Established in 1952

Eskom Holdings SOC Ltd

ERMELO – RICHARDS BAY COAL LINK UPGRADE PROJECT: PROPOSED DEVELOPMENT OF THE NEW NZALO (MQWABE) 400/88 KV, 160MVA SUBSTATION WITH ASSOCIATED 88KV AND 400KV TURN-IN POWER LINES EAST OF VRYHEID, KWAZULU-NATAL, SOUTH AFRICA

Final Basic Assessment Report

DEA Reference Number: 14/12/16/3/3/2/633
Issue Date: 11 June 2015
Revision No.: 1
Project No.: 12133

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Date:	11 June 2015
Document title:	**FINAL BAR: PROPOSED DEVELOPMENT OF NZALO (MQWABE) 400Kv SUBSTATION AND ASSOCIATED 400Kv TURN IN LINES, KWAZULU-NATAL PROVINCE, SOUTH AFRICA.**
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For:	**SiVEST Environmental Division**
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EXECUTIVE SUMMARY OF THE CONTENT OF THE BASIC ASSESSMENT REPORT

INTRODUCTION AND PROJECT DESCRIPTION:

The Applicant, Eskom Holdings (SOC) Ltd. is making an Application for Environmental Authorisation for the development of a 400/88 kV, 160MVA Substation with associated 88 kV and 400 kV turn-in power lines near Nzalo, Zululand District Municipality in KwaZulu-Natal Province, in terms of the National Environmental Management Act, Act No. 107 of 1998 (as amended). This Application for Environmental Authorisation is being made to the Competent Authority, namely, the National Department of Environmental Affairs (DEA). The proposed development requires compliance with the Environmental Impact Assessment (EIA) Regulations of 2010 (as amended), promulgated in terms of the National Environmental Management Act (No. 107 of 1998) (NEMA).

SiVEST Environmental has been appointed by Trans-Africa Projects Pty Ltd, on behalf of Eskom Holdings (SOC) Ltd (herein after referred to as the Applicant) to undertake a Basic Assessment Process for the above-mentioned project.

Project background:
The proposed Nzalo substation and associated power lines are part of a suite of projects collectively known as the Ermelo-Richards Bay Coal Link Upgrade.

Transnet is South Africa's sole provider of rail transport infrastructure for coal transportation. One of South Africa's largest foreign exchange earners is the export of high quality coal products to China. The Transnet rail link between the coal fields in Mpumalanga Province and the export node, the Richards' Bay Coal Terminal, is one of the busiest railway links in South Africa.

The increase in demand for South Africa's high quality coal necessitates the increase in production, which in turn has demands on the railway network infrastructure. In response to the increased demand for South Africa's coal in the global market place, Transnet needs to increase the volume of coal that is being transported between the Mpumalanga coal fields and the Richard's Bay Coal Terminal. This increase will be facilitated through capital expenditure on two fronts, the supporting infrastructure, i.e. the electrical network supplying the locomotives and the locomotives themselves.

In order for Transnet to accomplish the above they need to upgrade their power supply to their various traction substations between Ermelo and Richards Bay to facilitate the introduction of the new, larger locomotives that will be added to increase the volume of coal being transported and exported. Eskom Holdings (SOC) Ltd being one of the main suppliers of electrical energy in South Africa has been tasked by Transnet to supply the additional energy requirements to these traction substations.

The proposed development entails the following:
Eskom Holdings (SOC) Ltd (Transmission and Distribution) is proposing the construction of a new 400/88 kV, 160MVA Substation with associated 88kV and 400kV turn-in power lines approximately 15km north-east of Vryheid, KwaZulu-Natal.

The "North" Substation Site alternative is located approximately 500m west of the existing 400kV Normandie-Umfolozi power line and the "South" Substation Site alternative approximately 600m west of the existing 400kV Normandie-Umfolozi power line. The "North" power line corridor alternative (Alternative 1) will be approximately 6km in length and tie into the existing Normandie Bloedrivier 88kV traction power line.

The “South” power line corridor alternative (Alternative 2) will be approximately 4km in length and tie into the existing Normandie Bloedrivier 88kV traction power line.

The proposed 400kV turn-in power lines for both the north and south substation site alternatives will run east from the respective proposed substation sites to tie into the existing 400kV Normandie-Umfolozi power line. The length of these lines will be approximately 1000m respectively.

The proposed 88kV turn-in power line corridor will run west from the respective proposed substation sites to tie into the existing Normandie Bloedrivier 88kV traction power line, which runs parallel to the Richards Bay-Ermelo railway line. The proposed 88kV infrastructure will be built at 132kV but operated at 88kV at inception to provide for future capacity increases.

The minimum size (footprint) of the proposed Nzalo (Mqwabe) Transmission Substation site is approximately 4.8ha which needs to accommodate:

- Four (4) 400kV Transmission power lines bays of which two will be reserved for the future;
- Two (2) 88 kV Distribution power lines bays;
- Two (2) 400/88 kV transformer bays, of which one will be reserved for the future;
- Stormwater drainage systems; and
- Earth mat underlying the proposed substation at approx. 1m depth to ensure earthing/grounding of the substation;
- Associated control room building housing support services infrastructure; and
- All 88kV infrastructure will be constructed at 132kV.

The proposed 88kV and 400kV turn-in power line corridors for the “North” and “South” alternative are proposed to be constructed with steel lattice towers, and traverse agricultural lands and natural vacant land.

Access to the site is to comprise a single-lane gravel access road turning off east from the gravel road that leads to the area of Swembad. The access road for the “North” substation alternative will be approximately 500m long and the “south” substation alternative access road will be approximately 200m long. The exact position and type of road will be determined once the power line positions have been confirmed through the negotiation process.

At the location of proposed substation sites, earth mats (grounds mats) will be installed underground to provide a uniform potential gradient over the substation sites.

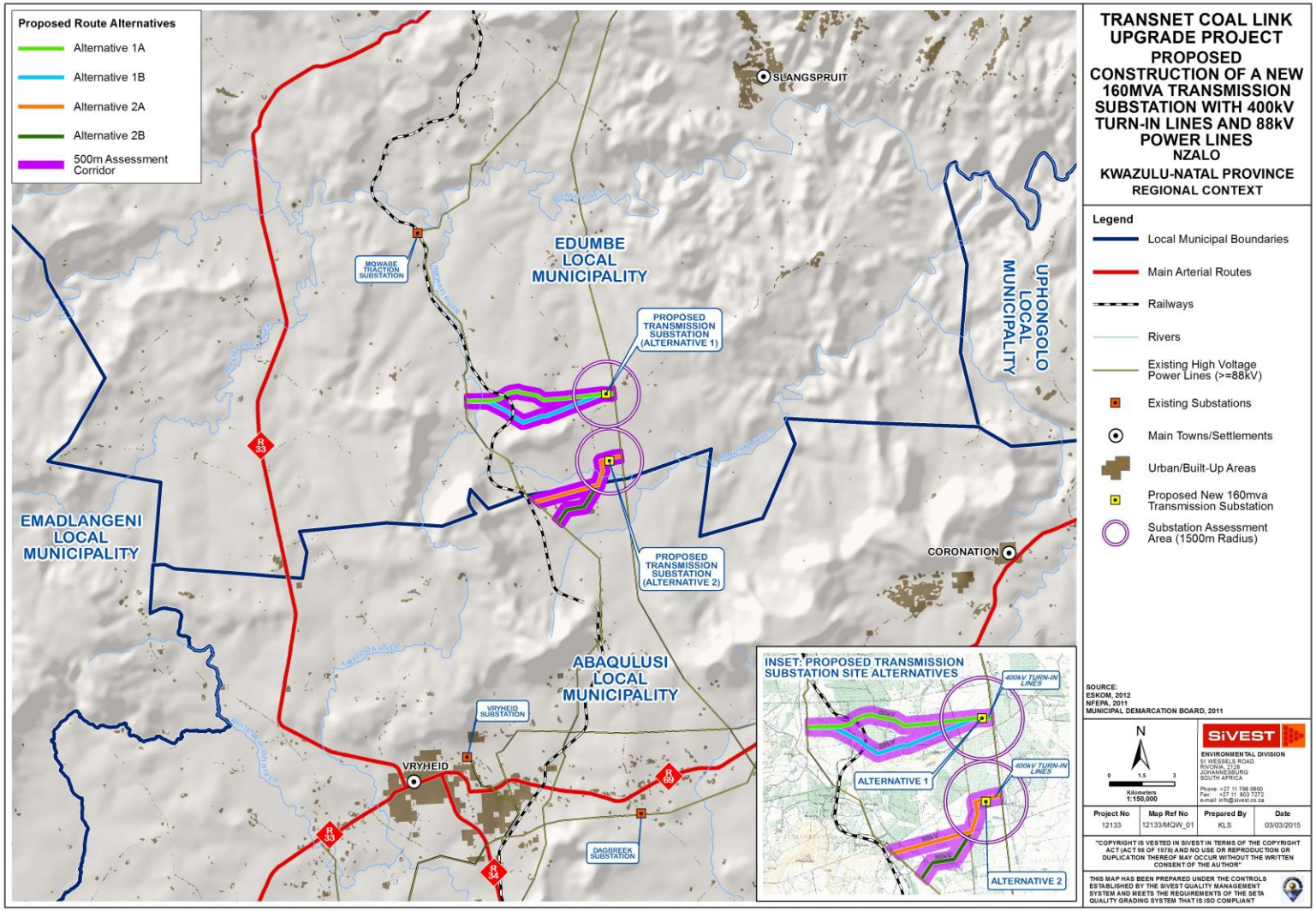

Figure 1: Locality Map

APPLICABILITY OF NEMA EIA REGULATIONS (2010):

The proposed development requires compliance with the Environmental Impact Assessment (EIA) Regulations of 2010, promulgated in terms of the National Environmental Management Act, Act 107 of 1998, as amended.

The proposed project is an existing EIA application (DEA Ref. NO. 12/12/20/1262) with a long history, including a 54 month inactive period up until 15 November 2013. SiVEST and the clients (Eskom and TAP) met with DEA representatives on 12 November 2013 to discuss the way forward. SiVEST proposed to downgrade the EIA applications to BA applications, in order to streamline the process, and start "afresh" to avoid confusion amongst stakeholders and to reduce the risk of appeals. The project components triggering a Listing Notice 2 Activity are considered less significant than the new 88kV power line corridors proposed, which trigger Listing Notices 1 and 3. The proposed downgrade from and EIA to a BA for the proposed Nzalo power line and Substation was granted by DEA on 24 March 2014. (Appendix J2)

The proposed now activity requires a Basic Assessment Process be undertaken as listed **Activities 10(i), 11(xi) and 18(i)** under **Government Notice No R. 544, Activity 8** under **Government Notice No R. 545** as well as listed **Activities *4(a)ii.(cc)(ee), 12(b), 13(a)(c)ii.(cc),* 14(a)(i) *and 16 (iv)(a)(ii)(dd)(ff)*** of **Government Notice No R. 546** of the EIA 2010 Regulations are triggered.

Although Listing Notice 2 (GN No. R545) stipulates that a full EIA is required for the proposed development, a motivation was drafted and subsequently accepted by the DEA for a Basic Assessment process to be undertaken instead of a full EIA.

RECEIVING ENVIRONMENT:

The "North" substation site alternative is located approximately 500m west of the existing 400kV Normandie-Umfolozi power line and the "South" substation site alternative approximately 600m west of the existing 400kV Normandie-Umfolozi power line.

The proposed 400kV turn-in power lines for both the north and south substation site alternatives will run east from the respective proposed substation sites to tie into the existing 400kV Normandie-Umfolozi power line. The length of these lines will be approximately 1000m respectively.

The study area falls within the Grassland Biome (Mucina & Rutherford, 2006). This can be further classified to form part of the Paulpietersburg Moist Grassland vegetation unit. The landscape of this vegetation unit comprises of mainly of moderately undulating steep slopes, although valley basins are wide and flat with mountainous areas occurring mostly along the northern and eastern boundaries.

The entire proposed power line alignment and substation sites fall within and traverses the GM 15 Paulpietersburg Moist Grassland vegetation unit, with the exception of where it has undergone some form of transformation, either through, cultivation, degradation as result of livestock utilisation, or total loss as a result of afforestation. This vegetation type is considered vulnerable, however, the field assessment has revealed that areas proposed for this project have already been degraded through livestock grazing or as a result of historic agricultural practices, e.g. pecan nut and forestry plantations.

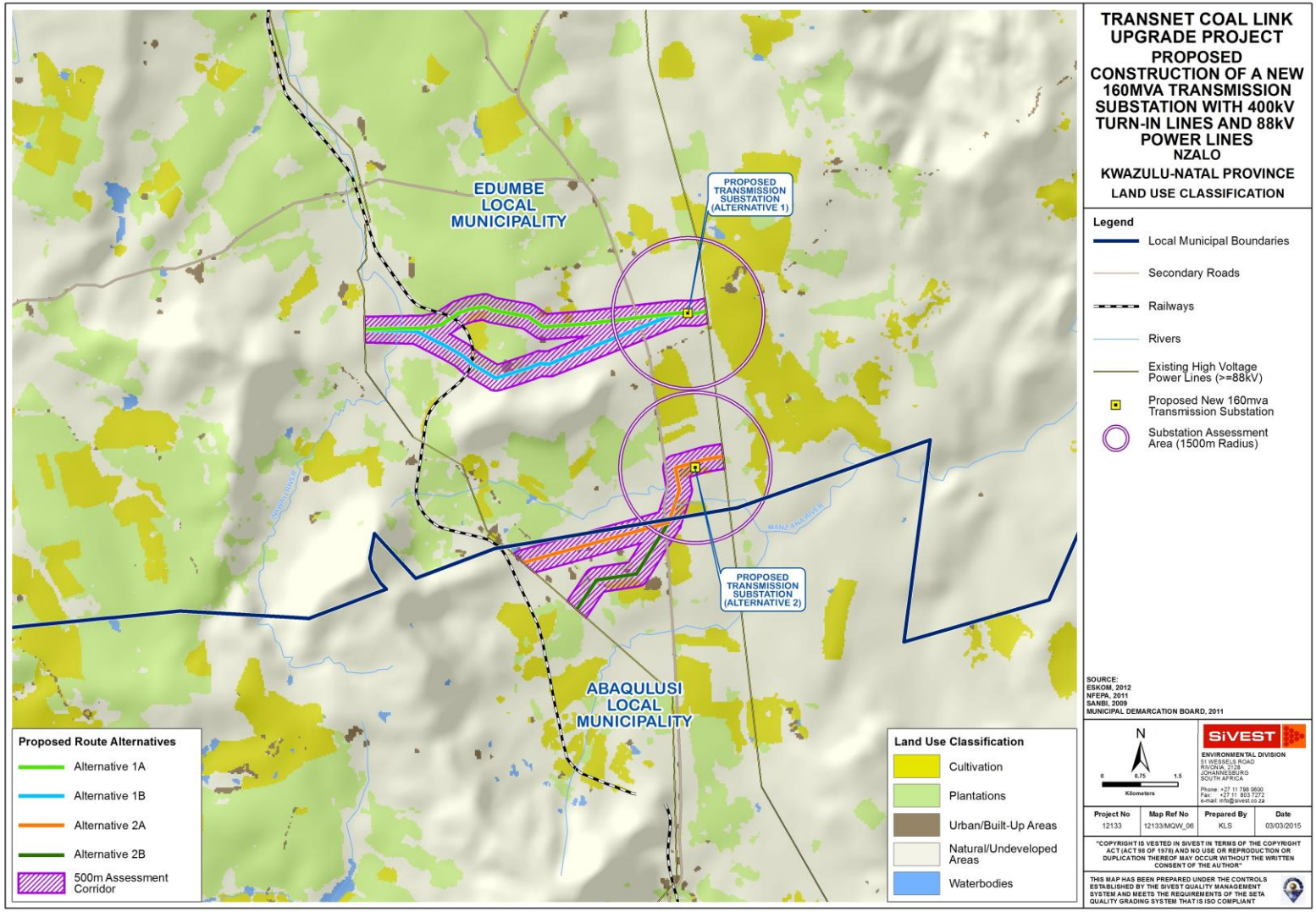

Figure 2: Land Use Map

ALTERNATIVES:

Alternatives are defined in the NEMA EIA Regulations (2010) as *"different means of meeting the general purpose and requirements of the activity, which may include alternatives to: (a) the property on which or location where it is proposed to undertake the activity; (b) the type of activity to be undertaken; (c) the design or layout of the activity; (d) the technology to be used in the activity; and (e) the operational aspects of the activity and (f) the option of not implementing the activity*".
For the purpose of this Application, the following Alternatives were investigated:

***Route Alternatives*:**

Two alternative substation sites and associated power line routes were assessed for the Nzalo project.

