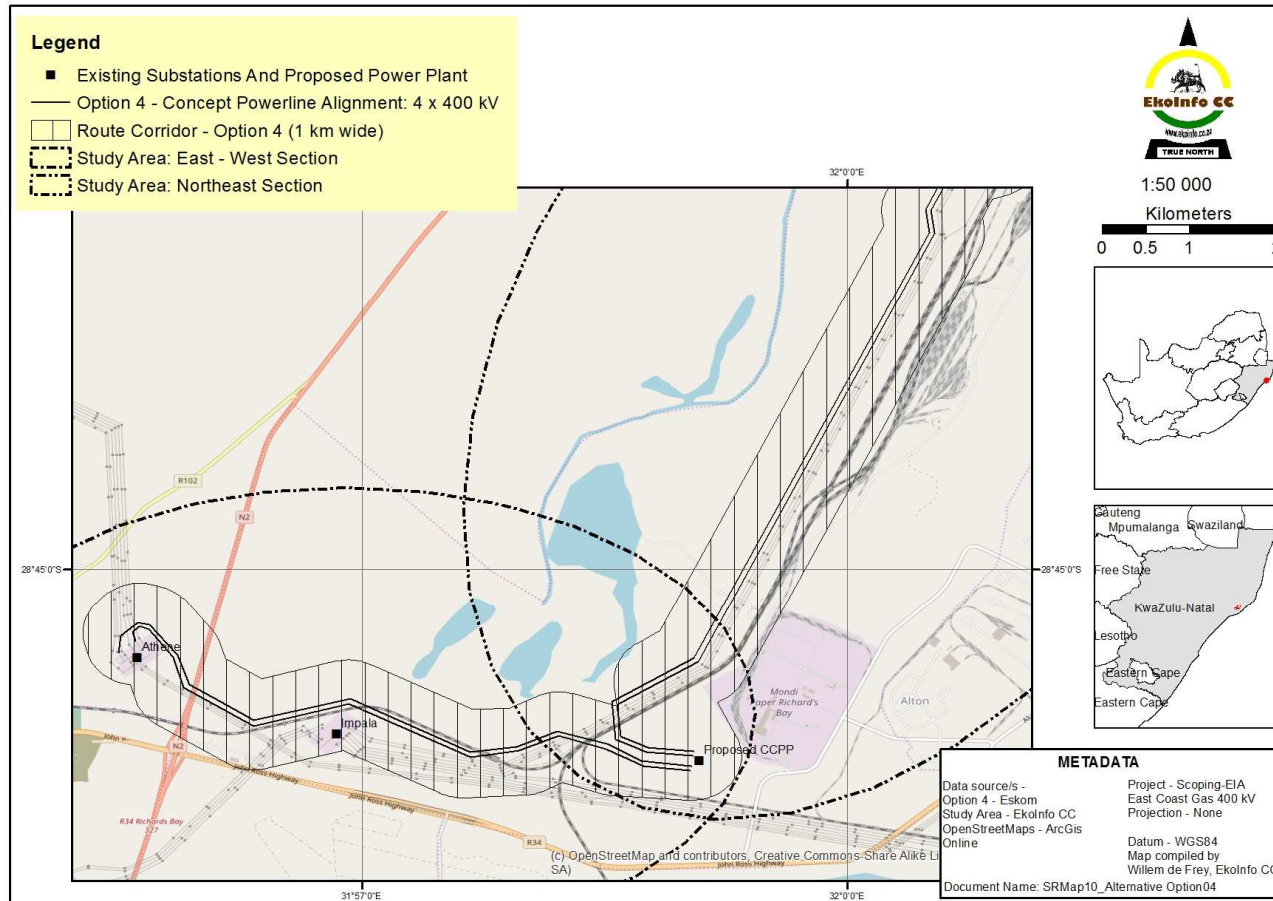


Figure 12: Overview of the proposed alternative route option four, consisting of 4 x 400kV powerlines in an east – west and northeast orientation, following existing infrastructure (southern portion)

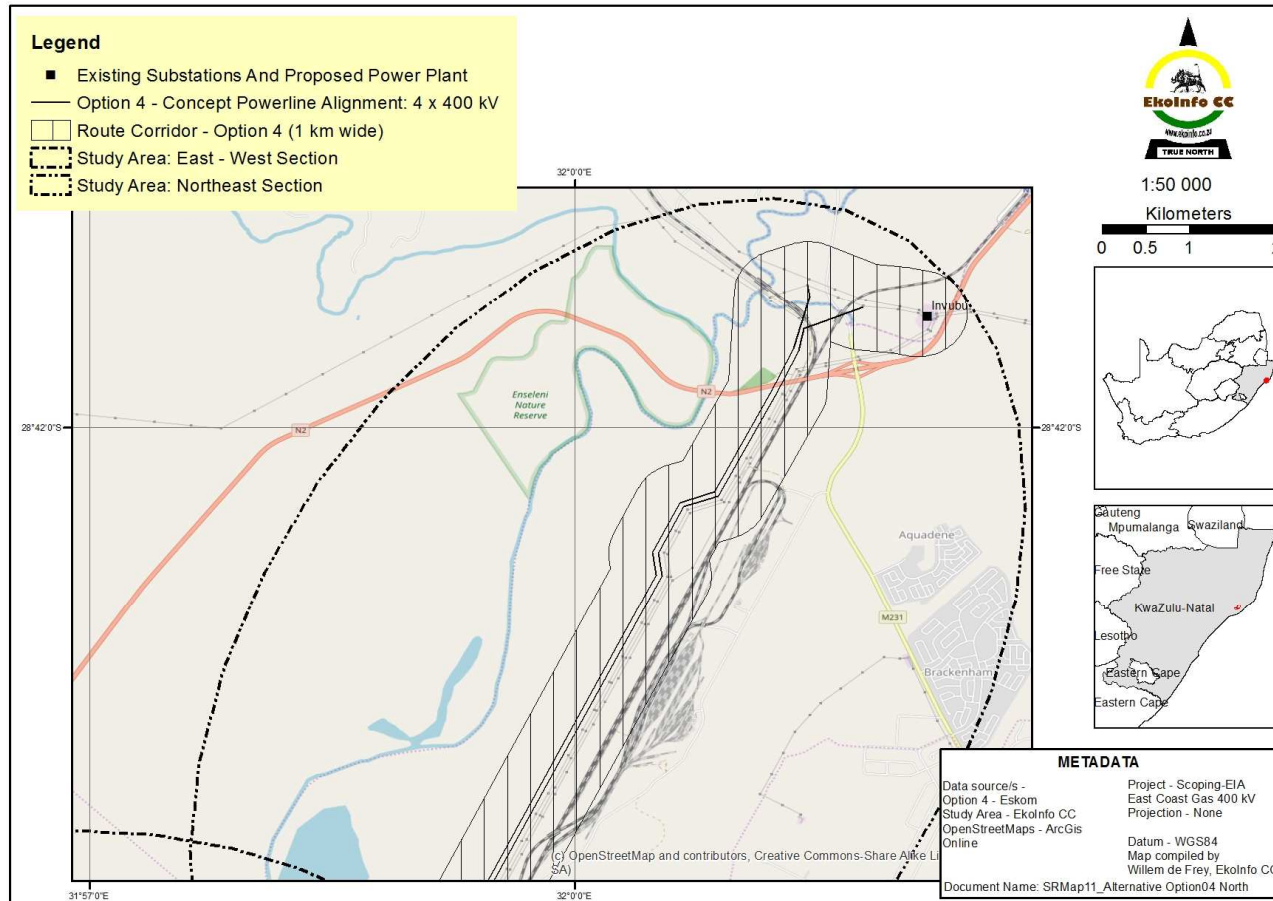


Figure 13: Overview of the proposed alternative route option four, consisting of 4 x 400kV powerlines in an east – west and northeast orientation, following existing infrastructure (northern portion)

11.1.2.3 Design Considerations

Design will consider the power line tower structure that would be used within the project. Figure 14 shows the tower designs that will be evaluated. The proposed towers must have the capability of carrying heavy 400kV power lines. These structures are big and require as a minimum the following:

- Towers must be at least 42m in height;
- Distance between towers must be between 350m and 500m, depending on terrain and route angles; and
- Minimum conductor clearance must be 8.1m above ground.

Comment [AS27]: for

Comment [AS28]: carrying – rather say large capacity conductors.

Comment [AS29]: 10 – 16 m clearance over sugarcane fields.

11.1.2.4 The No Go Alternative

An alternative that must always be taken into consideration is the NO GO alternative. This alternative is included to indicate where, the EAP feels that development should not be considered due to the impacts the proposed development will have. There is either a lack of acceptable mitigations of the impact or the development will not be sustainable in its current form. The EAP has the responsibility to indicate a NO GO alternative. This could be on the project as whole or certain areas within the project’s area of concern. All the alternatives and proposed developments will be measured against NO GO.

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Cross-roped suspension tower



Guyed-V suspension tower



Self – supporting suspension tower

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Figure 14: Overview of the different types of towers used for the construction of 400kV powerlines

11.1.3 Project Phases

The impact assessment will take into consideration the following phases:

- Planning phase post ~~Record of Decision~~ Environmental Authorization;
- Construction Phase;
- Operational and Maintenance Phase; and
- Decommissioning of existing power lines and structures.

11.1.3.1 Planning Phase Post ~~Record of Decision~~ Environmental Authorization

Once the DEA has approved the route corridors, Eskom route ~~planners selection team~~ will ~~start to plan a route within the corridor~~ finalize the route within the approved corridor. The final route will require Eskom to negotiate with land owners for access and approval to construct a power line on their land. Once the negotiations have been successfully completed the planned route will be visited by independent Environmental Consultants. The aim of the visit will be to determine the impact of each tower and whether the tower needs to be moved to mitigate impacts. The EAP will develop a final Construction Environmental Management Programme that will be submitted to DEA for approval.

~~The decommissioning of existing lines to be recycled into the new lines will form part of the planning if it is a viable alternative~~ Some portion of the existing powerlines will have to be decommissioned as part of construction of the proposed power lines.

11.1.3.2 Construction Phase

Although the new proposed power lines are relatively short the major impact will be during construction. The ~~following~~ impacts of the following activities will be reviewed within the EIR:

- Construction Camps;
- Utilisation of services and resources
 - Water;
 - Sewage;
 - Roads;
 - Waste etc
- Access Roads;
- Tower Pegging;
- Ground and Surface water management;
- Delivery of Raw Material;
- Excavation;
- Foundations.