Northern Option (Alternative 1): The Northern substation site (Alternative 1) is located adjacent to the 400kV Normandie Umfolozi power line between Vryheid and Paulpietersburg. The proposed 88kV turn-in power line route alternative runs for approximately 7km in a Western direction passing through mostly agricultural, vacant and forestry lands towards the existing 88kV power line and the Ermelo – Richards Bay Railway line. The proposed 400kV power line runs in an easterly direction from the proposed substation to the existing 400kV power line.

Southern Option (Alternative 2): The Southern substation site (Alternative 2) is also located adjacent to the 400kV Normandie Umfolozi power line between Vryheid and Paulpietersburg. The proposed turn-in power line route alternative runs for approximately 5km in a Westerly direction passing through mainly agricultural land towards the existing 88kV power line and the Ermelo – Richards Bay Railway line. The proposed 400kV power line runs in an easterly direction from the proposed substation to the existing 400kV power line.

The power lines are proposed to be constructed with steel monopole type or steel lattice towers.

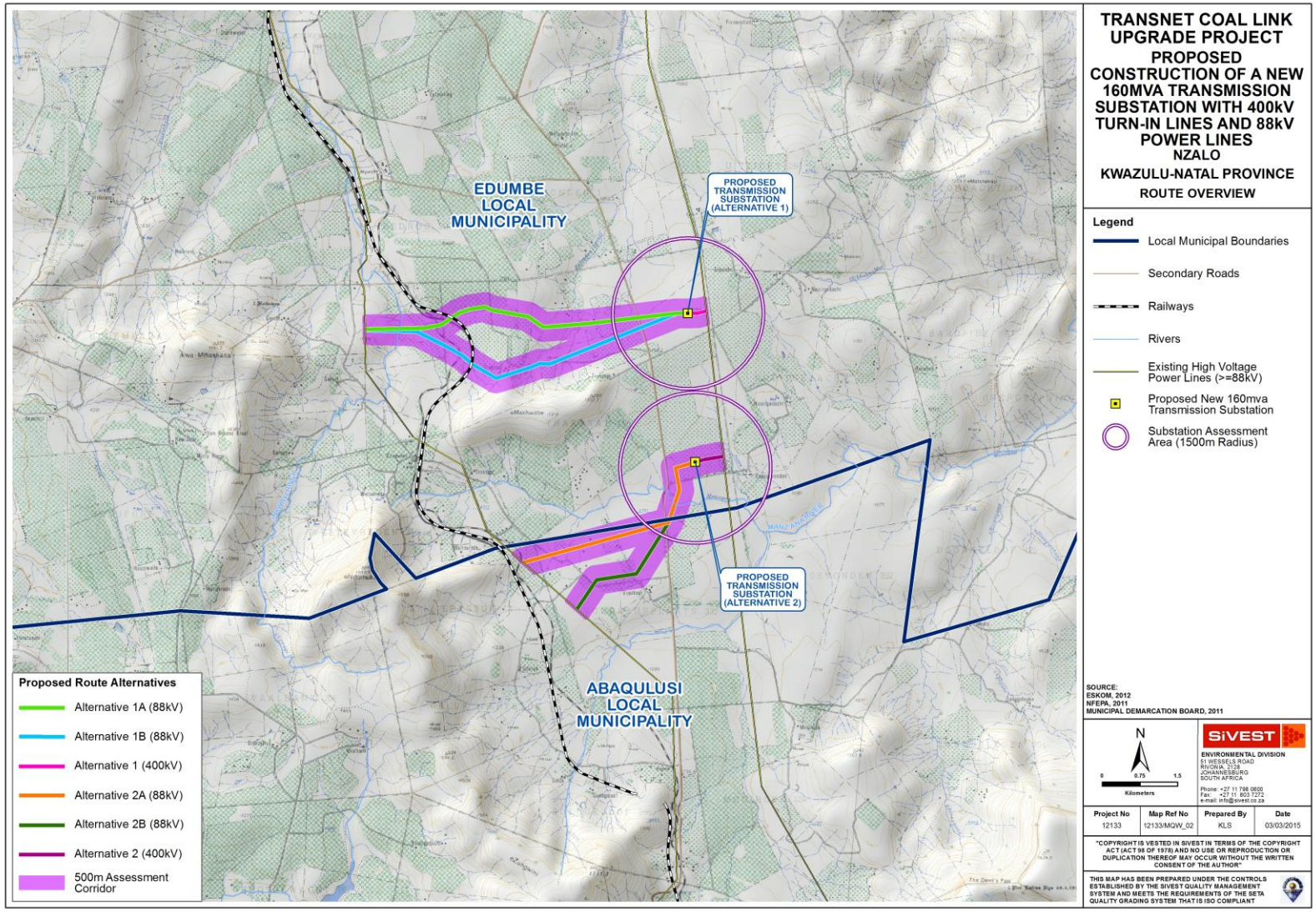

Figure 3: Route Overview Map

No-Go Alternative:

The No-Go Alternative refers to the option of not implementing the proposed infrastructure development and ultimately the continuation of the current *status quo*. However, should Eskom and Transnet not proceed with the development of the proposed Nzalo Substation and associated power lines, the necessary electrical input into the Transnet railway system will not be present. This will prevent Transnet from increasing the locomotive traffic between Richards Bay, KwaZulu-Natal and Ermelo, Mpumalanga and subsequently prevent increased coal transport to Richards Bay harbour for export. The proposed project is part of a Strategic Infrastructure Plan, aimed at increasing the coal mining industry and economic profile of South Africa, with a total CAPEX value of over 1 billion Rand and an employment opportunity value of over 48 million Rand, 80% of which is to be allocated to previously disadvantaged individuals. The Ermelo-Richards Bay Coal Link Upgrade project is therefore a major economic undertaking from which South African citizens can benefit.

Substation Alternative 2 and the associated corridors (Power line Alternatives 2A and 2B) have been identified as the preferred alternatives as it is less environmentally sensitive and will result in the least environmental impact. The proposed development has an overall positive benefit to the socio-economic development of the region as well potential botanical advantages through alien clearing along the proposed Power line route. The project is aligned with the objectives of the policies and frameworks at National, Provincial and local level.

PUBLIC PARTICIPATION

A public participation process is being undertaken in accordance with the NEMA EIA 2010 Regulations (as amended):

Initial and Draft BAR Notification

The following parties were notified of the Basic Assessment Process and the availability of the Background Information Document (BID), Draft Basic Assessment Report (DBAR) and Environmental Management Programme (EMPr) for review and comment:

- Department of Environmental Affairs
- Department of Economic Development, Tourism and Environmental Affairs (KZN-EDTEA)
- Department of Water and Sanitation
- Zululand District Municipality
- eDumbe Local Municipality
- Abaqulusi Local Municipality
- KZN Heritage Agency (Amafa) and/or SAHRA
- KZN Wildlife
- NGO and Ratepayers Association of the Area
- Adjacent landowners
- Ward Councillor of the area

In addition to this, newspaper advertisements were published between the 23rd March 2015 – 3rd April 2015 in the Sowetan Newspaper, Highveld Tribune, Zululand Observer and the Paulpietersburg Advertiser. Due to the high likelihood of overlapping stakeholders, all 8 Ermelo-Richards Bay Coal Link Upgrade projects were advertised together.

Additionally, site notices were placed on the site (along route alternatives and at the substation sites); and the BID, Draft BAR and Draft EMPr were delivered to:

- Vryheid Public Library (Corner of Mark and High Street, Vryheid, 3100, [Tel: 034 982 2133])

The documents were also made available on SiVEST's website (www.sivest.co.za) for review and comment. Stakeholders have been given the opportunity to review and comment on the Draft BAR for a period of 40 days **(26th March 2015 – 8th May)**. All comments received or responses sent during the public comment period for the Draft BAR are recorded in a Comments and Responses Report (Appendix E3).

ENVIRONMENTAL IMPACT STATEMENT

The impact statements for both the alternative substation sites and associated power line route options are listed below. Due to the homogenous nature of the area traversed by the various alternatives, both substations and all power line alternatives were assessed together. The detailed impact statement for all the alternative substation sites and route options can be found in Appendix F (Impact Assessment Report) of this report.

The impacts rated for the CONSTRUCTION PHASE:

Impact rating summary for all the power line and substation alternatives during the construction phase.

Type of Impact	Description	Status	Significance Rating Pre-Mitigation	Status after mitigation
Botanical	Impact on rare and endemic plant species	Negative	Medium **(Substation Alternatives)**	Low **(Substation Alternatives)**
			Low **(Power Line Alternatives)**	Low **(Power Line Alternatives)**
Botanical	Impact on natural vegetation	Negative	Medium **(Substation Alternatives)**	Low **(Substation Alternatives)**
			Low **(Power Line Alternatives)**	Low **(Power Line Alternatives)**
Botanical	Impact on sensitive vegetation types	Negative	Medium **(Substation Alternatives)**	Low **(Substation Alternatives)**
			Low **(Power Line Alternatives)**	Low **(Power Line Alternatives)**
Botanical	Impact on natural systems and their potential fragmentation	Negative	Low	Low
Botanical	Impact on Conservation Areas	Negative	Low	Low
Fauna	Vegetation clearing, disturbance and the use of heavy machinery and human presence along the power line route and at substation locations during construction is likely to negatively affect resident fauna directly and through habitat loss.	Negative	Medium	Low
Surface Water	Pre-Construction Lay-down area potential impacts: drainage lines and watercourse riparian habitat	Negative	Medium	Low

Type of Impact	Description	Status	Significance Rating Pre-Mitigation	Status after mitigation
	degradation			
Surface Water	Towers in Surface Water Resources and Removal of Vegetation for the Stringing of Power lines through Watercourse Riparian Habitat: Drainage Line and Watercourse Riparian Habitat Loss	Negative	High	Medium
Surface Water	Vehicle and Machinery Impacts: drainage lines and watercourse compaction/degradation	Negative	Medium	Low
Surface Water	Human degradation impacts: surface water resource fauna and flora physical degradation	Negative	Low	Low
Surface Water	Erosion, increased run-off and sedimentation impacts	Negative	Low	Low
Surface Water	Degradation Impacts: stringing of power lines through surface water resources	Negative	Low	Low
Physical and Geographical	Soil erosion through vegetation clearance and soil compaction by heavy duty construction vehicles.	Negative	Low	Low
Physical and Geographical	Contamination of soils through indiscriminate disposal of construction waste and accidental spillage of petroleum products.	Negative	Low	Low
Soil and Agriculture	Loss of agricultural land and / or production as a result of the proposed substation construction	Negative	High **(Power Line Alternative 1A)**	Medium **(Power Line Alternative 1A)**
			High **(Power Line Alternative 1B)**	Medium **(Power Line Alternative 1B)**
			Low **(Power Line Alternative 2A)**	Low **(Power Line Alternative 2A)**
			Low **(Power Line Alternative 2B)**	Low **(Power Line Alternative 2B)**
			High **(Alternative 1A + 1B)**	Medium **(Alternative 1A + 1B)**
			Low **(Alternative 2A + 2B)**	Low **(Alternative 2A + 2B)**
			Medium **(Substation Alternative 1)**	Low **(Substation Alternative 1)**
			Medium **(Substation Alternative 2)**	Low **(Substation Alternative 2)**
Avifauna	Disturbance of birds during construction of project	Negative	Low	Low
			Medium- (in areas close to wetlands)	
Avifauna	Destruction and alteration of habitat available to birds and the area during construction of the proposed project	Negative	Low	Low
Visual	Large construction vehicles and equipment during the construction phase may change the visual character of the study area and	Negative	Low	Low

Type of Impact	Description	Status	Significance Rating Pre-Mitigation	Status after mitigation
	expose sensitive receptors to visual impacts associated with the construction phase.			
Heritage	Five heritage sites occur on the footprint. These include four Grave Sites and one Later Iron Age Site.	Negative	High	None
Dust	Dust impacts on surrounding environment associated with construction activities.	Negative	Low	Low
Noise	Noise impacts on surrounding environment associated with construction activities.	Negative	Low	Low
Waste	Generating of additional waste / Litter and building rubble or hazardous material during the construction phase.	Negative	Medium	Low

The impacts rated for the <u>OPERATIONAL PHASE</u>

Impact rating summary for the proposed power line and substation alternatives during the operational phase.

Type of Impact	Description	Status	Significance Rating Pre-Mitigation	Status after mitigation
Botanical	Impact of maintenance activities on sensitive environments and vegetation	Negative	Low	Low
Botanical	Impact resulting from rehabilitation during decommissioning phase	Positive	Medium	Medium
Botanical	Impact associated with potential alien plant species infestations during decommissioning phase	Negative	Medium	Low
Surface Water	Service Road Establishment and Subsequent Vehicle Degradation Impacts to Riparian Habitats	Negative	Low	Low
Avifauna	Electrocution of birds by pylons/towers and in the substation yard.	Negative	High	Low
Avifauna	Collision of birds with overhead power line cables	Negative	Medium	Low
Visual	Change to the visual character of the surrounding area on potentially sensitive receptors	Negative	Medium	Medium
Socio - Economic	Positive socio-economic impacts as a result of constant, adequate, reliable supply of electricity to the area, thereby contributing positively to the expansion and strengthening of local economic activities.	Positive	High	High

The impact rated for the <u>NO-GO Alternative</u>:

Type of Impact	Description	Status	Significance Rating Pre-Mitigation	Status after mitigation
Socio - Economic	Negative socio-economic impacts as a result of inadequate supply of electricity to the area, thereby limiting	Negative	High	High

Type of Impact	Description	Status	Significance Rating Pre-Mitigation	Status after mitigation
	growth and expansion of local economic activities. Improvement in supply of electricity to the area will not be secured.			