11.1.3.3 Decommissioning

The ~~following~~ impacts of the following activities will be reviewed within the EIR above the once indicated in 13.1.3.2:

- Waste removal and dumping;

11.1.3.4 Operation and Maintenance

Although the new proposed power lines are relatively short most of the impact will be during construction. The following ~~impacts activities~~ will be reviewed within the EIR:

- Access Roads;

- Ground and Surface monitoring;
- Foundations

12 DESCRIPTION OF BIOPHYSICAL AND SOCIAL ENVIRONMENT

12.1 Biophysical Environment

This section follows the ecological sequence in terms of the various components influencing one another.

12.1.1 Geology

The geology within the study area differs both in time and composition ([Figure 15](#)~~Figure 15~~). Younger geological units from the Cenozoic Era overlay the eldest rock from the Swazian Era, which imply a significant difference in time of approximately 3 billion years. The younger lithological units consist of sedimentary rock, more specifically arenite of the Berea Formation, while the eldest lithology from the Swazian Era consists of granite and greenstone, igneous and metamorphic rock respectively.

The reconnaissance geotechnical input from the specialist highlights the fact that the area is prone to chemical weathering rather than mechanical weathering, which implies that it is expected that low lying areas will be due to the weathering of igneous rock (granite), while high lying areas will consist of sedimentary and metamorphic rock (Read & Watson 1968, McCarthy & Rubidge 2005, Johnson *et al* 2006, Norman & Whitfield 2006).

Input received from the geology and heritage specialists mention the potential for fossils to be present within the Berea and Port Dunford formations of the Cenozoic Era.

12.1.2 Climate

The study area is located within the Eastern Coastal Belt and Zululand climate zone ([Figure 16](#)~~Figure 16~~), which transects two global climate zones, namely sub-humid and moist sub-humid¹. This implies that the annual rainfall exceeds 600 mm and could go as high as 1 500 mm during the summer months. In these global climate zones there is an annual rainfall excess because the yearly rainfall is higher than the yearly evapotranspiration. This indicates that sufficient moisture is present for maintaining woody species and groundwater recharge (Strahler 1962, Strahler & Strahler 1987).

Data from the FAO CropWAT database confirms the high annual rainfall and low evapotranspiration ([Figure 17](#)~~Figure 17~~) for the region based on weather data from St Lucia to the north of Richards Bay. The climate graph for Richards Bay indicates that the mean temperature seldom drops below 15 °C or exceed 25 °C, with February being the wettest month at close to 140 mm of rainfall and the lowest during June at 49 mm ([Figure 18](#)~~Figure 18~~).

12.1.3 Topography

Two landforms occur within the study area, namely plains and hills, of which the plains are dominant ([Figure 19](#)~~Figure 19~~). Slopes of less than five degrees or eight percent are associated with plains. The highest lying areas are towards the west at approximately 88 meters above mean sea level, while the lowest lying areas are to the south at 28 meters and below.

¹ <http://www.fao.org/docrep/S2022E/s2022e06.htm>

Due to the terrain it is expected that runoff would be low and infiltration high, with the area being drained by the perennial Nseleni River.

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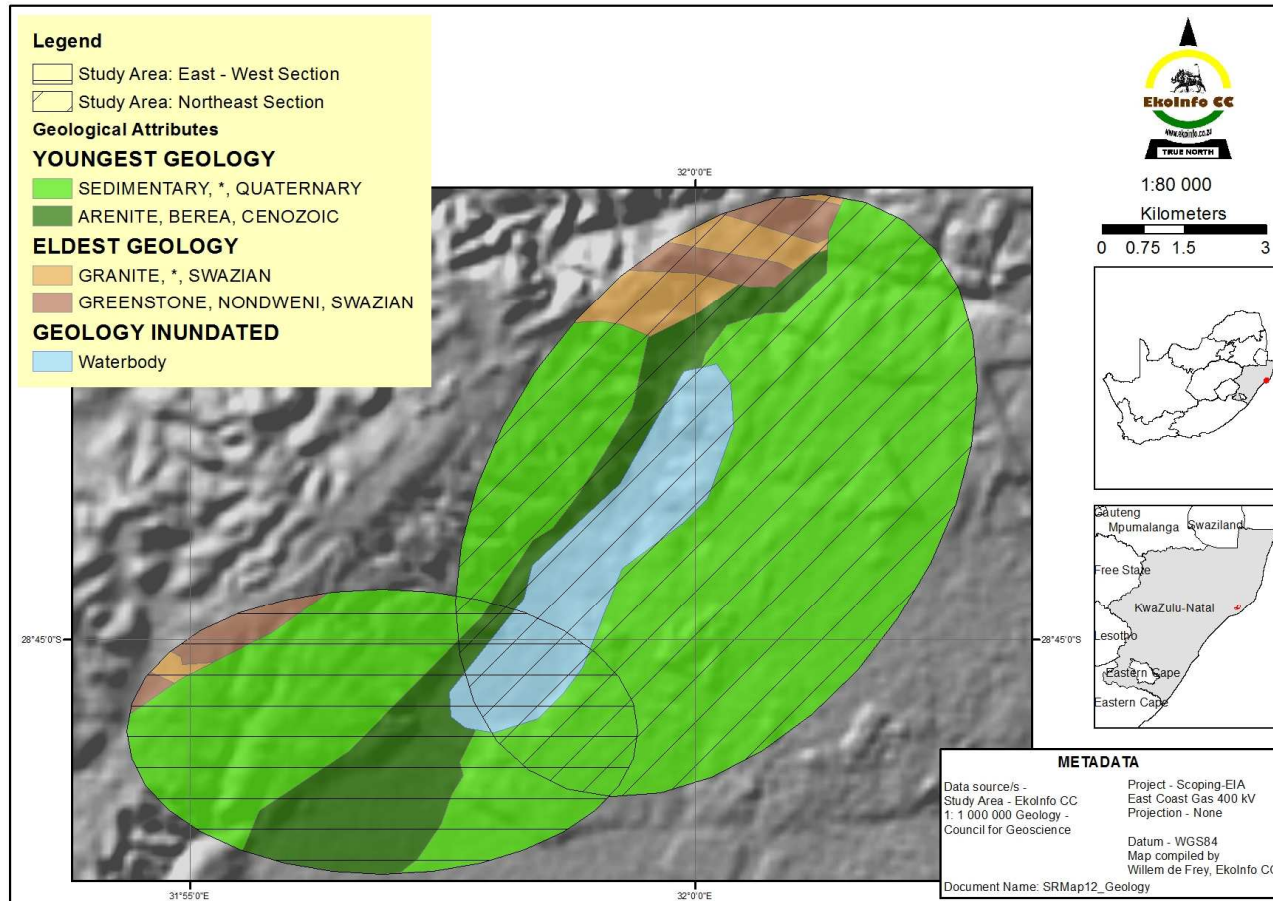


Figure 15: Geological attributes of the study area

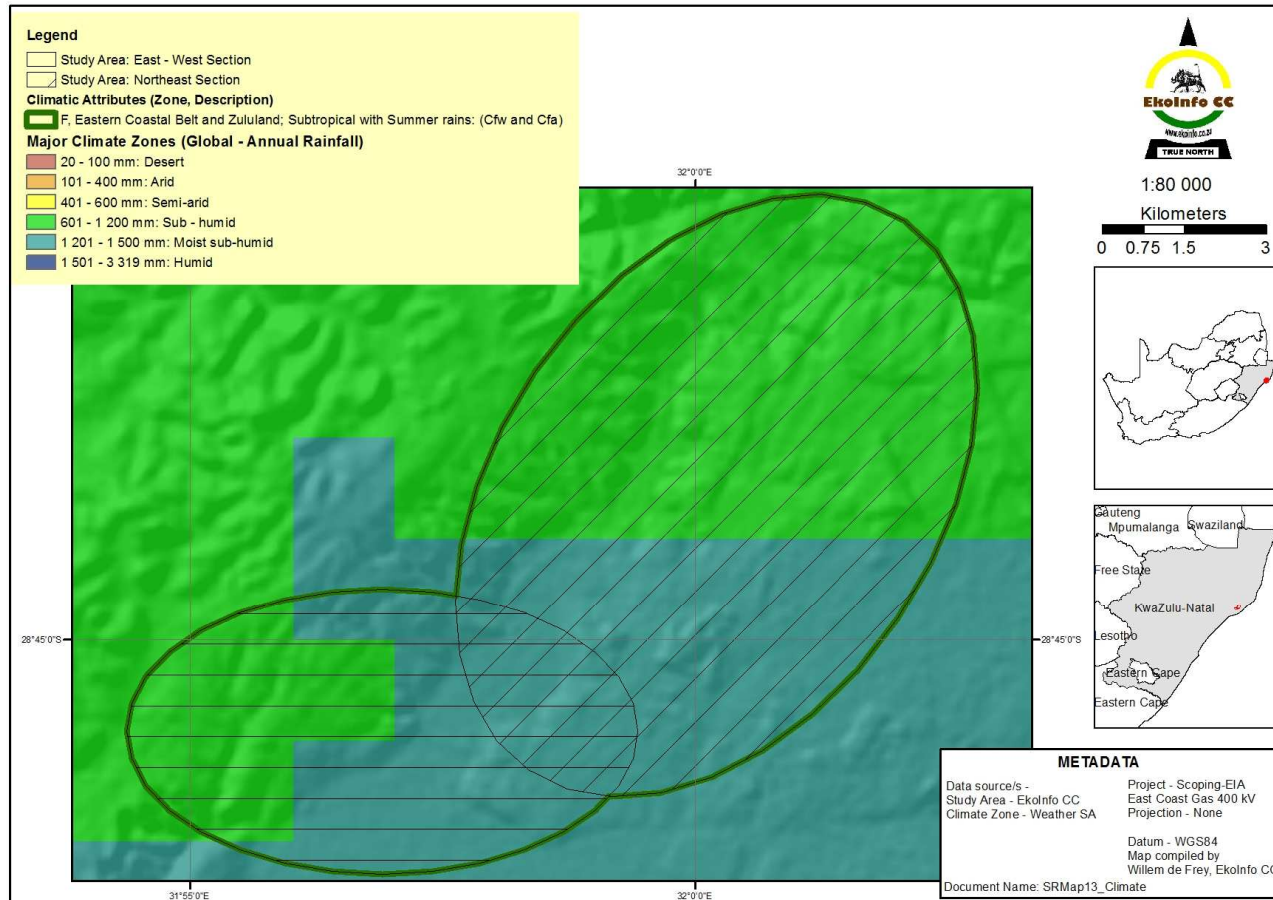


Figure 16: Global and national climate attributes associated with the study area

Monthly ETo Penman-Monteith - F:\Projects\Tender_Eskom Richards Bay 400kv Power Line\M...