To summarise, the negative environmental impacts associated with the proposed development (Preferred Route) are generally considered to be local of nature and can be mitigated to a low level of significance in accordance with the detailed EMPr (Appendix G). The project would however, result in high positive cumulative impacts as a result of increased electricity capacity and distribution to Vryheid – Paulpietersburg area, thereby contributing positively to the expansion and strengthening of local economic activities. This project will further have positive impacts beyond the local environment, as the increased transportation capability due to this development will have National benefits by increasing the coal export capacity of South Africa. Additionally, the clearance of vegetation along the Power line route will allow for the clearing of alien invasive species within the Paulpietersburg Moist Grassland vegetation type.

CONCLUSION AND RECOMMENDATIONS

The findings of the specialist studies undertaken within this BA provide an assessment of both the potential benefits and potential negative impacts anticipated as a result of the proposed development. The findings conclude that there are no environmental fatal flaws that should prevent the proposed project from proceeding. Areas of special concern have however been identified which will require site specific mitigation measures. These are included within the EMPr to ensure that these areas receive special attention.

The proposed development has an overall positive benefit to the socio-economic development of the region as well potential botanical advantages through alien clearing along the proposed power line route. The project is aligned with the objectives of the policies and frameworks at both Provincial and local level.

Substation Alternative 2 and the associated corridors (Power line Alternatives 2A and 2B) have been identified as the preferred alternatives as it is less environmentally sensitive and will result in the least environmental impact. The proposed development has an overall positive benefit to the socio-economic development of the region as well potential botanical advantages through alien clearing along the proposed Power line route. The project is aligned with the objectives of the policies and frameworks at National, Provincial and local level.

The Environmental Assessment Practitioner is therefore of the opinion that the negative environmental impacts associated with the proposed preferred route can be mitigated in accordance with the detailed EMPr (Appendix G).

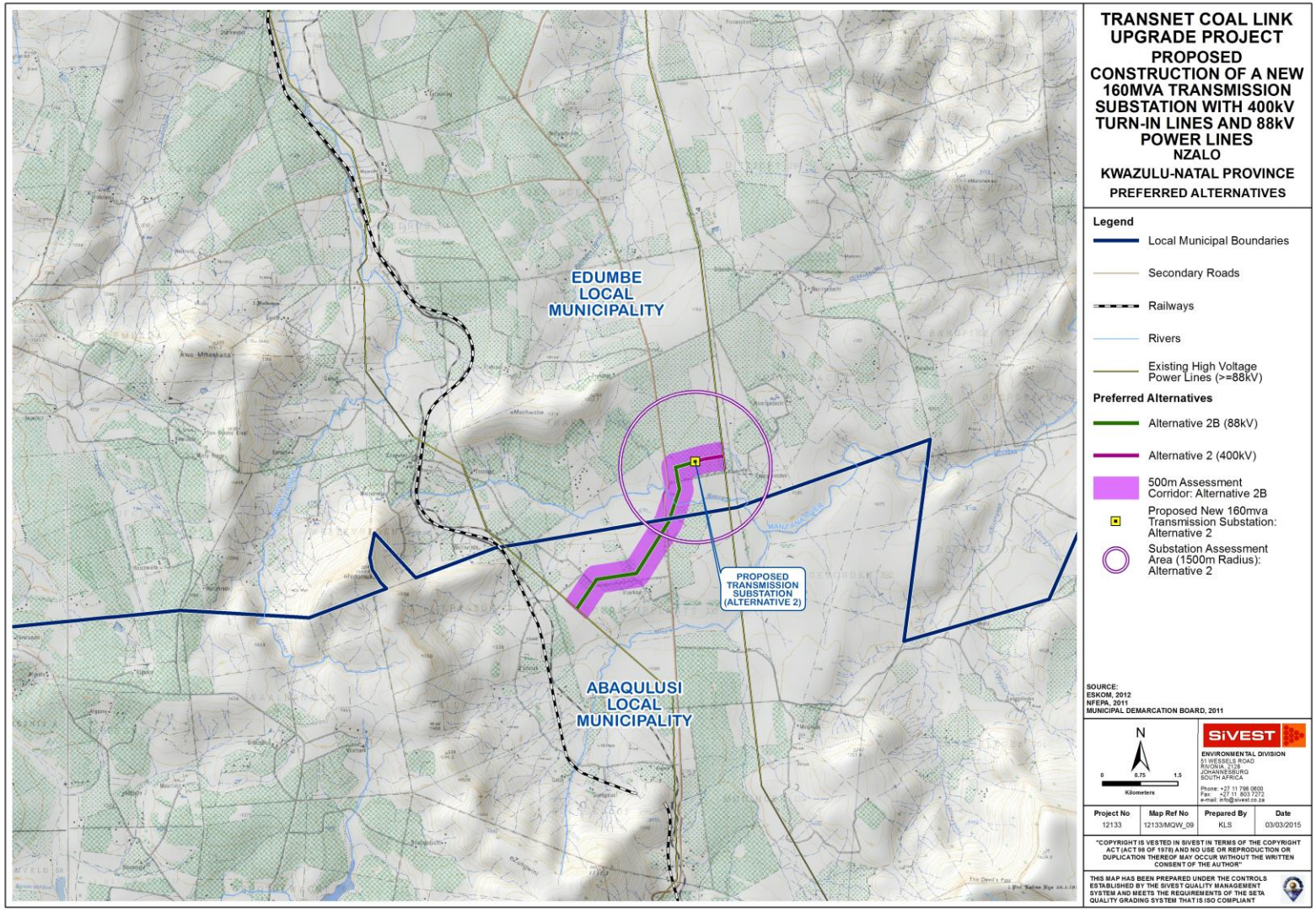

Figure 4: Preferred Alternative Map

environmental affairs

Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

	(For official use only)
File Reference Number:	**14/12/16/3/3/2/633**
Application Number:	
Date Received:	

Basic assessment report in terms of the Environmental Impact Assessment Regulations, 2010, promulgated in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended.

Kindly note that:

1. This **basic assessment report** is a standard report that may be required by a competent authority in terms of the EIA Regulations, 2010 and is meant to streamline applications. Please make sure that it is the report used by the particular competent authority for the activity that is being applied for.
2. This report format is current as of **1 August 2014**. It is the responsibility of the applicant to ascertain whether subsequent versions of the form have been published or produced by the competent authority
3. The report must be typed within the spaces provided in the form. The size of the spaces provided is not necessarily indicative of the amount of information to be provided. The report is in the form of a table that can extend itself as each space is filled with typing.
4. Where applicable **tick** the boxes that are applicable in the report.
5. An incomplete report may be returned to the applicant for revision.
6. The use of "not applicable" in the report must be done with circumspection because if it is used in respect of material information that is required by the competent authority for assessing the application, it may result in the rejection of the application as provided for in the regulations.
7. This report must be handed in at offices of the relevant competent authority as determined by each authority.
8. No faxed or e-mailed reports will be accepted.
9. The signature of the EAP on the report must be an original signature.
10. The report must be compiled by an independent environmental assessment practitioner.
11. Unless protected by law, all information in the report will become public information on receipt by the competent authority. Any interested and affected party should be provided with the information contained in this report on request, during any stage of the application process.
12. A competent authority may require that for specified types of activities in defined situations only parts of this report need to be completed.
13. Should a specialist report or report on a specialised process be submitted at any stage for any part of this application, the terms of reference for such report must also be submitted.

14. Two (2) colour hard copies and one (1) electronic copy of the report must be submitted to the competent authority.
15. Shape files (.shp) for maps must be included in the electronic copy of the report submitted to the competent authority.

SECTION A: ACTIVITY INFORMATION

Has a specialist been consulted to assist with the completion of this section? **YES**
If YES, please complete the form entitled "Details of specialist and declaration of interest" for the specialist appointed and attach in Appendix I.

1. PROJECT DESCRIPTION

a) Describe the project associated with the listed activities applied for

The Applicant, Eskom Holdings (SOC) Ltd. is making an Application for Environmental Authorisation for the development of a 400/88 kV, 160MVA Substation with associated 88 kV and 400 kV turn-in power lines near Nzalo, Zululand District Municipality in KwaZulu-Natal Province, in terms of the National Environmental Management Act, Act No. 107 of 1998 (as amended). This Application for Environmental Authorisation is being made to the Competent Authority, namely, the National Department of Environmental Affairs (DEA). The proposed development requires compliance with the Environmental Impact Assessment (EIA) Regulations of 2010 (as amended), promulgated in terms of the National Environmental Management Act (No. 107 of 1998) (NEMA).

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Motivation to Downgrade Proposed Project from an EIA to a BA process
The proposed project is an existing EIA application (DEA Ref. NO. 12/12/20/1262) with a long history, including a 54 month inactive period up until 15 November 2013. SiVEST and the clients (Eskom and TAP) met with DEA representatives on 12 November 2013 to discuss the way forward. SiVEST proposed to downgrade the EIA applications to BA applications, in order to streamline the process, and start "afresh" to avoid confusion amongst stakeholders and to reduce the risk of appeals. The project components triggering a Listing Notice 2 Activity are considered less significant than the new 88kV power line corridors proposed, which trigger Listing Notices 1 and 3 (as motivated in the letter attached as Appendix 15).The proposed downgrade from an EIA to a BA for the proposed Nzalo Power line and Substation was granted by DEA on 24 March 2014. (Appendix J2)

Background:
The proposed Nzalo substation and associated power lines are part of a suite of projects collectively known as the Ermelo-Richards Bay Coal Link Upgrade.

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In order for Transnet to accomplish the above they need to upgrade their power supply to their various traction substations between Ermelo and Richards Bay to facilitate the introduction of the new, larger locomotives that will be added to increase the volume of coal being transported and exported. Eskom Holdings SOC Ltd being one of the main suppliers of electrical energy in South Africa has been tasked by Transnet to supply the additional energy requirements to these traction substations. In trying to meet the task Eskom Holdings SOC Ltd requires environmental authorisation from the Department of Environmental Affairs (DEA) to establish new substations and power lines.

Proposed Development:

Eskom Holdings SOC Ltd (Transmission and Distribution) is proposing the construction of a new 400/88 kV, 160MVA Substation with associated 88kV and 400kV turn-in power lines approximately 15km north-east of Vryheid, KwaZulu-Natal.

The "North" substation site alternative is located approximately 500m west of the existing 400kV Normandie-Umfolozi power line and the "South" substation site alternative approximately 600m west of the existing 400kV Normandie-Umfolozi power line. The "North" power line corridor alternative (Alternative 1) will be approximately 6km in length and tie into the existing Normandie Bloedrivier 88kV traction power line

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The minimum size (footprint) of the proposed Nzalo (Mqwabe) Transmission Substation site is approximately 4.8ha which needs to accommodate:

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- Two (2) 88 kV Distribution power lines bays;
- Two (2) 400/88 kV transformer bays, of which one will be reserved for the future;
- Stormwater drainage systems;
- Earth mat underlying the proposed substation at approx. 1m depth to ensure earthing/grounding of the substation;
- Associated control room building housing support services infrastructure; and
- All 88kV infrastructure will be constructed at 132kV.

The proposed 88kV and 400kV turn-in power line corridors for the "North" and "South" alternative are proposed to be constructed with steel lattice towers, and traverse agricultural lands.

Access to the site is to comprise a single-lane gravel access road turning off east from the gravel road that leads to the area of Swembad. The access road for the "North" substation alternative will be approximately 500m long and the "south" substation alternative access road will be approximately 200m long. The exact position and type of road will be determined once the power line positions have been confirmed through the negotiation process.

At the location of proposed substation sites, earth mats (grounds mats) will be installed underground to provide a uniform potential gradient over the substation sites. This is needed so that individuals who are walking in the area are not exposed to excessive voltages across the length of a stride ('step potential') or when they touch a metallic structure ('reach potential'). Additional earth mats also provide a connection to the earth through which lightening or system fault currents can be dissipated. In effect, this objective amounts to managing the potential different relative to a remote location.

In an electrical substation a ground (earth) mat is a mesh of conductive material installed at places where a person would stand to operate a switch or other apparatus; it is bonded to the local supporting metal structure and to the handle of the switchgear, so that the operator will not be exposed to a high differential voltage due to a fault in the substation. Earthing mats normally consist of a rectangular (or square) grid of copper wires that are buried in underground trenches. This grid must lie underneath the entire area to be protected, and must extend beyond any security fencing that may be present to prevent intrusion by civilians.

The soil resistivity will be measured and the detail design of the earth mat completed, once the substation platform has been established. Adherence to the Eskom standard, D-DT 5240, regarding substation earth mats, will be monitored. Additionally, the detailed drainage design will be completed as soon as the site is confirmed, the relevant survey information received and the detailed design aspect of the project underway. Terrace slopes are usually designed with a 1% slope. This allows for adequate storm water run-off to cut-off drains. These flow towards natural drainage courses around the substations.

b) Provide a detailed description of the listed activities associated with the project as applied for

Note: New EIA Regulations were promulgated on 4 December 2014 (Government Gazette No. 38282 of 04 December 2014) and came into effect on 8 December 2014. However, the BA for this proposed project was initiated on 18 December 2013 prior to the new EIA Regulations coming into effect. Therefore in accordance with Regulation 53 (1) of the EIA 2014 Regulations, any applications submitted in terms of the previous NEMA regulations must be undertaken as if the previous NEMA regulations were not repealed. This EIA has therefore been undertaken in accordance with the EIA 2010 Regulations which are contained in four Government Notices (GN 543, 544, 545 and 546) which were promulgated on 18 June 2010 and came into effect on 02 August 2010.

Listed activity as described in GN R.544, 545 and 546	Description of project activity
GN R544, activity 10(i): The construction of facilities or infrastructure for the transmission and distribution of electricity - (i) outside urban areas or industrial complexes with a capacity of more than 33 but less than 275 kilovolts.	The capacity of the new turn-in distribution lines is 88kV. The construction of the distribution lines will occur outside an urban area.
GN R544, activity 11(xi): The construction of: (xi) infrastructure or structures covering 50 square metres or more	The Surface Water Assessment identified 23 wetlands within the study area. The erection of the pylons may fall within 32m of a watercourse.

Where such construction occurs within a watercourse or within 32 metres of a watercourse, measured from the edge of a watercourse, excluding where such construction will occur behind the development setback line.	
GN R544, activity 18(i): The infilling or depositing of any material of more than 5 cubic meters into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock from: (i) A watercourse;	The Surface Water Assessment identified 23 wetlands within the study area. The erection of the pylons may require the excavation or depositing of more than 5 cubic meters of soil or sand from a watercourse.
GN R545, activity 8: The construction of facilities or infrastructure for the transmission and distribution of electricity with a capacity of 275 kilovolts or more, outside an urban area or industrial complex.	The capacity of the new transmission lines is 400 kV. The proposed new substation will need to accommodate this. This proposed development is located outside of an urban area or industrial complex. As previously mentioned; although this listed Activity stipulates that a full EIA is required for the proposed development; a motivation was drafted and subsequently accepted by the DEA for a Basic Assessment process to be undertaken instead of a full EIA (Appendix J2)
GN 546 activity 4(a)ii. (cc) (ee): The construction of a road wider than 4 metres with a reserve less than 13,5 metres. (cc) Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as adopted by the competent authority; (ee) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans;	The construction of a road may be required for construction and maintenance purposes. The biodiversity assessment identified that all the power line alternatives and Substation Alternative 1 traverse a Critical Biodiversity Area (CBA). Should the road be required for the proposed development, the road may be greater than 4 m wide but will be less than 8 m wide.
GN R546, Activity 12 (b): The clearance of an area of 300 square metres or more of vegetation where 75% or more of the vegetative cover constitutes indigenous vegetation: (b) Within critical biodiversity areas identified in bioregional plans;	The biodiversity assessment identified that all the power line alternatives and Substation Alternative 1 traverse a Critical Biodiversity Area (CBA). The construction of the substation may require the clearance of an area of 300 square meters where 75% of the vegetation is indigenous within a critical biodiversity area. The extent of affected areas containing indigenous vegetation has been confirmed during the specialist studies.
GN R546, Activity 13(a)(c)ii.(cc): The clearance of an area of 1 hectare or more of vegetation where 75% or more of the vegetative cover constitutes indigenous vegetation	The biodiversity assessment identified that all the power line alternatives and Substation Alternative 1 traverse a Critical Biodiversity Area (CBA).