Country Location 32 Station CAPE-ST_-LUCIA

Altitude 107 m. Latitude 28.50 °S Longitude 32.40 °E

Month	Min Temp	Max Temp	Humidity	Wind	Sun	Rad	ETo
	°C	°C	%	km/day	hours	MJ/m ² /day	mm/day
January	21.4	27.9	73	199	6.7	21.2	4.73
February	21.5	27.9	76	181	6.6	20.0	4.35
March	20.8	27.4	77	181	6.3	17.5	3.81
April	18.9	25.4	77	147	6.0	14.4	2.93
May	16.7	23.6	68	130	6.2	12.1	2.43
June	14.2	21.8	68	130	6.4	11.0	2.01
July	14.2	21.6	66	147	6.4	11.5	2.18
August	15.2	22.3	71	199	6.4	13.7	2.73
September	16.5	22.9	75	216	6.3	16.4	3.19
October	17.4	23.7	77	233	5.8	18.1	3.60
November	18.8	25.0	77	251	5.9	19.7	4.06
December	20.4	26.9	77	216	6.7	21.5	4.54
Average	18.0	24.7	73	186	6.3	16.4	3.38



Monthly rain - F:\Projects\Tender_Eskom Richards Bay 400kv Power Line\My_CLIM...

Station CAPE-ST_-LUCIA Eff. rain method USDA S.C. Method

	Rain	Eff rain
	mm	mm
January	164.0	121.0
February	156.0	117.1
March	140.0	108.6
April	133.0	104.7
May	108.0	89.3
June	76.0	66.8
July	77.0	67.5
August	69.0	61.4
September	79.0	69.0
October	113.0	92.6
November	124.0	99.4
December	105.0	87.4
Total	1344.0	1084.7

Figure 17: Overview of monthly weather attributes based weather information from St Lucia, north of Richards Bay (http://www.fao.org/nr/water/infores_databases_cropwat.html)

CLIMATE GRAPH // WEATHER BY MONTH RICHARDS BAY

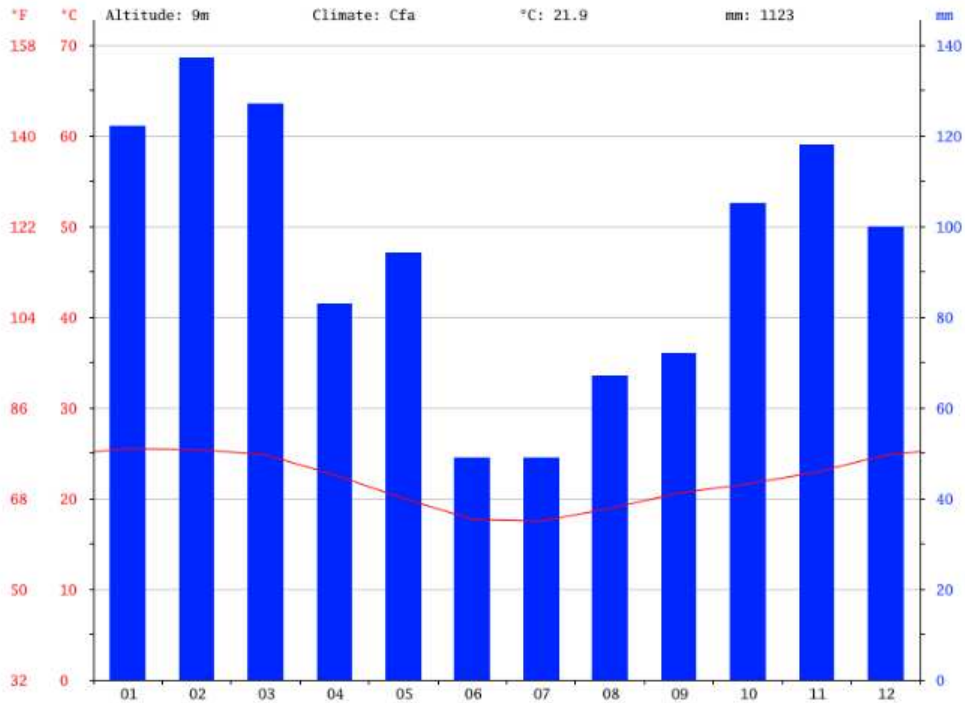


Figure 18: Climate graph reflecting the monthly weather conditions at Richards Bay (<https://en.climate-data.org/africa/south-africa/kwazulu-natal/richards-bay-637/>)

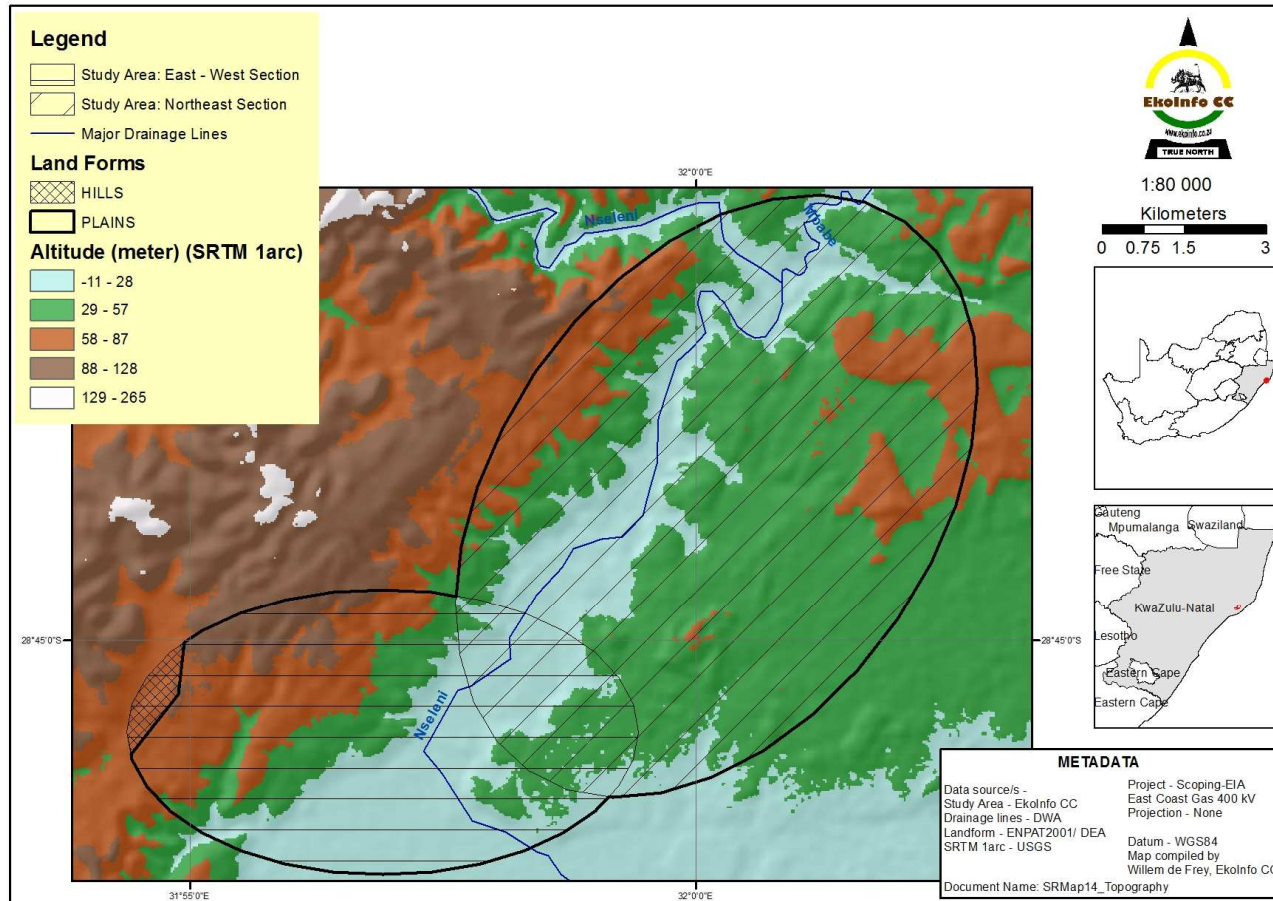


Figure 19: Topographic attributes associated with the study area

12.1.4 Soils and land use

Six broad soil patterns and eleven land type units (~~Figure 20~~~~Figure-20~~) occur within the study area. As to be expected, based on the underlying geology, coarse textured (sandy) soils dominate the area.

The scoping input from the soil scientist highlights that the variation in soil dictates agricultural use, with sugarcane production linked to the Dundee, Oakleaf and Tukulu soil forms, while the lower wetter areas are associated with extensive wetlands.

12.1.5 Wetlands, Surface water and Groundwater

Through the hydrosphere, wetlands, surface water and groundwater are interlinked. These systems are referred to as aquatic ecosystems, because water is the main driver in terms of quantity and quality. At the temporary/ seasonal side of the aquatic ecosystem gradient is wetlands, while on the seasonal/ permanent side is surface water (rivers, lakes and dams) (~~Figure 21~~~~Figure-24~~). Internationally and within South Africa's environmental legislation, all areas which becomes temporary or permanently saturated or over saturated with water, whether natural or man-made, with plants and animals adapted to waterlogged conditions are classified as wetlands (Cowan 1995, Denny 1985, DWAF 2005, Hasler 1975, Ewart-Smith **et al** 2006). The scoping input regarding wetlands indicates that the majority of the expected wetlands occur within Quaternary Catchment W12H. This catchment is classified to have a Class A (unmodified) Present Ecological State and high Ecological Importance And Sensitivity.

These systems are either a source of water to the groundwater table or receive water from the groundwater table. The reconnaissance geotechnical specialist input highlights the potential for the groundwater table to be shallow along the eastern side of the study area.

12.1.6 Flora

Three regional vegetation units occur within the study area (~~Figure 22~~~~Figure-22~~), of which two of the units are associated with terrestrial ecosystems and one with aquatic ecosystems. The aquatic ecosystem unit, namely the Subtropical Freshwater Wetlands are least threatened on a national scale, while one of the terrestrial ecosystem units, the Maputoland Coastal Belt is classified as Vulnerable. Both the terrestrial units belong to the Forest Biome (Mucina & Rutherford 2006), while the aquatic ecosystem unit represent azonal vegetation. This implies that it changes not according to soil conditions but is driven by water. Due to the high rainfall and comparative lower evapotranspiration, the soil moisture is sufficient to sustain a closed woody canopy, resulting in forest dominating the landscape (Strahler 1962, Strahler & Strahler 1987).

Vegetation units represent habitat for fauna, and it is evident from ~~Figure 5~~~~Figure-5~~ that the remaining habitat (~~Photo plate 1~~~~Photo-plate-4~~) is fragmented due to human activities related to sugarcane production, forestry and human settlement (~~Photo plate 1~~~~Photo-plate-4~~).