(a) Critical biodiversity areas and ecological support areas as identified in systematic biodiversity plans adopted by the competent authority. c) In KwaZulu-Natal ii. Outside urban areas, the following: (cc) Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as adopted by the competent authority.	The construction of the substation may require the clearance of an area of 1 hectare where 75% of the vegetation is indigenous within a critical biodiversity area. The extent of affected areas containing indigenous vegetation has been confirmed during the specialist studies.
GN R546, Activity 14 (a)(i): The clearance of an area of 5 hectares or more of vegetation where 75% or more of the vegetative cover constitutes indigenous vegetation (a) In KwaZulu-Natal i. All areas outside urban areas.	The biodiversity assessment identified that all the power line alternatives and Substation Alternative 1 traverse a Critical Biodiversity Area (CBA). The construction of the substation may require the clearance of an area of 5 hectares where 75% of the vegetation is indigenous outside an urban area.
GN R546, Activity 16 (iv)(a)(ii)(dd)(ff): The construction of: (iv) infrastructure or structures covering 10 square metres or more where such construction occurs within a watercourse or within 32 metres of a watercourse, measured from the edge of a watercourse, excluding where such construction will occur behind the development setback line. (a) In KwaZulu-Natal (ii) Outside urban areas, in: (dd) Sensitive Areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as adopted by the competent authority. (ff) Critical biodiversity areas or ecosystem service areas identified in systematic biodiversity plans adopted by the competent authority or in biological plans.	The Surface Water Assessment identified 23 wetlands within the study area. The erection of the pylons may fall within 32m of a watercourse. The biodiversity assessment identified that all the power line alternatives and Substation Alternative 1 traverse a Critical Biodiversity Area (CBA).

2. FEASIBLE AND REASONABLE ALTERNATIVES

"alternatives", in relation to a proposed activity, means different means of meeting the general purpose and requirements of the activity, which may include alternatives to—

(a) the property on which or location where it is proposed to undertake the activity;
(b) the type of activity to be undertaken;
(c) the design or layout of the activity;
(d) the technology to be used in the activity;
(e) the operational aspects of the activity; and
(f) the option of not implementing the activity.

Describe alternatives that are considered in this application as required by Regulation 22(2)(h) of GN R.543. Alternatives should include a consideration of all possible means by which the purpose and need of the proposed activity (NOT PROJECT) could be accomplished in the specific instance taking account of the interest of the applicant in the activity. The no-go alternative must in all cases be included in the assessment phase as the baseline against which the impacts of the other alternatives are assessed.

The determination of whether site or activity (including different processes, etc.) or both is appropriate needs to be informed by the specific circumstances of the activity and its environment. After receipt of this report the, competent authority may also request the applicant to assess additional alternatives that could possibly accomplish the purpose and need of the proposed activity if it is clear that realistic alternatives have not been considered to a reasonable extent.

The identification of alternatives should be in line with the Integrated Environmental Assessment Guideline Series 11, published by the DEA in 2004. Should the alternatives include different locations and lay-outs, the co-ordinates of the different alternatives must be provided. The co-ordinates should be in degrees, minutes and seconds. The projection that must be used in all cases is the WGS84 spheroid in a national or local projection.

a) Site alternatives

Two alternative substation positions are provided with routes alternatives associated to each of the specific substation locations. A full list of co-ordinates for substation locations and bend points is included in Appendix J.

Please Note: each substation location alternative is associated with a set of power line route alternatives. Therefore, the substation location alternatives with their respective power line route alternatives are presented in separate sections. Each substation locations are provided, each with two alternative route options for 88kV power lines and a single option for a 400kV power line. Please note that the coordinates below are the centre points for the proposed substations and power line corridors.

Substation Alternative 1		
Description	Lat (DDMMSS)	Long (DDMMSS)
Proposed Substation Alternative 1 (Centre point of assessment area)	**27° 36' 31.116" S**	**30° 52' 30.219" E**

In the case of linear activities:

Alternative:	Latitude (S):	Longitude (E):
Alternative 1A (88kV)		
• Starting point of the activity	**27° 36' 31.116" S**	**30° 52' 30.219" E**
• Middle/Additional point of the activity	**27° 36' 32.790" S**	**30° 50' 32.675" E**
• End point of the activity	**27° 36' 41.067" S**	**30° 48' 36.195" E**
Alternative 1B (88kV)		
• Starting point of the activity	**27° 36' 31.116" S**	**30° 52' 30.219" E**
• Middle/Additional point of the activity	**27° 37' 6.857" S**	**30° 50' 32.072" E**
• End point of the activity	**27° 36' 41.067" S**	**30° 48' 36.195" E**
Alternative 1 (400kV)		
• Starting point of the activity	**27° 36' 31.116" S**	**30° 52' 30.219" E**
• Middle/Additional point of the activity	**27° 36' 30.923" S**	**30° 52' 36.932" E**
• End point of the activity	**27° 36' 29.516" S**	**30° 52' 43.498" E**

Substation Alternative 2		
Description	Lat (DDMMSS)	Long (DDMMSS)
Proposed Substation Alternative 2 (Centre point of assessment area)	**27° 38' 7.270" S**	**30° 52' 35.422" E**

In the case of linear activities:

Alternative:	Latitude (S):	Longitude (E):
Alternative 2A (88kV)		
• Starting point of the activity	**27° 38' 7.270" S**	**30° 52' 35.422" E**
• Middle/Additional point of the activity	**27° 38' 53.038" S**	**30° 51' 48.077" E**
• End point of the activity	**27° 39' 12.064" S**	**30° 52' 35.134" E**
Preferred Alternative 2B (88kV)		
• Starting point of the activity	**27° 38' 7.270" S**	**30° 52' 35.422" E**
• Middle/Additional point of the activity	**27° 39' 3.438" S**	**30° 52' 3.730" E**
• End point of the activity	**27° 39' 42.339" S**	**30° 51' 9.142" E**
Preferred Alternative 2 (400kV)		
• Starting point of the activity	**27° 38' 7.270" S**	**30° 52' 35.422" E**
• Middle/Additional point of the activity	**27° 38' 5.066" S**	**30° 52' 45.297" E**
• End point of the activity	**27° 38' 3.615" S**	**30° 52' 55.626" E**

For route alternatives that are longer than 500m, please provide an addendum with co-ordinates taken every 250 meters along the route for each alternative alignment.

In the case of an area being under application, please provide the co-ordinates of the corners of the site as indicated on the lay-out map provided in Appendix A.

Please refer to Appendix J3 for the bend point coordinates of the power line corridor for each alignment

b) Lay-out alternatives

Alternative 1		
Description	Lat (DDMMSS)	Long (DDMMSS)
N/A		
Alternative 2		
Description	Lat (DDMMSS)	Long (DDMMSS)
N/A		
Alternative 3		
Description	Lat (DDMMSS)	Long (DDMMSS)
N/A		

c) Technology alternatives

Alternative 1
N/A
Alternative 2

d) Other alternatives (e.g. scheduling, demand, input, scale and design alternatives)

Alternative 1 (preferred alternative)
N/A
Alternative 2
N/A
Alternative 3
N/A

No other alternatives were investigated for the purpose of this project.

e) No-go alternative

The No-Go Alternative refers to the option of not implementing the proposed infrastructure development and ultimately the continuation of the current *status quo*. However, should Eskom and Transnet not proceed with the development of the proposed Nzalo Substation and associated power lines, the necessary electrical input into the Transnet railway system will not be present. This will prevent Transnet from increasing the locomotive traffic between Richards Bay, KwaZulu-Natal and Ermelo, Mpumalanga and subsequently prevent increased coal transport to Richards Bay harbour for export. The proposed project is part of a Strategic Infrastructure Plan, aimed at increasing the coal mining industry and economic profile of South Africa, with a total CAPEX value of over 1 billion Rand and an employment opportunity value of over 48 million Rand, 80% of which is to be allocated to previously disadvantaged individuals. The Ermelo-Richards Bay Coal Link Upgrade project is therefore a major economic undertaking from which South African citizens can benefit. Trans-Africa Projects, on behalf of Eskom Pty Ltd and Transnet Railways, is therefore proposing the above mentioned Nzalo Substation and associated power lines, in order to provide the necessary electrical infrastructure in the Vryheid - Paulpietersburg area, to allow for the increase in coal transport between Richards Bay and Ermelo.

Paragraphs 3 – 13 below should be completed for each alternative.

3. PHYSICAL SIZE OF THE ACTIVITY

Note: Two alternative substation locations are provided, each with two alternative route options for 88kV lines containing both in and out lines in a single route corridor and a single option for a 400kV power line. There is a third power line route option for each of the substation alternatives, to have a single 88kV power line within each proposed route corridor, one to run the incoming 88kV power line and one to run the outgoing 88kV power line.

Alternative SUBSTATION and ROUTE ALTERNATIVES 1 (North Option):

a) Indicate the physical size of the activity/technology as well as alternative activities/technologies (footprints):

Substation Alternative 1:	**Size of the activity:**
Alternative 1	**25 000 m²**
Alternative 2	
Alternative 3	

Substation Alternative 2:	**Size of the activity:**
Alternative 1	**25 000 m²**
Alternative 2	
Alternative 3	

or, for linear activities:

Power Line Alternatives 1:	**Length of the activity:**
Alternative 1A (88kV)	**6.613 km**
Alternative 1B (88kV)	**6.916 km**
Alternative 1 (400kV)	**0.369 m**

Power Line Alternative 2:	**Length of the activity:**
Alternative 2A (preferred activity alternative)	**4.537 km**
Alternative 2B (if any)	**4.248 km**
Alternative 2 (if any)	**0.574 m**

b) Indicate the size of the alternative sites or servitudes (within which the above footprints will occur):

Alternative:	**Size of the site/servitude:**
Alternative 1A & 2A (88kV)	**32 m wide**
Alternative 1B & 2B (88kV)	**32 m wide**
Alternative 1 & 2(400kV)	**55 m wide**

4. SITE ACCESS

Does ready access to the site exist?	**YES**

If NO, what is the distance over which a new access road will be built | m |

Describe the type of access road planned:

Access to the site is to comprise a single-lane gravel access road turning off east from the gravel road that leads to the area of Swembad. The access road for the "North" substation alternative will be approximately 500m long and the "south" substation alternative access road will be approximately 200m long.

The exact position and type of access roads cannot be determined until the power line positions have been confirmed through the servitude negotiation process. It is therefore recommended that the final road and power line alignments be submitted to the competent authority once these are confirmed and prior to construction.

Include the position of the access road on the site plan and required map, as well as an indication of the road in relation to the site. **SEE ABOVE**

5. LOCALITY MAP

An A3 locality map must be attached to the back of this document, as Appendix A. The scale of the locality map must be relevant to the size of the development (at least 1:50 000. For linear activities of more than 25 kilometres, a smaller scale e.g. 1:250 000 can be used. The scale must be indicated on the map.). The map must indicate the following:

- an accurate indication of the project site position as well as the positions of the alternative sites, if any;
- indication of all the alternatives identified;
- closest town(s;)
- road access from all major roads in the area;
- road names or numbers of all major roads as well as the roads that provide access to the site(s);
- all roads within a 1km radius of the site or alternative sites; and
- a north arrow;
- a legend; and
- locality GPS co-ordinates (Indicate the position of the activity using the latitude and longitude of the centre point of the site for each alternative site. The co-ordinates should be in degrees and decimal minutes. The minutes should have at least three decimals to ensure adequate accuracy. The projection that must be used in all cases is the WGS84 spheroid in a national or local projection).

A locality map is included in Appendix A.

6. LAYOUT/ROUTE PLAN

A detailed site or route plan(s) must be prepared for each alternative site or alternative activity. It must be attached as Appendix A to this document.

The site or route plans must indicate the following:

- the property boundaries and numbers of all the properties within 50 metres of the site;
- the current land use as well as the land use zoning of the site;
- the current land use as well as the land use zoning each of the properties adjoining the site or sites;
- the exact position of each listed activity applied for (including alternatives);
- servitude(s) indicating the purpose of the servitude;
- a legend; and
- a north arrow.

A Site Layout may indicating the alternative route alignments is included Appendix A.

7. SENSITIVITY MAP

The layout/route plan as indicated above must be overlain with a sensitivity map that indicates all the sensitive areas associated with the site, including, but not limited to:

- watercourses;
- the 1:100 year flood line (where available or where it is required by DWA);
- ridges;
- cultural and historical features;
- areas with indigenous vegetation (even if it is degraded or infested with alien species); and
- critical biodiversity areas.

The sensitivity map must also cover areas within 100m of the site and must be attached in Appendix A.

Various sensitivity maps for the proposed site alternatives are included in Appendix A.

8. SITE PHOTOGRAPHS

Colour photographs from the centre of the site must be taken in at least the eight major compass directions with a description of each photograph. Photographs must be attached under Appendix B to this report. It must be supplemented with additional photographs of relevant features on the site, if applicable.

Site Photographs taken along the two (2) proposed alternative route corridors for the 88kV and 400kV power lines and substation sites are included in Appendix B. Key features of the site are depicted in the site photographs.

9. FACILITY ILLUSTRATION

A detailed illustration of the activity must be provided at a scale of at least 1:200 as Appendix C for activities that include structures. The illustrations must be to scale and must represent a realistic image of the planned activity. The illustration must give a representative view of the activity.

A schematic drawings of the proposed tower types is included in Appendix C.

10. ACTIVITY MOTIVATION

Motivate and explain the need and desirability of the activity (including demand for the activity):

1. Is the activity permitted in terms of the property's existing land use rights?	**✓ YES**	
The majority of land on which the proposed Power line is to be stationed, is currently zoned as agricultural. However, Eskom is a Statutory Body and as such is exempt in terms of Section 23 of the Land Use Planning Ordinance, 1985 (Ordinance 15 of 1985) from rezoning and subdivision application procedures, therefore no application for rezoning will be undertaken.		
2. Will the activity be in line with the following?		
(a) Provincial Spatial Development Framework (PSDF)	**✓ YES**	
The KwaZulu-Natal PSDF (2011) indicates in Section 1 Introduction, that the PSDF (2011) serves as a spatial expression to the **Provincial Growth and Development Strategy (PGDS) (2011)**. The PGDS (2011) states under **3.7.2 Strategic Objective 4.2.: Development of Road and Rail Networks** that *"Freight will continue to be transported via a combination of road and rail…The development of nodes in the interior of the Province and the enhancement of rail, airfields and corridors will be crucial in this development."* The Coal Rail Link is identified as one of the existing infrastructures that "greatly complement and expand existing opportunities for manufacturing and trade" if upgraded and further developed. The proposed Nzalo Power Line and Substation is considered an upgrade of the Coal Link railway line by providing additional electrical capacity. This will increase the operational capacity of the railway line. The Strategic Objectives of the PGDS (2011) are directly in line with the 18 identified Strategic Integrated Projects (SIP) of the South African National Infrastructure Plan (2012). The proposed Ermelo-Richards Bay Coal Link Upgrade project is considered a SIP project and satisfies the conditions of SIP 2 and SIP 10 (refer to question 14 in this section for more information).		
(b) Urban edge / Edge of Built environment for the area		**✓Please explain**
The proposed power line route alternatives for the 88kV and 400kV as well as both the proposed Substations 1 and 2, lie outside the urban edge/built environment.		
(c) Integrated Development Plan (IDP) and Spatial Development Framework (SDF) of the Local Municipality (e.g. would the approval of this application compromise the integrity of the existing approved and credible municipal IDP and SDF?).	**✓YES**	
The proposed development is aimed at increasing the export capacity of South African coal to international consumers. The **Abaqulusi Spatial Development Framework (2009)** identifies the		

coal line corridor, which runs from Richards Bay, through Vryheid and Paulpietersburg and on to the mining areas of Mpumalanga, as an important route in the national rail and road network. The coal mining sector has been identified in the IDP as one of the key economic sectors due to the high demand of coal nationally and internationally. The proposed development therefore indirectly supports the Abaqulusi SDF (2009) by providing increased electricity provisions to the railway to increase coal transport for export to Richards Bay. The **eDumbe Local Municipality 2012/2013 Final IDP (2013)** further identify indirect employment opportunities associated with a development, of the type and scale, such as the proposed Nzalo substation and power line development. The following support services; e.g. engineering support, equipment maintenance and support; are already present within the area due to the historic mining activities. The future need for these services by the proposed development may contribute to job creation and poverty alleviation within the area.			
(d) Approved Structure Plan of the Municipality		**✓NO**	
No plans exist for the area in question.			
(e) An Environmental Management Framework (EMF) adopted by the Department (e.g. Would the approval of this application compromise the integrity of the existing environmental management priorities for the area and if so, can it be justified in terms of sustainability considerations?)		**✓NO**	
An EMF is not available for this area, however reference is made to the **Zululand District Municipality Environmental Management Plan (2006)** where in **Section 4.13 Alien Invasive Weeds**, it states invasion of alien vegetation as a major environmental and fire hazard and that "*all new developments within the municipal area should be required to submit an EMPr in which the alien invasive plant removal plan or policy is outlined.*" The power line corridors can be used as effective conservation corridors due to the clearance of alien vegetation within these, and selective removal of vegetation is only done when vegetation encroaches on the safety clearance area. The power line corridors can therefore encourage ecological connectivity between biodiversity corridors. Therefore the proposed power line may, indirectly, contribute to the prevention of loss of biodiversity within the area while controlling alien vegetation on a local scale. Please refer to the EMPr (Appendix G) for vegetation management.			
(f) Any other Plans (e.g. Guide Plan)		**✓NO**	
N/A: No other plans exist for this area.			
3. Is the land use (associated with the activity being applied for) considered within the timeframe intended by the existing approved SDF agreed to by the relevant environmental authority (i.e. is the proposed development in line with the projects and programmes identified as priorities within the credible IDP)?		**✓NO**	
The land use associated with the proposed development may aid in alleviating the high unemployment rate within the eDumbe and Abaqulusi Local Municipalities as described in section 2 (c) above.			

4. Does the community/area need the activity and the associated land use concerned (is it a societal priority)? (This refers to the strategic as well as local level (e.g. development is a national priority, but within a specific local context it could be inappropriate.)		✓NO	
The proposed project is not a societal priority, however the proposed project is necessary to increase the electricity capacity of the Transnet railway between Richards Bay and Mpumalanga to respond to increased coal transport demands. This project is designated as part of a "Strategic Infrastructure Project" to aid in the continued development of the mining and export industry of South Africa. Therefore, this project will impact positively on the local, provincial and national economies and ensure that South Africa continues to improve its national transport system, hereby increasing economic output and revenue.The local eDumbe and Abaqulusi municipalities, both have high levels of unemployment and this project may provide a much required capital injection to the area, along with a number of job opportunities during the construction and operational phases.			
5. Are the necessary services with adequate capacity currently available (at the time of application), or must additional capacity be created to cater for the development? (Confirmation by the relevant Municipality in this regard must be attached to the final Basic Assessment Report as Appendix I.)	✓YES		
The proposed power line and substation will require water and electricity resources, however these will be provided through trucked water and diesel generators. Construction waste will be generated during the construction process. Any excavated material not suitable for re-use will be disposed of at a licensed land-fill site in Vryheid or Paulpietersburg. Hazardous material generation is not anticipated, however should small quantities be produced, these would be disposed of at the closest Hazardous Landfill site. Proof of capacity from the Municipality for the waste disposal services will be included in the Final BAR.			
6. Is this development provided for in the infrastructure planning of the municipality, and if not what will the implication be on the infrastructure planning of the municipality (priority and placement of services and opportunity costs)? (Comment by the relevant Municipality in this regard must be attached to the final Basic Assessment Report as Appendix I.)		✓NO	
The proposed development is not included within the local municipalities' infrastructure planning, as the local municipal targets relate to service delivery within their jurisdiction. This however is a Strategic Infrastructure Project of national importance. The project is associated with **SIP 2: Durban-Free State-Gauteng logistics and industrial corridor,** aiming at strengthening the logistics and transport corridor between South Africa's main economic hubs, and **SIP 10: Electricity transmission and distribution for all**, where the aim is to align the 10-year transmission plan, the services backlog, the national broadband roll-out and the freight rail line development to leverage off regulatory approvals, supply chain and project development capacity.			
7. Is this project part of a national programme to address an issue of national concern or importance?	✓YES		
This project forms part of a suite of projects throughout Mpumalanga and Kwazulu-Natal, collectively known as the Ermelo-Richards Bay Coal Link Upgrade Project. This project will significantly increase			

the volume of coal that South Africa can export, meeting the international demand for South African coal. This suite of projects are further considered to form part of the National Strategic Infrastructure Projects and falls within the parameters of **SIP 2** and **SIP 10,** thus this proposed development is considered to be of national importance. The proposed development is further in line with the **National Spatial Development Perspective** which states that "South Africa will become a nation in which investment in infrastructure…support government's growth and development objectives: by focusing economic growth…in areas where it is most effective and sustainable; by fostering development on the basis of local potential…".		
8. Do location factors favour this land use (associated with the activity applied for) at this place? (This relates to the contextualisation of the proposed land use on this site within its broader context.)	**✓YES**	
Existing power line servitudes and railway lines are already present in the area. The proposed development will increase the volume of goods that would be transported along the existing railway line. Therefore, based on the existing power line infrastructure in the area, the location factors favour the land use of in terms of the development of the Nzalo substation and associated turn-in power lines.		
9. Is the development the best practicable environmental option for this land/site?	**✓YES**	
The site is located mostly within low grade agricultural land, but portions of the routes do traverse areas of higher agricultural value and areas with protected vegetation species present. The proposed development will have minimal impact on the current agricultural activities in the area. Currently the predominant land use in the area is agriculture and will be favourable to the proposed land use. . Although the proposed power line routes in some areas traverse natural vegetation in good condition, alien vegetation is present at identified locations (refer to Botanical Specialist report in Appendix D) which may be controlled as part of the construction and operational mitigation measures. The environmental impacts associated with the proposed development are projected to be low after implementation of mitigation measures (refer to EMPr in Appendix G) making the proposed development the best practicable environmental option for the identified land. Should the route alternatives and site locations indicated to be preferable according to the specialists be selected, the project would mostly cover low value agricultural land and would therefore be preferable to this environment.		
10. Will the benefits of the proposed land use/development outweigh the negative impacts of it?		
This proposed development will increase South Africa's national capacity to export coal internationally, increasing national revenue and benefitting all South African Citizens. The construction and operational phases of the proposed development may provide a number of job opportunities within the local municipalities affected, eDumbe and Abaqulusi, alleviating some of the high unemployment levels in the area. These positive social impacts along with the proposed mitigation methods as set out in the EMPr (Appendix G) will ensure that the positive impacts outweigh the negative environmental impacts of the proposed development.		
11. Will the proposed land use/development set a precedent for similar activities in the area (local municipality)?		**✓NO**
The proposed development of the Nzalo Traction Substation and associated turn-in power lines serve to increase the electricity capacity to accommodate increasing transport of coal for export and future growth of the South African economy. The negative impacts associated with the proposed development are generally low. However, no precedent is set for future development as the proposed		

development will increase electrical input into the existing Transnet railway line to transport coal for export.		
12. Will any person's rights be negatively affected by the proposed activity/ies?		**✓NO**
All landowners affected, by the proposed route alternatives and substation site locations, were notified timeously (refer to Appendix E) on the availability of the Draft BAR and EMPr for the proposed development, for comment. A public workshop is also scheduled to be held two weeks into the Draft PPP Phase. Therefore, any concerns with regards to the proposed development can be voiced by all affected I&AP's. Consent for land access and construction (where applicable) will be obtained prior to the start of the construction phase.		
13. Will the proposed activity/ies compromise the "urban edge" as defined by the local municipality?		**✓NO**
All activities of the proposed project fall outside the urban edge of the urban centres of Vryheid and Paulpietersburg. .		
14. Will the proposed activity/ies contribute to any of the 17 Strategic Integrated Projects (SIPS)?	**✓YES**	
The proposed development **<u>will contribute</u>** to two (2) SIP namely: **SIP 2** on "strengthening the logistics and transport corridor between SA's main industrial hubs" and **SIP 10:** Electricity Transmission and Distribution for all – *"Align the 10-year transmission plan, the services backlog, the national broadband roll-out and the freight rail line development to leverage off regulatory approvals, supply chain and project development capacity."*		
15. What will the benefits be to society in general and to the local communities?		**✓ Please explain**
This proposed development will increase South Africa's national capacity to export coal internationally, increasing national revenue and benefitting all South African Citizens including the local communities. Local communities may further benefit during the construction and operational phases of the proposed development through an increase in employment opportunities within the area. This will assist in alleviating the high unemployment levels found within the affected local municipal areas of the eDumbe and Abaqulusi Local Municipalities.		
16. Any other need and desirability considerations related to the proposed activity?		**✓ Please explain**
All need and desirability aspects have been identified and considered.		
17. How does the project fit into the National Development Plan for 2030?		**✓ Please explain**
With reference to **Chapter 4 – Economic infrastructure,** sub-chapter "The energy reality" (pg. 164) the NDP notes that "The quality of market competition and regulation in the energy sector has been far from optimal" and that the "crippling [rail] transport constraints" result in "the lack of rail capacity that constrain[s]…the expansion of coal exports." It is further noted that the export capacity at the Richard's Bay coal terminal is one third higher than the rail capacity from the coal fields. Therefore, the proposed Nzalo substation power line, as part of the Ermelo-Richards Bay Coal Link Upgrade Project, directly contribute to alleviating the identified coal export constraints outlined in the NDP for 2030.		

18. Please describe how the general objectives of Integrated Environmental Management as set out in section 23 of NEMA have been taken into account.
a) *Promote the integration of the principles of environmental management set out in section 2 into the making of all decisions which may have a significant effect on the environment;* • **This Basic Assessment process takes into account all the general objectives of Integrated Environmental Management. The social, economical, cultural and biophysical impacts have been considered and evaluated. The impacts will be mitigated and managed according to a detailed Environmental Management Programme.** b) *Identify, predict and evaluate the actual and potential impact on the environment, socio-economic conditions and cultural heritage, the risks and consequences and alternatives and options for mitigation of activities, with a view to minimising negative impacts, maximising benefits and promoting compliance with the principles of environmental management set out in section 2;* • **Impacts associated with the proposed development of the Nzalo substation and power line (construction and operational phases and decommissioning where applicable) have been identified, assessed and mitigation measures provided (detailed in Section D of this BAR).** c) *Ensure that the effects of activities on the environment receive adequate consideration before actions are taken in connection with them;* • **This Application is being undertaken in accordance with the NEMA EIA Regulations (2010), the provisions of which themselves take into account the general objectives of Integrated Environmental Management in Section 23 of the NEMA** • **Please also refer to the attached Environmental Management Programme (Appendix G)** d) *Ensure that adequate and appropriate opportunity for public participation in decisions that may affect the environment;* • **This Application has been undertaken in accordance with the Public Participation Requirements (and proposed deviations) set out in the NEMA EIA Regulations (2010).** • **Please refer to Section C of this BAR for details relating to PPP.** e) *Ensure the consideration of environmental attributes in management and decision-making which may have a significant effect on the environment; and* • **This Basic Assessment process takes into account all the general objectives of Integrated Environmental Management. The social, economic, cultural and biophysical impacts have been considered and evaluated. The impacts will be mitigated and managed according to a detailed Environmental Management Programme.** f) *Identify and employ the modes of environmental management best suited to ensuring that a particular activity is pursued in accordance with the principles of environmental management*

set out in section • **This Basic Assessment process takes into account all the general objectives of Integrated Environmental Management. The social, economic, cultural and biophysical impacts have been considered and evaluated. The impacts will be mitigated and managed according to a detailed Environmental Management Programme attached at Appendix G.**
19. Please describe how the principles of environmental management as set out in section 2 of NEMA have been taken into account.
The principles of environmental management as set out in section 2 of the NEMA require that environmental management must place people and their needs at the forefront of development and that development must be socially, environmentally and economically sustainable. As described above; these principles have been taken into account by undertaking a thorough PPP in order to ensure that all Interested and Affected Parties (I&APs) are given the opportunity to be involved in the BA process and ultimately that their comments are taken into consideration by the DEA when reviewing the application. Several specialist studies were also undertaken to ensure that the development is sustainable and that disturbance to the environment is avoided were possible, minimised through appropriate mitigation measures and remedied via appropriate measures.