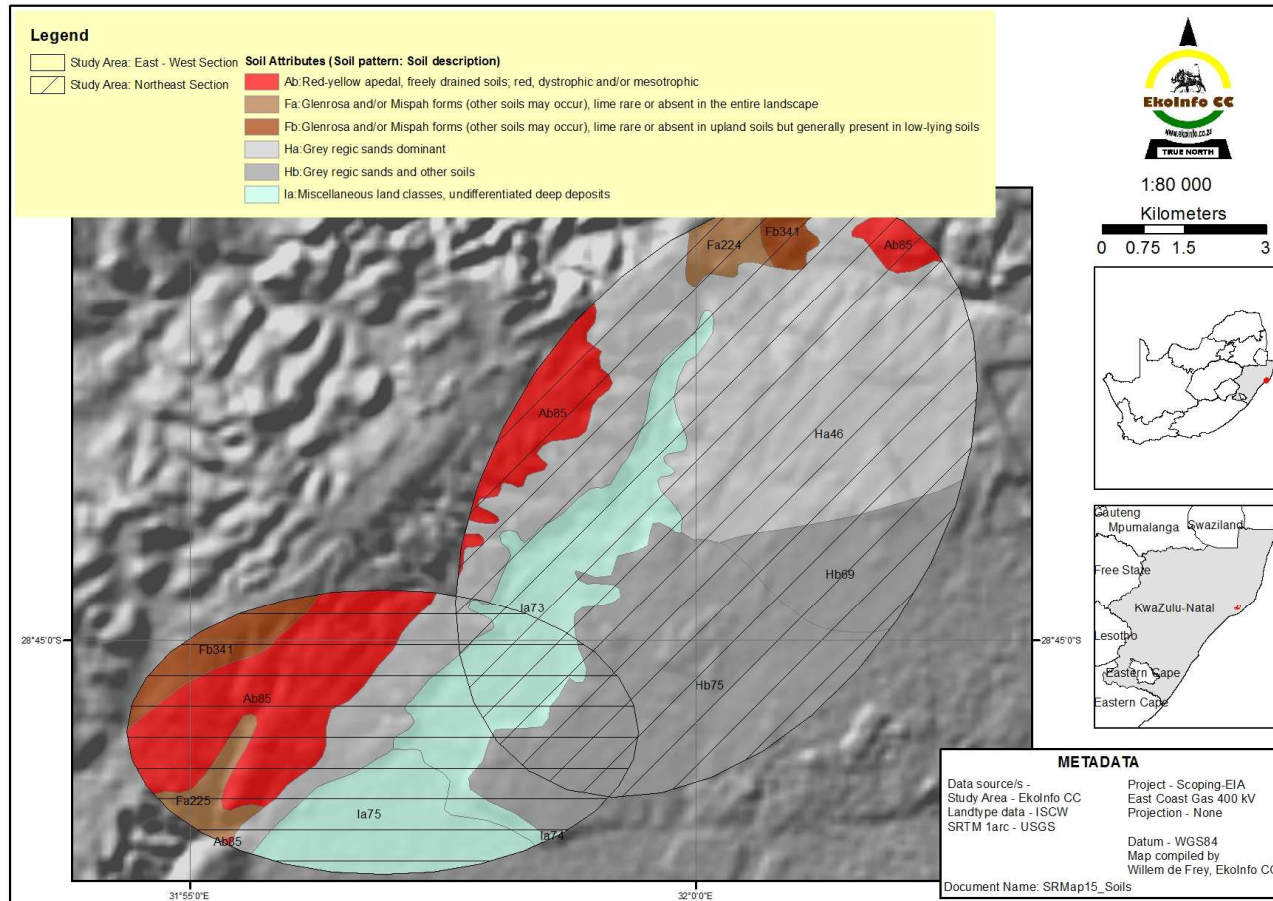


Figure 20: Soil attributes associated with the study area

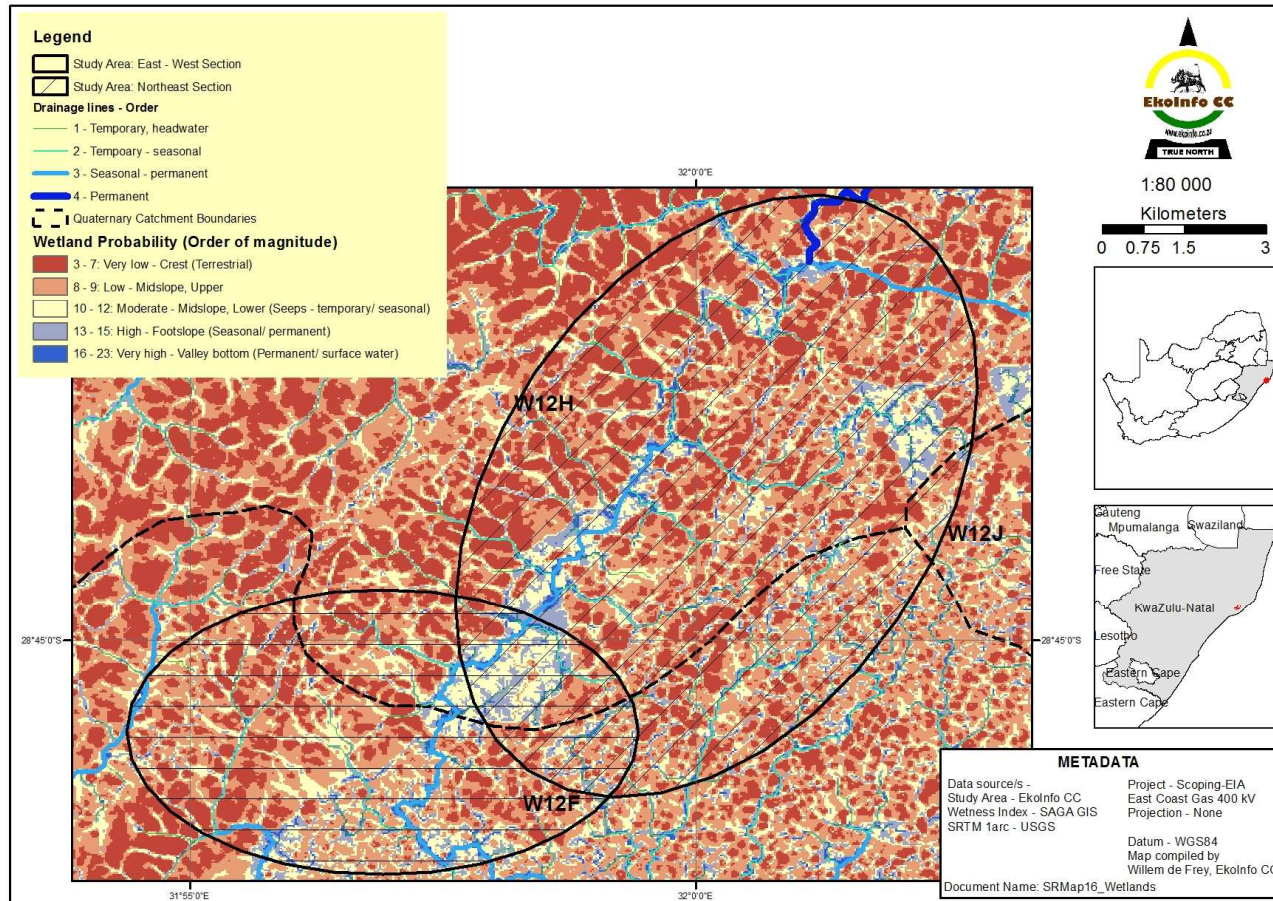


Figure 21: Wetness index indicating the probability of wetlands (temporary, seasonal, permanent) occurring with the study area

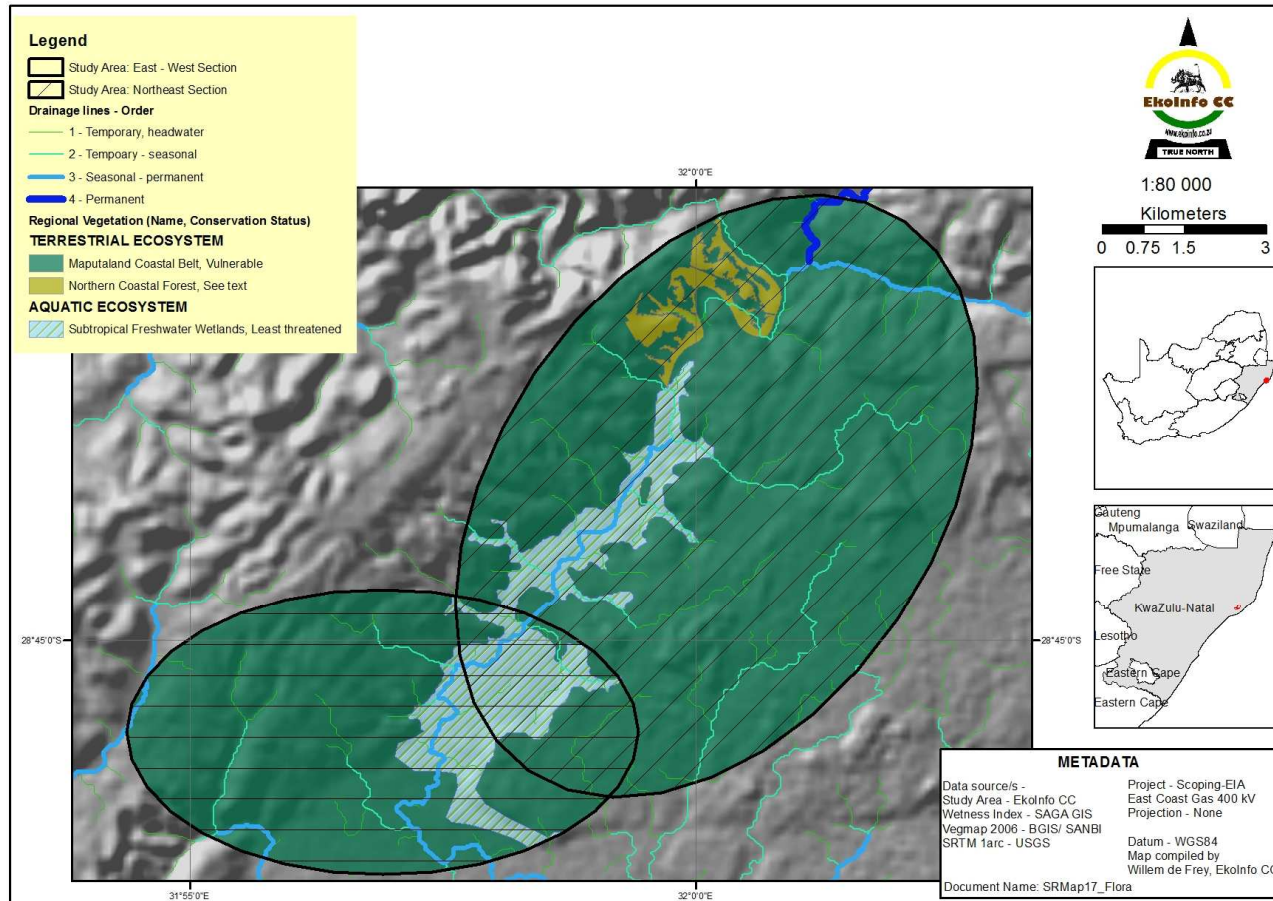


Figure 22: Floristic attributes associated with the study area



Forest/ woodland remnants



Grassland patch



Sugarcane



Forestry

Photo plate 1: Examples of the vegetation cover present within the study area

12.1.7 Avifauna and Fauna In General

Due to the overall transformed status of the study area, exceeding 50% (Table 1-4), the presence of ground living mammals is low, except for the conservation areas or large remaining patches of natural vegetation. The fauna specialist input highlights the risk of power lines, especially with regards to avifauna (birds), mainly due to collision. The document lists 17 bird species which are prone to collision with power lines and 10 wildlife species in general which could be influenced during the construction activities, either through habitat loss (transformation) or displacement.