11. APPLICABLE LEGISLATION, POLICIES AND/OR GUIDELINES

List all legislation, policies and/or guidelines of any sphere of government that are applicable to the application as contemplated in the EIA regulations, if applicable:

Title of legislation, policy or guideline	Applicability to the project	Administering authority	Date
National Environmental Management Act, 107 of 1998. NEMA EIA Regulations (Government Notices 543; 544; 546)	Identification of activities triggered by the proposed project for a Basic Assessment/Environmental Authorisation	Department of Environmental Affairs	1998 2010
National Water Act, 36 of 1998	A General Authorisation may be required for the altering or temporary impedance of watercourses during the construction phase.	Department of Water Affairs	1998
National Heritage Act, 25 of 1999	Authorisation from Amafa/SAHRA for commencement of construction and for a permit if required	Amafa/SAHRA	1999
The Vegetation of South Africa, Lesotho and Swaziland. Mucina &	Utilised as a reference guide for the identification of upgrade-specific	SANBI	2006

Rutherford (2006). SANBI, Pretoria	environmental information		
KwaZulu-Natal Provincial Planning Commission (2011)	Identifies the need for additional electricity to increase the operational capacity of the railway line based on spatial development information on a provincial level.	KwaZulu-Natal Provincial Planning Commission	2011
KwaZulu-Natal Provincial Spatial Development (2011)	Identifies the need for additional electricity supply based on spatial development information on a provincial level.	KwaZulu-Natal Provincial Planning Commission	2011
Zululand District Municipality IDP Review 2013/14.	Identifies the unemployment rate of the AbaQulusi municipal area and need to create employment.	Zululand District Municipality	2013
Zululand District Municipality Environmental Management Plan Municipal Wide Analysis (May 2006)	Identifies the environmental feasibility of electrical infrastructure development.	Zululand District Municipality	2006
eDumbe Local Municipality 2013/2014 Draft IDP Review	Identifies the unemployment rate of the eDumbe municipal area and need to create employment.	eDumbe Local Municipality	2013
eDumbe Local Municipality 2012/2013 Final IDP	Identifies the importance of the Transnet coal railway line.	eDumbe Local Municipality	2012
AbaQulusi Local Municipality Final 2013 IDP	Identifies the importance of the Transnet coal railway line.	AbaQulusi Local Municipality	2013

12. WASTE, EFFLUENT, EMISSION AND NOISE MANAGEMENT

a) Solid waste management

Will the activity produce solid construction waste during the construction/initiation phase?	✓YES
If YES, what estimated quantity will be produced per month?	**10 m³**

How will the construction solid waste be disposed of (describe)?

Solid waste (minimal construction waste and regular household waste) will be collected by independent contractors and disposed of at a registered licensed municipal landfill site with proof of safe disposal required.

Where will the construction solid waste be disposed of (describe)?

Solid waste (construction waste and builders rubble) will be collected by independent contractors and disposed of at a registered licensed municipal landfill site with proof of safe disposal required.

Will the activity produce solid waste during its operational phase?	✓NO
If YES, what estimated quantity will be produced per month?	m^3

How will the solid waste be disposed of (describe)?

N/A

If the solid waste will be disposed of into a municipal waste stream, indicate which registered landfill site will be used.

N/A

Where will the solid waste be disposed of if it does not feed into a municipal waste stream (describe)?

N/A

If the solid waste (construction or operational phases) will not be disposed of in a registered landfill site or be taken up in a municipal waste stream, then the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.

Can any part of the solid waste be classified as hazardous in terms of the NEM:WA?	✓NO

If YES, inform the competent authority and request a change to an application for scoping and EIA. An application for a waste permit in terms of the NEM:WA must also be submitted with this application.

Is the activity that is being applied for a solid waste handling or treatment facility?	✓NO

If YES, then the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA. An application for a waste permit in terms of the NEM:WA must also be submitted with this application.

b) Liquid effluent

Will the activity produce effluent, other than normal sewage, that will be disposed of in a municipal sewage system?	✓NO
If YES, what estimated quantity will be produced per month?	m^3
Will the activity produce any effluent that will be treated and/or disposed of on site?	✓NO

If YES, the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.

Will the activity produce effluent that will be treated and/or disposed of at another facility?	✓NO

If YES, provide the particulars of the facility:

Facility name:	**N/A**		
Contact person:	**N/A**		
Postal address:	**N/A**		
Postal code:	**N/A**		
Telephone:	**N/A**	**Cell:**	**N/A**
E-mail:	**N/A**	**Fax:**	**N/A**

Describe the measures that will be taken to ensure the optimal reuse or recycling of waste water, if any:

N/A

c) Emissions into the atmosphere

Will the activity release emissions into the atmosphere other that exhaust emissions and dust associated with construction phase activities? If YES, is it controlled by any legislation of any sphere of government?	**✓NO**

If YES, the applicant must consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.
If NO, describe the emissions in terms of type and concentration:

N/A

d) Waste permit

Will any aspect of the activity produce waste that will require a waste permit in terms of the NEM:WA?	**✓NO**

If YES, please submit evidence that an application for a waste permit has been submitted to the competent authority

e) Generation of noise

Will the activity generate noise?	**✓YES**	
If YES, is it controlled by any legislation of any sphere of government?		**✓NO**

Describe the noise in terms of type and level:

Noise, during normal working hours associated with the construction phase of the project is anticipated. Any equipment used during the construction or operational phase will not exceed a noise level 80 decibel amperes (dbA). The noise effect of the Nzalo (substation component) during the operational phase is not significant due to the location of the Preferred Substation Site 2 and the Alternative Substation Site 1.

13. WATER USE

Please indicate the source(s) of water that will be used for the activity by ticking the appropriate box(es):

Municipal	Water board	Groundwater	River, stream, dam or lake	Other	**✓The activity will not use water**

If water is to be extracted from groundwater, river, stream, dam, lake or any other natural feature, please indicate the volume that will be extracted per month:		litres
Does the activity require a water use authorisation (general authorisation or water use license) from the Department of Water Affairs?	**✓YES**	NO

If YES, please provide proof that the application has been submitted to the Department of Water Affairs.

The Department of Water and Sanitation (DWS) did not provide comment on the Draft BAR to confirm if a water use authorisation is required for construction activities at/near watercourses. Should an application be necessary, proof of submission to DWS will be provided in due course. A minimal amount of water may be required during the construction phase, this water is presumed to be available from the Municipality and will be trucked to the site. The amount of water is assumed to be negligible and only required for the foundations. The local Municipalities did not provide comment on the DBAR to confirm this.

14. ENERGY EFFICIENCY

Describe the design measures, if any, which have been taken to ensure that the activity is energy efficient:

Conductor cables are designed to transmit electricity as efficiently as possible, i.e. minimal loss of electricity during the transmission process from one substation to the next.

Describe how alternative energy sources have been taken into account or been built into the design of the activity, if any:

Electricity distributed throughout South Africa originates mainly from coal-powered generating stations.

SECTION B: SITE/AREA/PROPERTY DESCRIPTION

Important notes:

1. For linear activities (pipelines, etc) as well as activities that cover very large sites, it may be necessary to complete this section for each part of the site that has a significantly different environment. In such cases please complete copies of Section B and indicate the area, which is covered by each copy No. on the Site Plan.

Section B Copy No. (e.g. A): ✓

2. Paragraphs 1 - 6 below must be completed for each alternative.

3. Has a specialist been consulted to assist with the completion of this section? ✓YES

If YES, please complete the form entitled "Details of specialist and declaration of interest" for each specialist thus appointed and attach it in Appendix I. All specialist reports must be contained in Appendix D.

Property description/physical address:

Province	KwaZulu-Natal	
District Municipality	Zululand District Municipality	
Local Municipality	eDumbé Local Municipality and Abaqulusi Local Municipality	
Ward Number(s)	eDumbé Local Municipality: Ward 7 Abaqulusi Local Municipality: Ward 7	
Farm name and number	Please refer to the full list in Appendix E.	
Portion number	Please refer to the full list in Appendix E.	
SG Code	Please refer to the full list in Appendix E.	

Where a large number of properties are involved (e.g. linear activities), please attach a full list to this application including the same information as indicated above.

Current land-use zoning as per local municipality IDP/records:

Agriculture

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

Is a change of land-use or a consent use application required? ✓NO

1. GRADIENT OF THE SITE

Indicate the general gradient of the site.

Preferred Substation 2 (South Alternative):

Flat	**✓1:50 – 1:20**	1:20 – 1:15	1:15 – 1:10	1:10 – 1:7,5	1:7,5 – 1:5	Steeper than 1:5

Preferred Route Corridor 2A (South Alternative)

Flat	**✓1:50 – 1:20**	**✓1:20 – 1:15**	1:15 – 1:10	1:10 – 1:7,5	1:7,5 – 1:5	Steeper than 1:5

Alternative Route Corridor 2B (South Alternative)

Flat	**✓1:50 – 1:20**	**✓1:20 – 1:15**	1:15 – 1:10	1:10 – 1:7,5	1:7,5 – 1:5	Steeper than 1:5

Alternative Route Corridor 2 (South Alternative)

Flat	**✓1:50 – 1:20**	**✓1:20 – 1:15**	1:15 – 1:10	1:10 – 1:7,5	1:7,5 – 1:5	Steeper than 1:5

Alternative Substation 1 (North Alternative)

Flat	**✓1:50 – 1:20**	**✓1:20 – 1:15**	1:15 – 1:10	1:10 – 1:7,5	1:7,5 – 1:5	Steeper than 1:5

Alternative Route Corridor 1A(North Alternative)

Flat	**✓1:50 – 1:20**	**✓1:20 – 1:15**	1:15 – 1:10	1:10 – 1:7,5	1:7,5 – 1:5	Steeper than 1:5

Alternative Route Corridor 1B(North Alternative)

Flat	**✓1:50 – 1:20**	**✓1:20 – 1:15**	1:15 – 1:10	1:10 – 1:7,5	1:7,5 – 1:5	Steeper than 1:5

Alternative Route Corridor 1 (North Alternative)

Flat	**✓1:50 – 1:20**	**✓1:20 – 1:15**	1:15 – 1:10	1:10 – 1:7,5	1:7,5 – 1:5	Steeper than 1:5

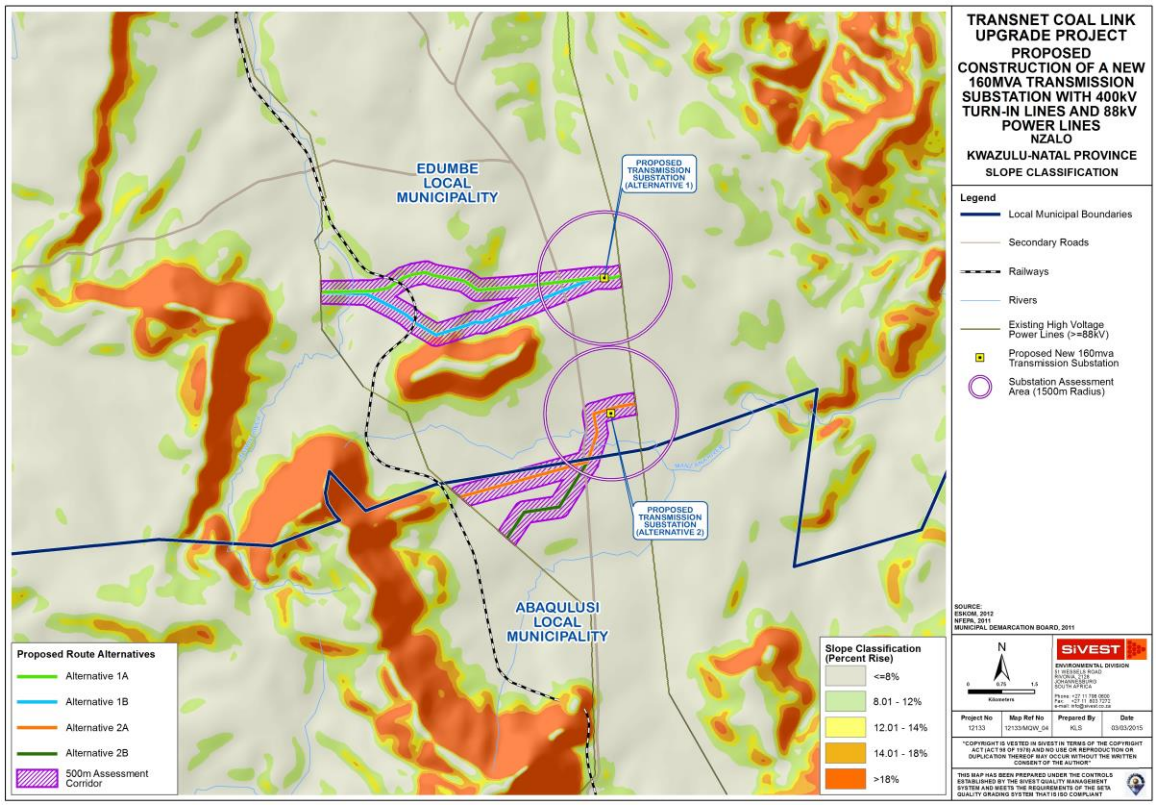

Figure 5: Slope Classification Map

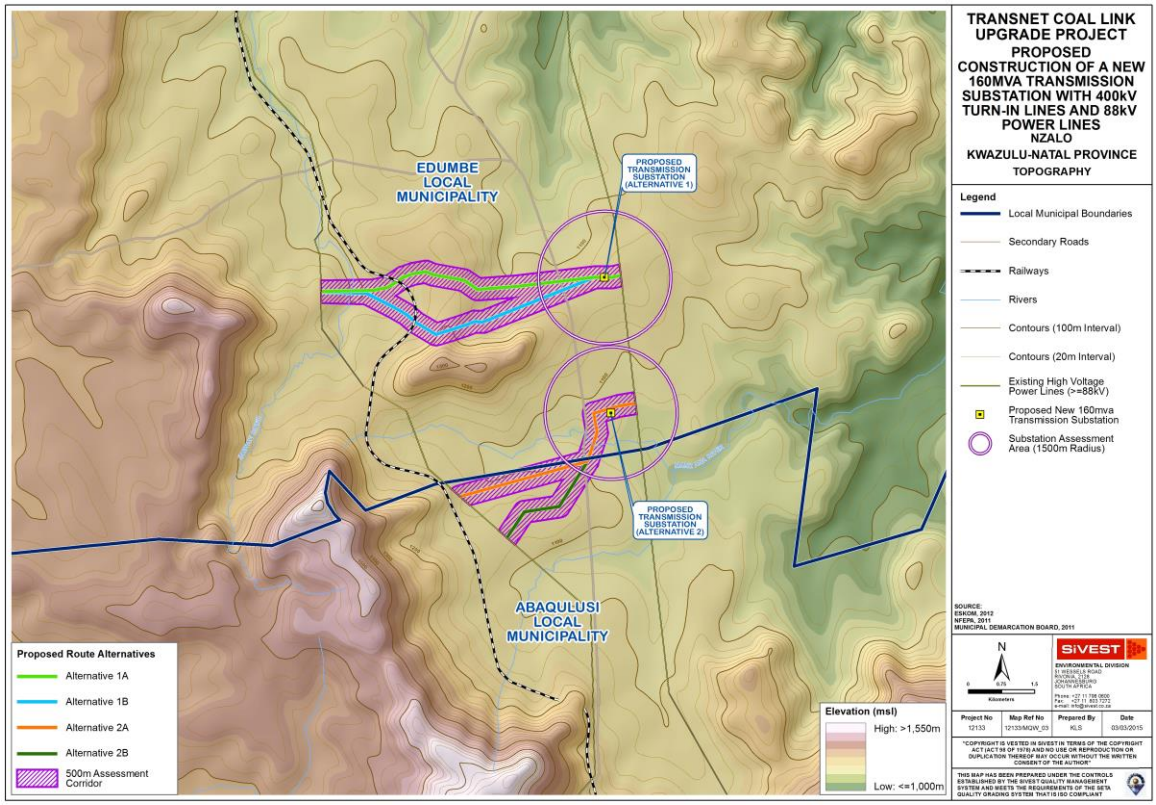

Figure 6: Topography map

2. LOCATION IN LANDSCAPE

Indicate the landform(s) that best describes the site:

2.1 Ridgeline		2.4 Closed valley		**2.7 Undulating plain / low hills**	✓
2.2 Plateau		2.5 Open valley		2.8 Dune	
2.3 Side slope of hill/mountain		**2.6 Plain**	✓	2.9 Seafront	
2.10 At sea					

3. GROUNDWATER, SOIL AND GEOLOGICAL STABILITY OF THE SITE

Is the site(s) located on any of the following?