It is expected that the majority of these species will be associated with the wetland systems, such as the Nseleni wetland system along the Nseleni River (Figure 19-49, Figure 21-24 & Figure 22-22).

12.1.8 Areas Of Conservation Concern

The only formally protected area within the study area is the Enseleni Nature Reserve towards the northwest of the study area (Figure 23-23), currently this area will not be influenced by the proposed power lines. However, the provincial biodiversity spatial framework indicates a large area of irreplaceable Critical Biodiversity Area (CBA) along the Nseleni River, which will be influenced by the currently proposed power line corridors. The sensitivity is most probably due to the large patches of intact natural vegetation (Photo plate 2-2), and the presence of species of concern highlighted in the scoping input from the fauna specialist. The Nseleni River also represents a corridor along which wildlife can move to and from the nature reserve.

12.1.9 Heritage

The scoping input document from the heritage specialists highlights the presence of historical and palaeontological important features within the study area. The historical and palaeontological important features are:

1. Mondli/ Transnet Village
2. Potential Graves
3. Fossils

The reconnaissance geotechnical input also refers to the presence of fossils within the study area. However, it is expected that these will only be uncovered during the construction phase and would then be managed according to the heritage management plan.

Due to the nature of power lines, it would be possible to avoid direct impacts on historically important features within the study area. However, indirect impacts should be considered and managed such as vandalism and access to these features.

Table 1: Overview of the extent and percentage cover of major habitats (natural areas) and human influenced (transformed areas) areas within the study area

Major Land Use And Habitat Types (Land Cover 2014)	Surface Area (ha)	% Cover	Derived Ecological Status	
			Natural Areas	Transformed Areas
Bare none vegetated	49	1%	49	
Cultivation	1 253	13%		1 253
Forestry	3 496	37%		3 496
Grassland	330	4%	330	
Human settlement	565	6%		565
Indigenous Forest	301	3%	301	
Low shrubland	26	0%	26	
Mining	17	0%		17
Thicket /Dense bush	2 742	29%	2 742	
Water permanent	83	1%	83	
Water seasonal	67	1%	67	
Wetlands	386	4%	386	
Woodland/Open bush	111	1%	111	
Totals	9 425	100%	4 094	5 331
			43%	57%

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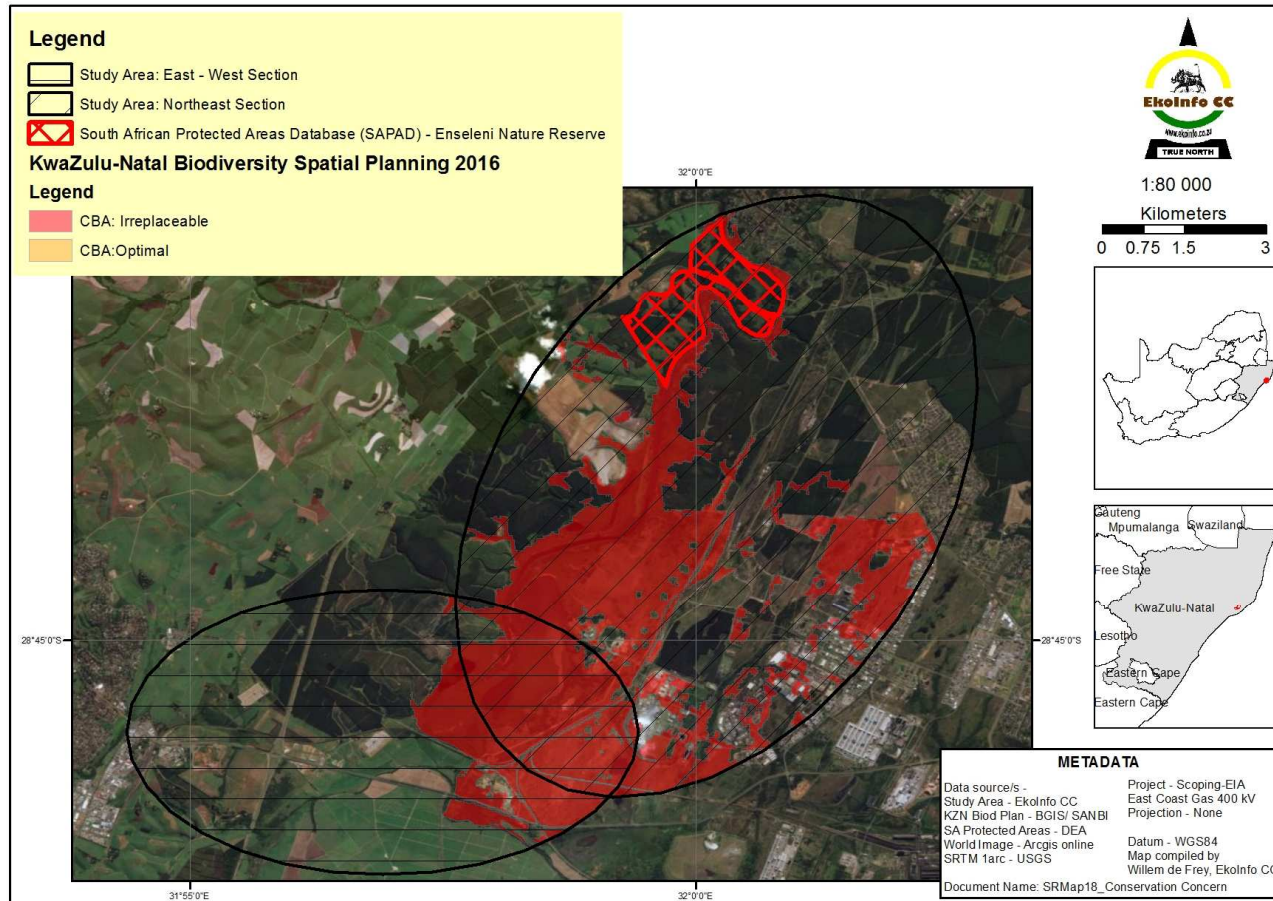


Figure 23: Areas of conservation concern within the study area



View: Northeast



View: North



View: West

Photo plate 2: Quadcopter images recorded during the scoping visit (26th of September 2018) along the Nseleni River wetland system

12.1.10 Socio-economic Environment

The area of concern covers two local municipalities, uMhlathuz Local municipality and Mfolozi Local Municipality, although it is only the area around Invubu substation that falls within Mfolozi local municipality. Both municipalities fall within the King Cetshwayo District Municipality.

12.1.10.1 *Population*

According to the 2016 community survey the population of ULM is 410465. This represents a 22,73% increase from the 2011 Census. The ULM municipality is one of the fastest growing municipalities in the district. The increased population will place pressure on the power grid as more community members will need access to basic services such as electricity.

12.1.10.2 *Sex and Age Distribution*

According to the 2011 Census, female population 51,28% vs males at 48,72 which is largely in line with the country's demographics. The number of female headed households are higher than the male headed households. With a difference of 2.56%, due to factors including the high level of divorce cases, and the fact that women are becoming more independent (National Planning Commission, 2011).

The ULM 2016 IDP stated that, 58% of the population resides in tribal areas, while 39% is in urban areas, and the remaining 3% resides on farm land.

12.1.10.3 *Health and Wellbeing*

12.1.10.4 *Education level*

According to 2011 statistics, within the uMhlathuze local municipality; 7.2 no schooling individuals could be found, 36.9 Matriculants and 7.3 Higher education individuals.

12.1.10.5 *Employment*

The total working age population in the area of ULM is approximately 237 265. Approximately 42% of the population is not economically active. According to the strict definition of unemployment, 16% of the population is unemployed. Infrastructure development could boost the economy and drive job creation.

12.1.10.6 *Economic Land Use*

Economic Land Use Activities within the area of concern include:

- Farming;
- Transportation and Rail Infrastructure;
- Social Infrastructure;
- Towns and Communities;
- Industrial Parks;
- Ecological Support Area; and
- Forestry.

12.1.11 Other Infrastructure

According to the 2011 Census, 93% of citizens within the ULM have access to electricity. While this number is high, it still falls short of the aims of the South African government for universal access to electricity as a basic human right. The South African President in 2004 stated the policy goal of universal access to electricity by 2012 (Bernard Beker, 2008). However, this still has not been achieved.

12.1.11.1 *Shooting Range*

The Richards Bay Spot Shooting Club falls within the study area.

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13 PUBLIC PARTICIPATION AND STAKEHOLDER ENGAGEMENT

Chapter 6 of NEMA states the importance of public participation and stakeholder engagement in any project undertaken under NEMA. Recent court cases have also highlighted the point of proper public participation in projects that affects the public and communities.

Eskom sees public participation as a vital part of the process and encourages feedback and public input at all levels of the EIA.

The Public Participation (PP) team set out an information program during the Scoping Phase of the process. The aim was to ensure that as many I&APs as possible will be well informed of the proposed project so that they could form part of the EIA from inception to completion.

During the EIA Phase, the focus will be to inform potential I&APs as well as registered I&APs about the project and to ensure that they (and other stakeholders) have ample opportunity to comment and give input, especially with regard to their preferred alignment. There will be no cut-off date for registering as I&APs and new stakeholders will be welcomed into the process throughout.

13.1 Developing the I&AP Database

The Public Participation Process in the Scoping Phase kicked off with an exercise and desktop study to ensure that the team had contact details of as many stakeholders and I&AP as possible. The initial stages of the process were conducted in October 2018. The data base includes communities, stakeholders, governmental departments, NGO's, NPO's and the general public.

The I&AP Database will be updated regularly and throughout the process.

13.2 Notifying Potential I&APs of the Project

In October 2018 the PP team visited the area and put up site notices within the study area. Figure 24 indicates the points at which the site notices were placed. The intention is to allow the communities and public who frequent these areas, the opportunity to become aware of the project and participate.

During this time land owners, other members of the public and stakeholders were handed Basic Information Documents (BID) regarding the project. BID documents were also sent to government departments and other I&AP's whose detail was obtained during the site visit.

Table 2 lists the dates that newspaper advertisements introducing the project to the public were done. The proof of the advertisements can be seen in Appendix A.

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Table 2: Newspapers and publication dates

Newspaper	Publication Date
Izoleswe (English and Zulu)	15 October 2018
Beeld (Afrikaans)	15 October 2018
Zululand Observer (Afrikaans Zulu and English)	12 October 2018

13.3 Stakeholder and Public Meetings

The following stakeholder meeting and public meetings are planned to discuss the DSR with the public and stakeholders (Table 3).

Table 3: Public and Stakeholder meetings

Date	Venue	Time	Type of Meeting
13 February 2019	Empangeni Hall corner Commercial and Union Street Empangeni	18H00	Public Meeting
14 February 2019	Bay Hall 2627 Bayview Boulevard Street RB	18H00	Public Meeting
15 February 2019	The Function Room Altron	10H00	Stakeholder Meeting

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Comment [VT30]: Where the project affect state land and communal land; the leadership, Chiefs, Cogta and Municipalities will have to be consulted prior to consulting communities. And where state land is affected the administration office either public works or rural development needs to be consulted for consent or for checking of land claims.

Comment [VT31]: Where Private farms are affected, please ensure that all farmers unions including emerging farmers organizations are consulted.

13.4 Draft Scoping Report Public Comment Period

The DSR will be available for public review from 25 January 2019 to 28 February 2019. The report is available for review at the following public institutions:

- Richards Bay Public library - 3 Kruger Rand Grove
- Empangeni Public Library – Corner Commercial and Union Street Empangeni Central,
- Aquadene Public Library - 4 Via Ammannia, Aquadene, Richards Bay;

The DSR will also be available for download from EkolInfo and Eskom websites or via Dropbox. Contact EkolInfo on www.ekolinfo.co.za or the office at 012 365 2546 or Sean Hutcheons 0847027780 to obtain copies of the report.

13.5 Summary of Concerns Raised During the Scoping Phase

The following concerns were raised to date:

- Impacts on Wetlands;
- Impact on Infrastructure;
- Impact on Land Use

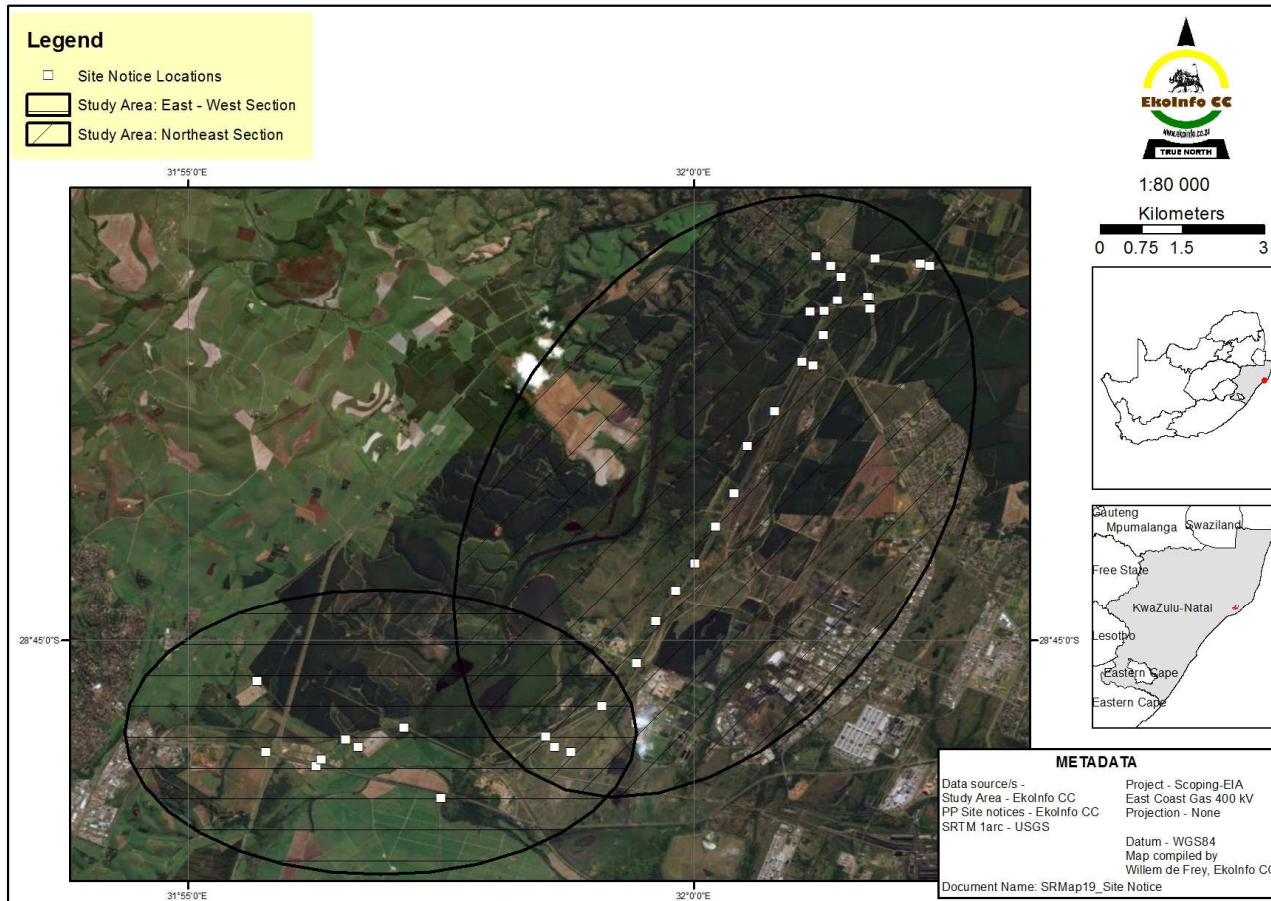


Figure 24: Overview of distribution of the site notices placed during the public participation process

14 POTENTIAL ENVIRONMENTAL AND SOCIAL IMPACTS

14.1 Environmental and Social Issues

The new proposed power lines will, in conjunction with the CCPP, have a positive impact on the stability of power supply in the Richards Bay area as well as increase power output on a regional level. This will socially have a positive impact. Any development will have an impact on the environment and is unavoidable. It is important to find the alternative that has the least impact with the best mitigation measures. The study area is situated near wetlands and high value land uses such as forestry and agriculture. This project would most likely impact on some or all of these land use activities.

14.2 Economic Impacts

Economic impact will be two fold. Firstly, there is potential loss of economical land use areas due to the power lines and pylons.

Secondly there will be a positive impact due to the increase in stability of power supply as well as the increase in power supply capacity.

14.3 Infrastructure Impacts

The impact on infrastructure is potentially limited due to the short length of the proposed power lines, but also due to the size of the new proposed power lines. The new lines will be high enough to navigate most other infrastructure in the area.

The area between the CCPP site and Athene substation has a high concentration of power lines already and this is the area where there is the highest potential for impacts on current infrastructure.

14.4 Aesthetic Impacts

As indicated above the area between the CCPP site and Athene substation has a high volume of power lines. Any new power lines will not have a high impact on the aesthetics of the area.

The alternative from the CCPP site towards the north and Invubu sub station has the potential for high impact although there is currently other industrial infrastructure in the area.

14.5 Health-Related Impacts

Electromagnetic fields (EMF) are generated by electric currents and voltages in conductors. There is considerable concern about the health effects of long-term exposure to these fields within the public domain. The EIR will include studies conducted by ESKOM on EMF and potential risk. This information will also be extrapolated to the alternative routes within the study area.

14.6 Ecological Impacts

The impacts and possible impact areas identified during the scoping phase are:

- Fauna and Flora impacts are expected during the construction phase;
- Avifauna;
- Visual;
- Heritage and palaeontology.

The EIA phase will investigate these risk and specialists in each field will report on the possible impacts and mitigations.

14.7 Hydrological and Wetland Impacts

The study area overlaps with two quaternary catchments, namely W12F and W12H in the Pongola –Mtamvuna Water Management Area (WMA). Quaternary Catchment W12F has a Moderately modified (class C) Present Ecological State (PES) and a Moderate Ecological Importance and Sensitivity (EIS), while Quaternary Catchment W12H has an Unmodified (class A) Present Ecological State (PES) and a High EIS. The largest portion of the study area is located within Quaternary Catchment W12H.

Remaining wetlands in this portion of the study area are expected to have a higher ecological value and integrity compared to wetlands in Quaternary Catchment W12F.

Impacts on flow within wetlands as well as sedimentation during construction and operational phase have been identified as possible risks to the wetland. Wetland degradation due to access to construction areas and maintenance roads is also a risk factor that will be investigated in the EIA phase.

14.8 Potential Cumulative Impacts

The cumulative impacts that will be investigated during the EIA phase will mainly concentrate on impacts during the construction phase. These will include:

- Noise;
- Construction activities and camp;
- Traffic disruption;
- Access to construction sites;
- Construction waste management;
- Waste management if decommissioning takes place;

The operational phase will have very limited cumulative impacts as any impact will revolve around maintenance issues.

15 PLAN OF STUDY FOR THE EIA

15.1 Introduction

NEMA in appendix 2 indicate the minimum information that is required within the plan of study (POS) to enable the public and the competent authority enough information to approve the POS and to continue with the EIA phase of the project. These minimum requirements are:

- A description of the alternatives to be considered and assessed within the preferred site, including the option of not proceeding with the activity;
- A description of the aspects to be assessed as part of the environmental impact assessment process;
- Aspects to be assessed by specialists;
- A description of the proposed method of assessing the environmental aspects, including aspects to be assessed by specialists;
- A description of the proposed method of assessing duration and significance;
- An indication of the stages at which the competent authority will be consulted;
- Particulars of the public participation process that will be conducted during the environmental impact assessment process; and

- A description of the tasks that will be undertaken as part of the environmental impact assessment process;
- Identify suitable measures to avoid, reverse, mitigate or manage identified impacts and to determine the extent of the residual risks that need to be managed and monitored.