	Preferred Substation 2 (South Alternative):		**Preferred Route Corridor: 2A (South Alternative)**		**Alternative Route Corridor: 2B (South Alternative)**		**Alternative Route Corridor: 2 (South Alternative)**	
Shallow water table (less than 1.5m deep)	✓YES		✓YES		✓YES		✓YES	
Dolomite, sinkhole or doline areas		✓NO		✓NO		✓NO		✓NO
Seasonally wet soils (often close to water bodies)	✓YES		✓YES		✓YES		✓YES	
Unstable rocky slopes or steep slopes with loose soil		✓NO		✓NO		✓NO		✓NO
Dispersive soils (soils that dissolve in water)		✓NO		✓NO		✓NO		✓NO
Soils with high clay content (clay fraction more than 40%)		✓NO		✓NO		✓NO		✓NO
Any other unstable soil or geological feature		✓NO		✓NO		✓NO		✓NO
An area sensitive to erosion		✓NO		✓NO		✓NO		✓NO

	Alternative Substation 1 (North Alternative):		**Alternative Route Corridor 1A (North Alternative):**		**Alternative Route Corridor 1B (North Alternative):**		**Alternative Route Corridor 1 (North Alternative):**	
Shallow water table (less than 1.5m deep)	✓YES		✓YES		✓YES		✓YES	
Dolomite, sinkhole or doline areas		✓NO		✓NO		✓NO		✓NO
Seasonally wet soils (often close to water bodies)	✓YES		✓YES		✓YES		✓YES	
Unstable rocky slopes or steep slopes with loose soil		✓NO		✓NO		✓NO		✓NO

Dispersive soils (soils that dissolve in water)	✓NO	✓NO	✓NO	✓NO
Soils with high clay content (clay fraction more than 40%)	✓NO	✓NO	✓NO	✓NO
Any other unstable soil or geological feature	✓NO	✓NO	✓NO	✓NO
An area sensitive to erosion	✓NO	✓NO	✓NO	✓NO

If you are unsure about any of the above or if you are concerned that any of the above aspects may be an issue of concern in the application, an appropriate specialist should be appointed to assist in the completion of this section. Information in respect of the above will often be available as part of the project information or at the planning sections of local authorities. Where it exists, the 1:50 000 scale Regional Geotechnical Maps prepared by the Council for Geo Science may also be consulted.

A geotechnical assessment of the proposed substation sites was conducted by Mark Richter of WorleyParsons RSA (Pty) Ltd and is included in Appendix D8. The geology of the two substation sites is similarly underlain by transported and residual soils overlying dolerite and shale bedrock. Underlying the residual shale is completely to highly weathered shale bedrock of the Pietermaritzburg Formation. Both Substation sites are generally characterised by deep weathering profiles of predominantly sandy silty/clayey materials occurring below the silty/clayey colluvial layer which occurs from the surface to an average depth of 0.4m below the existing ground level.

Due to the low soil consistencies and the shallow structure of groundwater beneath the majority of Substation Alternative 2, Substation Alternative 1 can be considered as the less problematic option for the proposed development, provided that the necessary foundation requirements are met. Substation Alternative 1 also has more occurrences of soils suitable for use in bulk fills. Additionally, founding conditions are similar at both substation alternative sites.

A most important factor in the promotion of a stable site is the control and removal of both surface and groundwater from the site. It is important that the design of the stormwater management system allow for the drainage of accumulated surface water. Such water should be directed away from the site towards natural drainage lines.

Surface drainage of building platforms should also be designed to direct water away from fill edges to prevent over-topping of the fill crest and erosion of the fill embankment slopes. It is important that grassing of fill embankments be carried out as soon as possible after construction. Most substation sites have a subsoil drainage network beneath the substation platform, and a similar design should be provided for either of the two sites, in view of the occurrence of a shallow perched groundwater table, particularly on Site Sub B3. (Site Sub B3 is Alternative 2).

Worley Parsons noted that their recommends relate to the positions of the inspection pits, and they recommend that the variations in the subsoil conditions be evaluated during construction to avoid unnecessary expense and delays

4. GROUNDCOVER

Indicate the types of groundcover present on the site. The location of all identified rare or endangered species or other elements should be accurately indicated on the site plan(s).

Preferred Substation Location: Substation Site 2 (South Alternative)

Natural veld - good condition[E]	**Natural veld with scattered aliens[E]**	Natural veld with heavy alien infestation[E]	Veld dominated by alien species[E]	Gardens
Sport field	Cultivated land	Paved surface	Building or other structure	Bare soil

Preferred Route Corridor: Route 2A (South Alternative)

Natural veld - good condition[E]	**Natural veld with scattered aliens[E]**	Natural veld with heavy alien infestation[E]	Veld dominated by alien species[E]	Gardens
Sport field	Cultivated land	Paved surface	Building or other structure	Bare soil

Alternative Route Corridor: Route 2B (South Alternative)

Natural veld - good condition[E]	**Natural veld with scattered aliens[E]**	Natural veld with heavy alien infestation[E]	Veld dominated by alien species[E]	Gardens
Sport field	Cultivated land	Paved surface	Building or other structure	Bare soil

Alternative Route Corridor: Route 2 (South Alternative)

Natural veld - good condition[E]	**Natural veld with scattered aliens[E]**	Natural veld with heavy alien infestation[E]	Veld dominated by alien species[E]	Gardens
Sport field	Cultivated land	Paved surface	Building or other structure	Bare soil

Alternative Substation Location: Substation Site 1 (North Alternative)

Natural veld - good condition[E]	**Natural veld with scattered aliens[E]**	Natural veld with heavy alien infestation[E]	Veld dominated by alien species[E]	Gardens
Sport field	Cultivated land	Paved surface	Building or other structure	Bare soil

Alternative Route Corridor: Route 1A (North Alternative)

Natural veld - good condition[E]	**Natural veld with scattered aliens[E]**	Natural veld with heavy alien infestation[E]	Veld dominated by alien species[E]	Gardens
Sport field	Cultivated land	Paved surface	Building or other structure	Bare soil

Alternative Route Corridor: Route 1B (North Alternative)

Natural veld - good condition[E]	**Natural veld with scattered aliens[E]**	Natural veld with heavy alien infestation[E]	Veld dominated by alien species[E]	Gardens
Sport field	Cultivated land	Paved surface	Building or other structure	Bare soil

Alternative Route Corridor: Route 1 (North Alternative)

Natural veld - good condition[E]	**Natural veld with scattered aliens[E]**	Natural veld with heavy alien infestation[E]	Veld dominated by alien species[E]	Gardens
Sport field	Cultivated land	Paved surface	Building or other structure	Bare soil

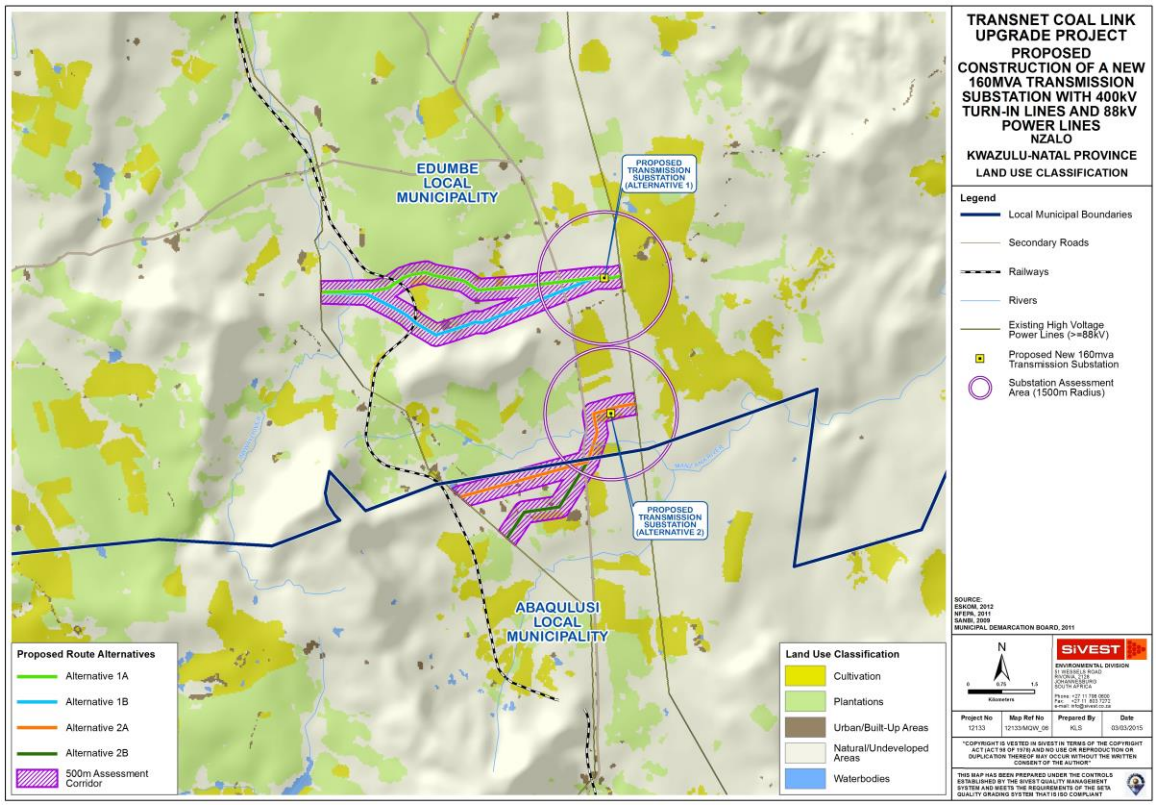

Figure 7: Land use Map

If any of the boxes marked with an "[E] "is ticked, please consult an appropriate specialist to assist in the completion of this section if the environmental assessment practitioner doesn't have the necessary expertise.

5. SURFACE WATER

Indicate the surface water present on and or adjacent to the site and alternative sites?

Perennial River	**YES✓**	
Non-Perennial River		**NO✓**

Permanent Wetland	**YES✓**	
Seasonal Wetland	**YES✓**	
Artificial Wetland	**YES✓**	
Estuarine / Lagoonal wetland		**NO✓**

If any of the boxes marked YES or UNSURE is ticked, please provide a description of the relevant watercourse.

A desktop study revealed that the study area traverses seven perennial rivers, namely the Balladon Spruit, Manzana River and the Inxwayi River, and four other tributaries.

The study area also encompasses an artificial un-channelled valley-bottom wetland and a natural channelled valley-bottom wetland. The in-field assessment verified a total of twenty-three wetlands for the area. These wetlands include the following: ten (10) hill-slopes seep wetlands, seven channelled valley bottom wetlands, four (4) un-channelled valley bottom wetlands and two (2) artificial man-made impoundments. For more detail on these wetlands please see the specialist Surface Water Assessment provided in appendix D.

6. LAND USE CHARACTER OF SURROUNDING AREA

Indicate land uses and/or prominent features that currently occur within a 500m radius of the site and give description of how this influences the application or may be impacted upon by the application:

✓Natural area	Dam or reservoir	Polo fields
Low density residential	Hospital/medical centre	Filling station [H]
Medium density residential	**✓School**	Landfill or waste treatment site
High density residential	Tertiary education facility	**✓Plantation**
Informal residential[A]	Church	**✓Agriculture**
Retail commercial & warehousing	Old age home	**✓River, stream or wetland**
Light industrial	Sewage treatment plant[A]	Nature conservation area
Medium industrial [AN]	Train station or shunting yard [N]	**✓Mountain, koppie or ridge**
Heavy industrial [AN]	**✓Railway line [N]**	Museum
Power station	Major road (4 lanes or more) [N]	Historical building
Office/consulting room	Airport [N]	Protected Area
Military or police base/station/compound	Harbour	Graveyard
Spoil heap or slimes dam[A]	Sport facilities	Archaeological site
Quarry, sand or borrow pit	Golf course	Other land uses (describe)

If any of the boxes marked with an "N "are ticked, how will this impact / be impacted upon by the proposed activity? Specify and explain:

Railway Line: In order for Transnet to deliver on the increasing demand for exported coal from South Africa, they need to upgrade their power supply to their various traction substations between Ermelo and Richards Bay to facilitate the introduction of new, larger locomotives that will be added to increase the volume of coal being transported and exported. The proposed project entails the construction of a 400/88kV, 160MVA electrical substation and associated 400 kV turn-in powerlines along the existing Normandie-Umfolozi line, with the associated development of two turn-in powerlines tying into the existing 88kV powerline providing power to the railway line between Ermelo and Richards Bay. The proposed powerline and substation development will not negatively impact on the existing railway line. The proposed powerline and substation is to supply additional power in order for the railway line to operate additional locomotives.

If any of the boxes marked with an "An" are ticked, how will this impact / be impacted upon by the proposed activity? Specify and explain:

N/A

If any of the boxes marked with an "H" are ticked, how will this impact / be impacted upon by the proposed activity? Specify and explain:

N/A

Does the proposed site (including any alternative sites) fall within any of the following:

Critical Biodiversity Area (as per provincial conservation plan)	**✓YES**	
Core area of a protected area?		**✓NO**
Buffer area of a protected area?		**✓NO**
Planned expansion area of an existing protected area?		**✓NO**
Existing offset area associated with a previous Environmental Authorisation?		**✓NO**
Buffer area of the SKA?		**✓NO**

If the answer to any of these questions was YES, a map indicating the affected area must be included in Appendix A.

7. CULTURAL/HISTORICAL FEATURES

Are there any signs of culturally or historically significant elements, as defined in section 2 of the National Heritage Resources Act, 1999, (Act No. 25 of 1999), including Archaeological or paleontological sites, on or close (within 20m) to the site? If YES, explain:	**✓YES**	

Mr Frans Prins conducted a specialist study of the area, dated 21 February 2014. This study consisted of a desktop study and ground survey, following standard and accepted archaeological procedures. Particular attention was focussed on the contemporary Zulu homesteads located within the proposed development corridor. The study area comprises of four (4) grave sites and one (1) Late Iron Age Site. The Iron Age Site and the Grave sites are protected by heritage legislation as they all appeared to be older than 60 years. Detailed descriptions of the Late Iron Age site and the four (4) identified gravesites are provided in the Heritage Impact Assessment Report provided in Appendix D.

If uncertain, conduct a specialist investigation by a recognised specialist in the field (archaeology or palaeontology) to establish whether there is such a feature(s) present on or close to the site. Briefly explain the findings of the specialist:

Refer to above and the specialist report in Appendix D.

Will any building or structure older than 60 years be affected in any way?	✓NO
Is it necessary to apply for a permit in terms of the National Heritage Resources Act, 1999 (Act 25 of 1999)?	✓NO

If YES, please provide proof that this permit application has been submitted to SAHRA or the relevant provincial authority.

Note: Should the applicant wish to develop within the proposed buffer zones (refer to the Heritage Impact Assessment Report, page 8, included in Appendix D) for this development, mitigation measures must be initiated under the regulations of the local heritage agency AMAFA. This will include a Second Phase Heritage Impact Assessment, the application for a permit, and the possible exhumation of certain graves located within the proposed area.

8. SOCIO-ECONOMIC CHARACTER

a) Local Municipality

Please provide details on the socio-economic character of the local municipality in which the proposed site(s) are situated.