15.2 Description of the Proposed EIA Process

The EIA Study to be undertaken for the Richards Bay new power lines will aim to achieve the following:

- Provide an overall description of the social and biophysical environment affected by the activities of the proposed development;
- Assess potentially significant impacts (direct, indirect and cumulative, where required) associated with the proposed new power lines and associated infrastructure;
- Identify and recommend appropriate mitigation measures for potentially significant environmental impacts.
- Undertake a fully inclusive public participation process to ensure that public and I&APs are afforded the opportunity to participate, and that their issues and concerns are recorded. This process will include consultation with I&APs, stakeholders and authorities and conducting focus group meetings and public meetings.
- The public review of the EIA report for a 30-day period will also take place.

The EIA will address potential environmental impacts and benefits (direct, indirect and cumulative impacts) associated with each life-cycle stage of the development including design, planning, construction, operation and decommissioning. The EIA will aim to provide the environmental authorities with all the relevant information to make an informed decision regarding the proposed new Eskom power lines.

15.3 Composition of the Project Team

The team that will be used in the specialist studies are as follow:

Company or Team Member	Years' Experience	Qualification
Project Leader EkolInfo CC Willem de Frey	20	MSc Wildlife Management
Pachnoda Consulting CC Lukas Niemand Biological – Fauna; Herpetofauna; invertebrates	18	MSc Zoology SACNAPS – Zoological and Ecological
EkolInfo CC Willem de Frey Biological - Flora	20	MSc Wildlife Management SACNAPS - Botany & Ecology
Pachnoda Consulting CC Lukas Niemand Avi Fauna	18	MSc Zoology SACNAPS – Zoological and Ecological
Terrasoil Sciences DR Johan v d Waals Soil and Land capability	15	MSc Strata Control SACNAPS Earth Science
Terralogix Consulting K Drescher Visual	15	MSc Strata Control SACNAPS Earth Science
NGT Holdings (PTY) LTD Nkosinathi Tomose Social and Heritage	11	MSc, ASAPA and Amafa KZN registered
EkolInfo CC Sean Hutcheons Public and Stakeholders feedback	13	M.Phil. Wild Life Management, MCOM Business Management

Imperata Consulting CC Retief Grobler Wetland	12	MSc Botany SACNAPS – Botanical and Ecological Science
EkolInfo CC Sean Hutcheons EAP	13	M.Phil. Wild Life Management, MCOM Business Management
Reviewer DR Theo Mostert		

15.4 Consultation with the Relevant Authorities

There will be a consultation meeting with the various authorities (DEA, DWAS, SAHRA and DAFF) on issues that need to be addressed

15.5 Alternatives to be investigated

The following alternatives will be investigated:

- ~~Figure 1~~ ~~Figure 1~~ indicates the two main areas in which the new powerlines could be situated. East West from the CCPP and South North from the CCPP. Within these areas alternative routing for the 4 powerlines will be investigated. These could include all 4 in one area or two in one area and two in another area. Within these areas the requirement is for a 55m servitude per powerline. The goal will be to determine alignment corridors of 1km wide in which the 55m servitudes per power line could be found. The corridor is then approved by the competent authority. Once approved Eskom’s alignment team will determine the route and pylon placements
- The possibility of using inactive servitudes or decommissioning of current powerlines and replacing them with the new powerline;
- The alternative types of power lines to be used will be investigated, see ~~Figure 14~~ ~~Figure 14~~ for examples;

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15.5.1 Alternative assessment

Each alternative will be assessed by the specialist team and the EAP to determine the alternatives with the smallest impact and the highest mitigation measures (~~Table 4~~ ~~Table 4~~).

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Table 4: Example of impact and mitigation matrix per alternative

Environmental and Economic aspects	Alternative	Alternative	Alternative
Biological – Fauna; Herpetofauna; invertebrates			
Biological - Flora			
Avi Fauna			
Soil and Land capability			
Visual			
Social and Heritage			
Public and Stakeholders feedback			

Wetland			
Total Score ratings			
The rating will be: 1 – High impact low mitigation 2 - Medium impact and medium mitigation 3 – Low impact and high mitigation 4 – NO GO			

15.6 Specialist Studies

The following specialist studies will be conducted during the EIA phase:

- Biological – Fauna; Herpetofauna; invertebrates
- Biological - Flora
- Avifauna
- Soil and Land capability
- Visual
- Social and Heritage
- Public and Stakeholders feedback
- Wetland

15.7 Impact Assessment Methodology and Impact Rating

EkolInfo will provide an outline of the approach used in the study. Assumptions and sources of information will be clearly identified, and the knowledge of local people will be incorporated in the study. The description of the study approach will include a short discussion of the appropriateness of the methods used in the specialist study in terms of local and international trends and specific practice.

15.7.1 Description of the Affected Environment

A description of the affected environment must be provided. EkolInfo will additionally provide an indication of the sensitivity of the affected environment. Sensitivity, in this context, refers to the “ability” of an affected environment to tolerate disturbance, for example, if disturbance of the natural habitat results in the permanent loss of its biodiversity. The affected environment could be categorised as having a “low tolerance” to disturbance and is, therefore, termed a highly sensitive habitat. If, on the other hand, a habitat can withstand significant disturbance without a marked impact on its biodiversity, the affected environment could be categorised as having a high tolerance to disturbance (i.e. “low sensitivity” habitat).

15.7.2 Impact Identification and Assessment

EkolInfo will make a clear statement, identifying the environmental impacts of the construction, operation and management of the proposed development. As far as possible, the suite of potential environmental impacts identified in the study will be quantified and the significance of the impacts will be assessed according to the criteria set out below. Each impact will be assessed and rated. The assessment of the data will, where possible, be based on accepted scientific techniques. Failing this, judgements will be based on the consultant’s professional expertise and experience.

15.7.3 Project Phasing

Activities within the framework of the proposed development and their respective construction and operational phases, give rise to certain impacts. For the purpose of assessing these impacts, the project will be divided into phases from which impacting activities can be identified, namely:

a) Status Quo

The site as it currently stands taking cognisance of the disturbance and the impacts remaining, while operating.

b) Pre-construction phase

All activities on site up to the start of the construction, not including the transport of materials, but including the initial site preparations. This also includes the impacts, which would be associated with the planning.

c) Construction phase

All the construction and construction related activities on site, until the contractor leaves the site.

d) Operational phase

All activities, including the operation and maintenance of the proposed development.

The activities arising from each of the relevant phases have been included in Table 3. The assessment endeavours to identify activities which require certain environmental management actions to mitigate the impacts arising from them. The criteria against which the activities were assessed are given in Section 9.3.4.

15.7.4 Assessment criteria

The terms of reference for the study include criteria for the description and assessment of environmental impacts. These criteria are drawn from the Integrated Environmental Management Guidelines and the criteria include:

Table 5: Impact Assessment Criteria

<p>Nature of impact This is an appraisal of the type of effect the proposed activity would have on the affected environmental component. The description should include what is being affected, and how.</p>		
<p>Extent The physical and spatial size of the impact.</p>	<p>Site</p>	<p>The impact could affect the whole, or a measurable portion of the above-mentioned properties.</p>
	<p>Local</p>	<p>The impacted area extends only as far as</p>

		the activity, e.g. a footprint.
	Regional	The impact could affect the area including the neighbouring farms, the transport routes and the adjoining towns.
Duration The lifetime of the impact; this is measured in the context of the lifetime of the proposed base.	Short term	The impact will either disappear with mitigation or will be mitigated through natural process in a span shorter than any of the phases.
	Medium term	The impact will last up to the end of the phases, where after it will be entirely negated.
	Long term	The impact will continue or last for the entire operational life of the development but will be mitigated by direct human action or by natural processes thereafter.
	Permanent	The only class of impact which will be non-transitory. Mitigation either by man or natural process will not occur in such a way or in such a time span that the impact can be considered transient.
Intensity	Low	The impact alters the affected environment in such a way that the natural processes or functions are not affected.
	Medium	The affected environment is altered, but function and process continue, albeit in a modified way.
	High	Function or process of the affected environment is disturbed to the extent where it temporarily or permanently ceases.
Probability This describes the likelihood of the impacts actually occurring. The impact may occur for any length of time during the life cycle of the activity, and not at any given time.	Improbable	The possibility of the impact occurring is very low, due either to circumstances, design or experience.
	Probable	There is a possibility that the impact will occur to the extent that provisions must be made therefore.
	Highly probable	It is most likely that the impacts will occur at some or other stage of the development. Plans must be drawn up before undertaking the activity.
	Definite	The impact will take place regardless of any prevention plans, and there can only be relied on mitigatory actions or contingency plans to contain the effect.
Determination of	No	The impact is not substantial and does not

<p>significance Significance is determined through a synthesis of impact characteristics. Significance is an indication of the importance of the impact in terms of both physical extent and time scale, and therefore indicates the level of mitigation required.</p>	<p>significance</p>	<p>require any mitigatory action.</p>
	<p>Low</p>	<p>The impact is of little importance but may require limited mitigation.</p>
	<p>Medium</p>	<p>The impact is of importance and therefore considered to have a negative impact. Mitigation is required to reduce the negative impacts to acceptable levels.</p>
	<p>High</p>	<p>The impact is of great importance. Failure to mitigate, with the objective of reducing the impact to acceptable levels, could render the entire development option or entire project proposal unacceptable. Mitigation is therefore essential.</p>

16 Mitigation

16.1 Mitigation Measures

Mitigation measures should be recommended in order to enhance benefits and minimise negative impacts and they should address the following:

16.1.1 Mitigation objectives

For each identified impact, EkolInfo or the relevant specialists will provide mitigation objectives (tolerance limits) which would result in a measurable reduction in impact. Where limited knowledge or expertise exists on such tolerance limits, the specialist must make an “educated guess” based on his/her professional experience.

16.1.2 Recommended mitigation measures

For each impact EkolInfo or the relevant specialists will recommend practicable mitigation actions that can measurably affect the significance rating. The specialist must also identify management actions, which could enhance the condition of the environment. Where no mitigation is considered feasible, this must be stated, and reasons provided.

16.1.3 Effectiveness of mitigation measures

EkolInfo will provide quantifiable standards (performance criteria) for reviewing or tracking the effectiveness of the proposed mitigation actions, where possible.

16.2 Stakeholder and Public Engagement

As per NEMA the public will have the opportunity to review the Environmental Assessment Report (EIR) for the prescribed period. During this time there will be both public meetings and stakeholder engagements to explain the findings of the report and solicit feedback and concerns regarding the project and the EIR findings.

The I&AP database developed during the Scoping phase as well as the registration received will be used in notifying the public. Local and Daily newspaper advertisement informing the public regarding the review will also be done. Notifications will include National, Provincial and Local government spheres including:

- SANRAL;
- PRASA;
- SPOORNET;
- DWAS;
- DAFF;
- SAHRA;
- City of Umhlathuze Local Municipality;
- King Cetshwayo District Municipality;
- uThungulu District Municipality;
- uMfolozi Local Municipality;
- KwaZulu-Natal Department of Economic Development, Tourism and Environmental Affairs;

The registration of new I&PA's will also continue throughout the process.

16.3 Submission of the Final EIA Report and EMP to DEA

16.4 Specialist Study: Scope of Work

The specialist in each field has analysed the findings during the scoping phase and have indicated that the following investigations, including methodologies, are required to enable a full EIA. The findings will be used to determine impacts and mitigations.

16.4.1 Biodiversity Specialist Study

16.4.1.1 *Flora*

To document the presence of threatened and/ or protected species using scientific methods, within the remaining natural vegetation areas in the four corridor options. The Braun-Blanquet approach will be used, which is the national standard for vegetation description and mapping (Mucina & Rutherford 2006, Brown et. al. 2013).

A minimum of 20 plots will be surveyed to allow for the inclusion of the data into the national data set. At each plot the following aspects will be document:

- Abiotic factors
 - Location - Garmin GPS Montana, 5 m accuracy
 - Altitude (m)
 - Topography
 - Terrain units
 - Slope
 - Aspect
- Soil conditions
 - Soil form
 - Soil depth
 - Estimated percentage soil texture: A-horizon
 - Estimated percentage rock cover

- Vegetation characteristics
 - Species composition
 - Estimated abundance cover per species
 - Estimated percentage cover per major growth form (graminoids, forbs, woody species)
 - Estimated height per physiognomic layer (herbaceous, woody)
- Additional information
 - General observation regarding the ecological status
 - Georeferenced digital photographs in the major wind directions using
 - Ground based platforms
 - Air based platforms

The above information will make it possible to determine:

- The distribution and extent of natural vegetation per corridor option.
- The presence or absence of threatened or protected plants or suitable habitat for them.
- The presence or absence of declared alien invasive species.

Thereby making it possible to avoid sensitive areas in terms of the vegetation.

The information will be represented in a report compiled using MS Word. The following Geographic Information System (GIS) software will be used to create models, analyse and present the data:

- Idrisi Selva
- ESRI ArcView
- SAGA GIS

Landsat 8 imagery will form the basis of the mapping, supplemented with Google Earth images:

- Minimum pixel resolution will be 30 m x 30 m
- Minimum mapping unit 1 ha
- Minimum scale 1: 50 000 or larger

16.4.1.2 Mammals

The conservation status of mammal taxa will be based on the IUCN Red List (2017) and Child *et al* (2016), while mammalian nomenclature follows Stuart & Stuart (2015), unless otherwise specified.

The distribution of potential occurring species will be sourced from Stuart & Stuart (2015), Skinner & Chimimba (2005) and Friedmann & Daly (2004). As part of the assessment, national small-scale datasets managed by the Animal Demography Unit (ADU) and relevant citizen science projects will be consulted such as MammalMAP.

16.4.1.3 Herpetofauna

The conservation status of reptile taxa will be chosen according to the recent conservation assessment conducted by Bates *et al.* (2014).

The conservation status of amphibian taxa follows Measey (2010).

The distribution of reptile and amphibian species will be verified against the ADU's database consisting of ReptileMAP and FrogMAP.

16.4.1.4 Invertebrates

Lepidoptera (Butterflies)

The occurrence of butterfly taxa will be based on Woodhall (2005) and Mecenero *et al.* (2013).

The conservation status of the butterfly taxa follows that of Mecenero *et al.* (2013).

The online LepiMAP database will provide a preliminary inventory of butterflies occurring on the study area.

Odonata (Dragonflies & Damselflies)

The occurrence of adult Odonate taxa will be based on Samways (2008), Tarboton & Tarboton (2015) and Samways & Simaika (2016).

The conservation status of Odonate taxa follows that of Samways & Simaika (2016).

The online OdonataMAP database provides a preliminary inventory of adult dragonflies and damselflies occurring on the study area.

Scorpions

The occurrence of Scorpion taxa will be based on the online ScorpionMAP database.

Mygalomorph spiders (baboon and trapdoor spiders)

The SpiderMAP database will be consulted for potential species that could occur.

16.4.1.5 Avifauna

A number of references will be consulted which include the following (although are not limited to):

- Hockey *et al.* (2005) for general information on bird identification and life history attributes.
- Marnewick *et al.* (2015) will be consulted for information regarding the biogeographic affinities of selected bird species that could be present on the study area.
- The conservation status of bird species will be categorised according to the global IUCN Red List of threatened species (IUCN, 2017) and the regional conservation assessment of Taylor *et al.* (2015).
- Distributional data will be sourced from the first South African Bird Atlas Project (SABAP1) and verified against Harrison *et al.* (1997) for species corresponding to four quarter-degree grid cells (QDGCs) sympatric to the study area. These include 2831DB (Empangeni), 2832CA (KwaMbonami), 2831DD (Felixton) and 2832CC (Richards Bay). The SABAP1 data provides a “snapshot” of the abundance and composition of species recorded within a quarter degree grid cell (QDGC) which was the sampling unit chosen (corresponding to an area of approximately 15 min lat x 15 min long). It should be noted that the atlas data makes use of reporting rates that were calculated from observer cards submitted by the public as well as citizen scientists. It provides an indication of the thoroughness of which the QDGCs were surveyed between 1987 and 1991.
- Distributional data will also be sourced from the SABAP2 database (sabap2.adu.org.za). Since bird distributions are dynamic (based on landscape changes affected by fragmentation and climate change), SABAP2 was born (and launched in 2007) from SABAP1 with the main difference being that all sampling is done at a finer scale known as pentad grids (5 min lat x 5 min long, equating to 9 pentads within a QDS). This implies that the data is more site-specific, recent and more comparable with observations made during the site visit. A total of 14 pentad grids are applicable to the project which is centred at grids 2845_3155 and 2840_3200.

- To facilitate the alignment selection process, the breeding occurrence and incidental occurrence records (when available) for large birds of prey and Grey Crowned Cranes (*Balearica regulorum*) will be requested from EWT;
- Data on power line derived bird mortalities in the area will be requested from the electrical infrastructure mortality incident register (the dataset was provided by EWT);
- The Coordinated Waterbird Count (QWAC) and Birds in Reserve Project (BIRP) datasets will be obtained for the project area;
- The choice of scientific nomenclature, taxonomy and common names are recommended by the International Ornithological Committee (the IOC World Bird Names, v.8.2), unless otherwise specified (see www.worldbirdnames.org as specified by Gill & Donsker, 2018).
- Additional information regarding bird-power line interactions will be provided by the author's own personal observations.

16.4.2 Geotechnical Specialist Study

The scoping assessment has indicated that for the purpose of the EIA no further geotechnical studies will be conducted. The Scoping phase indicated the possibility of unstable ground and palaeontological risks that will be considered within the impact assessment and the Draft EMP.

16.4.3 Heritage Specialist Study

It is recommended that the EIA phase of the project should include a section on Ecosystems Services and how the project could positively or negatively impact on ecosystem services that support the health and wellbeing of the affected communities. Communities include the affected municipalities, industries, the farmers and households within and immediately outside of the receiving environment. The assessment will also include interviews with ecology and wetland specialists working on the project to determine the social benefits of conserving wetlands and biodiversity as part of ecosystem services. The assessment of ecosystem services should consider the following:

- Direct drivers of the ecosystem change. For example, change in local land use and cover; resources consumption; pollution; increase in population
- Indirect drivers of the ecosystem change. For example, demographic change; economic change; socio-political change; cultural and religious change; scientific and technological change.
- The wellbeing of the ecosystem services beneficiaries, for example, these include among others: change in demand for ecosystem services for basic material for good life; change in demand for ecosystem services for health; change in demand for ecosystem service for security; change in demand for ecosystem service for good community and social relations.

16.4.4 Soils and Land Capability Specialist Study

A detailed soil and land use investigation will be conducted through the auguring of holes for soil classification and description, roughly 300m apart along the identified alternative corridors. This information will be augmented through a detailed aerial photograph interpretation (both recent based on Google Earth images and historic based on old aerial photographs). Information regarding yields and land use will be obtained from the current land users.

16.4.5 Wetlands Specialist Study

The following aspects will be addressed as part of the wetland and watercourse specialist study for the EIA phase of the proposed East Coast Gas 400kV Power Line development:

- The description of watercourses, particularly wetlands and rivers within the study area. Watercourses assessed during this study are based on the definitions stated in the National Water Act:
 - A river or spring.
 - A natural channel in which water flows regularly or intermittently.
 - A wetland, lake or dam into which, or from which, water flows.
- Identification of important watercourse properties and components, which may be influenced by the proposed transmission line, and may influence the proposed transmission line during construction and operation. This will include wetland site surveys in each of the four corridor and alignment alternatives.
- General overview of watercourses within each of the corridor alternatives.
- Identification and delineation of watercourses within corridor alternatives. These currently include the following:
 - Alternative 1 to 4 as indicated in figures 8 to 13.
- Assess each corridor alternative in terms of identified watercourse sensitivities and recommended the most suitable corridor alternative based on the results of the assessment. Provide a motivation to explain why the selected corridor is regarded as the preferred alternative.
- Impact assessment of expected project related activities on watercourses with and without recommended impact mitigation measures.

16.4.6 Visual Specialist Study

During the EIA phase the study will be refined and focus on areas with a potential high visual sensitivity – these areas will be subjected to a full visual impact assessment based on the methods given by the Landscape Institute & IEMA [1], the BLM [2], Smardon [3], and Blair [4]. The areas will be described in terms of land, water, vegetation and structures. Photographs taken during a site visit will form part of the site description.

Visual analyses will be done by various Geographic Information System (GIS) software modelling procedures. A digital terrain model DTM, generated from available 5m contours, will be used to determine the regional aspect and slope, as well as performing viewshed analyses within a 3 km buffer zone around the alternative alignments.

Visual contrast ratings will be done on areas of modelled high visual impact do determine the visual impact severity.

17 CONCLUSIONS

This is a DRAFT document due to the fact that the input of the public is still required. The current objective of this document is to inform the public about the project, provide an overview of the nature of the project and the environment it could potentially impact upon, and to provide insight on how the specialists would assess the potential impacts on the environment during the EIA phase based on the information available, their knowledge and experience.

The document will be finalised once the input/ response from the Interested and Affected Parties (I&APs) had been received. The documents will be made available to the public at the **end of January/ beginning of February 2019.**

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19 APPENDIX A – NEWSPAPER & SITE NOTICE EVIDENCE

To be included in document to be presented to the public

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20 APPENDIX B – TEAM CV'S

To be included in document to be presented to the public

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