Level of unemployment:

The proposed development spans over two (2) local municipalities, Abaqulusi Local Municipality and eDumbe Local Municipality located within the Zululand District Municipality.

Both of the local municipalities have a high level of unemployment, even though the Abaqulusi Local Municipality is considered to be the highest contributor to the Zululand District GDP (Abaqulusi Local Municipality Integrated Development Plan 2013). The unemployment rate in the Abaqulusi Local Municipality is 35.4% and within the eDumbe Local Municipality it is 37.7% (Stats SA, 2011 Census).

Abaqulusi Local Municipality: Key Statistics (Stats SA)		
Census	**2001**	**2011**
Unemployment Rate	**59.4%**	**35.4%**
Youth Unemployment Rate	**69.2%**	**45.1%**

eDumbe Local Municipality: Key Statistics (Stats SA)

Census	2001	2011
Unemployment Rate	57.5%	37.7%
Youth Unemployment Rate	64.7%	45.4%

Both of these local municipalities have a higher unemployment rate than the South African national average of 24.7%, even though there was a marked decrease since 2001.

Economic profile of local municipality:

Income levels in èDumbe tend to be quite low with 69% of the population earning less than R800 a month. This is significantly higher than both the district and provincial levels where 50% and 36% of people respectively earn less than R800 a month. These figures indicate that the majority of the population has low living standards and a poor quality of life (eDumbe Local Municipality 201/2014 Draft IDP), falling within the medium to high poverty range (Stats SA, Census Data)

The income levels in the Abaqulusi Municipality is considered to be below the South African national standard, with more than 32% of households without any secured source of income, while 9.1% earns less than R4800 per month. This means that more than a third of the population in the municipality lives below the poverty datum line (Abaqulusi IDP, 2010/2011 Review).

Level of education:

Abaqulusi Local Municipality: Key Statistics (Stats SA)		
Census	2001	2011
No Schooling Aged 20+	30.2%	16.9%
Higher Education Aged 20+	6.2%	6.6%
Matric Aged 20+	16.1%	28.1%

eDumbe Local Municipality: Key Statistics (Stats SA)		
Census	2001	2011
No Schooling Aged 20+	37.7%	18.3%
Higher Education Aged 20+	3%	4%
Matric Aged 20+	10.5%	22.1%

b) Socio-economic value of the activity

What is the expected capital value of the activity on completion?	**R362 000 000.00**	
What is the expected yearly income that will be generated by or as a result of the activity?	**Transnet will be able to increase their coal export tonnage**	
Will the activity contribute to service infrastructure?	**✓YES**	
Is the activity a public amenity?		**✓NO**
How many new employment opportunities will be created in the development and construction phase of the activity/ies?	**Unknown**	

What is the expected value of the employment opportunities during the development and construction phase?	**R 3 620 000.00**
What percentage of this will accrue to previously disadvantaged individuals?	**80 %**
How many permanent new employment opportunities will be created during the operational phase of the activity?	**Unknown**
What is the expected current value of the employment opportunities during the first 10 years?	**Unknown at this stage**
What percentage of this will accrue to previously disadvantaged individuals?	**80 %**

9. BIODIVERSITY

(Substation Site 1: South Alternative)

Please note: The Department may request specialist input/studies depending on the nature of the biodiversity occurring on the site and potential impact(s) of the proposed activity/ies. To assist with the identification of the biodiversity occurring on site and the ecosystem status consult http://bgis.sanbi.org or BGIShelp@sanbi.org. Information is also available on compact disc (cd) from the Biodiversity-GIS Unit, Ph (021) 799 8698. This information may be updated from time to time and it is the applicant/ EAP's responsibility to ensure that the latest version is used. A map of the relevant biodiversity information (including an indication of the habitat conditions as per (b) below) and must be provided as an overlay map to the property/site plan as Appendix D to this report.

a) Indicate the applicable biodiversity planning categories of all areas on site and indicate the reason(s) provided in the biodiversity plan for the selection of the specific area as part of the specific category)

Systematic Biodiversity Planning Category				**If CBA or ESA, indicate the reason(s) for its selection in biodiversity plan**
Critical Biodiversity Area (CBA)	Ecological Support Area (ESA)	**✓Other Natural Area (ONA)**	No Natural Area Remaining (NNR)	

b) Indicate and describe the habitat condition on site

Habitat Condition	**Percentage of habitat condition class (adding up to 100%)**	**Description and additional Comments and Observations (including additional insight into condition, e.g. poor land management practises, presence of quarries, grazing, harvesting regimes etc).**
Natural	**85%**	**Best quality grassland of the entire field survey area, with some protected plant species occurring within it. Utilised for grazing of livestock.**
Near Natural (includes areas with	**0%**	**N/A**

low to moderate level of alien invasive plants)		
Degraded (includes areas heavily invaded by alien plants)	**0%**	**N/A**
Transformed (includes cultivation, dams, urban, plantation, roads, etc)	**15%**	**There are cultivated fields adjacent the site, forestry and roads network surrounding the site**

c) Complete the table to indicate:

(i) the type of vegetation, including its ecosystem status, present on the site; and

(ii) whether an aquatic ecosystem is present on site.

Terrestrial Ecosystems		**Aquatic Ecosystems**						
Ecosystem threat status as per the National Environmental Management: Biodiversity Act (Act No. 10 of 2004)	Critical	Wetland (including rivers, depressions, channelled and unchanneled wetlands, flats, seeps pans, and artificial wetlands)			Estuary		Coastline	
	Endangered							
	✓Vulnerable							
	Least Threatened	**✓YES**	NO	UNSURE	YES	**✓NO**	YES	**✓NO**

d) Please provide a description of the vegetation type and/or aquatic ecosystem present on site, including any important biodiversity features/information identified on site (e.g. threatened species and special habitats)

The grassland areas which have not been transformed are in the best condition of any grassland areas sampled elsewhere during the field survey. The following protected plant species were recorded: *Eucomis autumnalis* and *Eulophia welwitschii.* **Please refer to the Biodiversity Assessment Report included in Appendix D1 of this report.**

(Substation Site 2: North Alternative)

a) Indicate the applicable biodiversity planning categories of all areas on site and indicate the reason(s) provided in the biodiversity plan for the selection of the specific area as part of the specific category)

Systematic Biodiversity Planning Category	**If CBA or ESA, indicate the reason(s) for its selection in biodiversity plan**

Critical Biodiversity Area (CBA)	Ecological Support Area (ESA)	**✓Other Natural Area (ONA)**	No Natural Area Remaining (NNR)	

b) Indicate and describe the habitat condition on site

Habitat Condition	**Percentage of habitat condition class (adding up to 100%)**	**Description and additional Comments and Observations (Including additional insight into condition, e.g. poor land management practises, presence of quarries, grazing, harvesting regimes etc).**
Natural	**75%**	**Relatively transformed grassland with a poor species diversity and dominated by *Hyparrhenia hirta*. Utilised for grazing of livestock.**
Near Natural (includes areas with low to moderate level of alien invasive plants)	**0%**	**N/A**
Degraded (includes areas heavily invaded by alien plants)	**0%**	**N/A**
Transformed (includes cultivation, dams, urban, plantation, roads, etc.)	**25%**	**There are cultivated fields adjacent the site, forestry and roads network surrounding the site**

c) Complete the table to indicate:

(i) The type of vegetation, including its ecosystem status, present on the site; and

(ii) Whether an aquatic ecosystem is present on site.

Terrestrial Ecosystems **Paulpietersburg Moist Grassland**		**Aquatic Ecosystems**						
Ecosystem threat status as per the National Environmental Management: Biodiversity Act (Act No. 10 of 2004)	Critical	Wetlands			Estuary		Coastline	
	Endangered							
	✓Vulnerable							
	Least Threatened	**✓YES**	NO	UNSURE	YES	**✓NO**	YES	**✓NO**

d) Please provide a description of the vegetation type and/or aquatic ecosystem present on site, including any important biodiversity features/information identified on site (e.g. threatened species and special habitats)

The grassland areas which have not been transformed are in a degraded condition as a result of poor management practices and high livestock numbers. No protected plant species were recorded, however they may occur within the vicinity of the 1.5 km radius of the centre point. Please refer to the Biodiversity Assessment Report included in Appendix D1 of this report.

(Power line Route Alternative 1 A & B: North Alternative)

a) Indicate the applicable biodiversity planning categories of all areas on site and indicate the reason(s) provided in the biodiversity plan for the selection of the specific area as part of the specific category)

Systematic Biodiversity Planning Category				**If CBA or ESA, indicate the reason(s) for its selection in biodiversity plan**
Critical Biodiversity Area (CBA)	Ecological Support Area (ESA)	✓**Other Natural Area (ONA)**	No Natural Area Remaining (NNR)	

b) Indicate and describe the habitat condition on site

Habitat Condition	**Percentage of habitat condition class (adding up to 100%)**	**Description and additional Comments and Observations (Including additional insight into condition, e.g. poor land management practises, presence of quarries, grazing, harvesting regimes etc).**
Natural	**20%**	**Better quality grassland of the two power line alternatives (Alternative 1: North Alternative and Alternative 2: South Alternative), with some protected plant species occurring within it. Utilised for grazing of livestock.**
Near Natural (includes areas with low to moderate level of alien invasive plants)	**35%**	**Some areas have been historically transformed but have indigenous pioneer grass species which have colonised them, with indigenous pioneer herbs having established within them as well.**
Degraded (includes areas heavily invaded by	**5%**	**Areas adjacent to some of the plantation compartments and near to the dwellings.**

alien plants)		
Transformed (includes cultivation, dams, urban, plantation, roads, etc.)	**40%**	**cultivated fields, large compartments of forestry, roads network, dwellings and Pecan Nut farming activities**

c) Complete the table to indicate:

(i) The type of vegetation, including its ecosystem status, present on the site; and

(ii) Whether an aquatic ecosystem is present on site.

Terrestrial Ecosystems **Paulpietersburg Moist Grassland**		**Aquatic Ecosystems**						
Ecosystem threat status as per the National Environmental Management: Biodiversity Act (Act No. 10 of 2004)	Critical	Wetlands			Estuary		Coastline	
	Endangered							
	✓Vulnerable							
	Least Threatened	**✓YES**	NO	UNSURE	YES	**✓NO**	YES	**✓NO**

d) Please provide a description of the vegetation type and/or aquatic ecosystem present on site, including any important biodiversity features/information identified on site (e.g. threatened species and special habitats)

The grassland areas which have not been transformed range from good through medium to low in terms of their condition. The following protected plant species were recorded: *Eucomis autumnalis* and *Eulophia welwitschii.*
Please refer to the Biodiversity Assessment Report included in Appendix D1 of this report.

(Power line Route Alternative 2 A & B: South Alternative)

a) Indicate the applicable biodiversity planning categories of all areas on site and indicate the reason(s) provided in the biodiversity plan for the selection of the specific area as part of the specific category)

Systematic Biodiversity Planning Category				**If CBA or ESA, indicate the reason(s) for its selection in biodiversity plan**
Critical Biodiversity Area (CBA)	Ecological Support Area (ESA)	**✓Other Natural Area (ONA)**	No Natural Area Remaining (NNR)	

b) Indicate and describe the habitat condition on site

Habitat Condition	Percentage of habitat condition class (adding up to 100%)	Description and additional Comments and Observations (Including additional insight into condition, e.g. poor land management practises, presence of quarries, grazing, harvesting regimes etc).
Natural	**15%**	**One protected plant species occurring within it. Utilised for grazing of livestock. Grazing has been intensive and unmanaged**
Near Natural (includes areas with low to moderate level of alien invasive plants)	**40%**	**Some areas have been historically transformed but have indigenous pioneer grass species which have colonised them, with indigenous pioneer herbs having established within them as well. Grazing has impacted significantly on the plant species assemblage**
Degraded (includes areas heavily invaded by alien plants)	**5%**	**Areas adjacent to some of the plantation compartments and near to the dwellings.**
Transformed (includes cultivation, dams, urban, plantation, roads, etc.)	**40%**	**cultivated fields, large compartments of forestry, roads network, dwellings and Pecan Nut farming activities**

c) Complete the table to indicate:

(i) The type of vegetation, including its ecosystem status, present on the site; and

(ii) Whether an aquatic ecosystem is present on site.

Terrestrial Ecosystems **Paulpietersburg Moist Grassland**		**Aquatic Ecosystems**						
Ecosystem threat status as per the National Environmental Management: Biodiversity Act (Act No. 10 of 2004)	Critical	Wetlands			Estuary		Coastline	
	Endangered							
	✓Vulnerable							
	Least Threatened	**✓YES**	NO	UNSURE	YES	**✓NO**	YES	**✓NO**

d) Please provide a description of the vegetation type and/or aquatic ecosystem present on site, including any important biodiversity features/information identified on site (e.g. threatened species and special habitats)

The grassland areas which have not been transformed are in a poor or of low functional value i.e. their condition is low. One species of protected plant was encountered namely *Crinum bulbispermum*.

Please refer to the Biodiversity Assessment Report included in Appendix D1 of this report.

SECTION C: PUBLIC PARTICIPATION

1. ADVERTISEMENT AND NOTICE

Publication name	Sowetan Newspaper	
	Highveld Tribune	
	Zululand Observer	
	Paulpietersburg Advertiser	
Date published	27th March 2015	
	31st March 2015	
	27th March 2015	
	02nd April 2015	
Site notice position	**Latitude**	**Longitude**
	S 27° 46' 08.2"	E 30° 47' 37.4"
	S 27° 25' 16.9"	E 30° 48' 57.0"
	S 27° 25' 33.4"	E 30° 49' 07.6"
	S 27° 46' 08.2"	E 30° 47' 23.2"
	S 27° 39' 21.1"	E 30° 52' 16.7"
	S 27° 38' 05.1"	E 30° 52' 12.6"
	S 27° 36' 59.6"	E 30° 52' 02.5"
Date placed	Site Notices were placed between the 24th March – 28th March 2015	

Include proof of the placement of the relevant advertisements and notices in Appendix E1.

2. DETERMINATION OF APPROPRIATE MEASURES

Provide details of the measures taken to include all potential I&APs as required by Regulation 54(2)(e) and 54(7) of GN R.543.

Key stakeholders (other than organs of state) identified in terms of Regulation 54(2)(b) of GN R.543:

Title, Name and Surname	Affiliation/ key stakeholder status	Contact details (tel number or e-mail address)
Refer to Appendix E for all key stakeholder information.		

Include proof that the key stakeholder received written notification of the proposed activities as Appendix E2. This proof may include any of the following:

- e-mail delivery reports;
- registered mail receipts;
- courier waybills;
- signed acknowledgements of receipt; and/or
- or any other proof as agreed upon by the competent authority.

3. ISSUES RAISED BY INTERESTED AND AFFECTED PARTIES

Summary of main issues raised by I&APs	Raised by	Summary of response from EAP
Mentioned that the DAFF deals with the National Forest Act (NFA) and questioned how the proposed developments will affect the forestry and protected species.	Ayanda Mnyunwla KZN - DAFF	SiVEST can send through shape files of the proposed alignments and corridors to DAFF (these were sent on the 17th April 2015). Additionally, the forest areas have been avoided, and are following existing servitudes as far as possible. **Kelly Tucker - SiVEST**
DAFF appreciates the opportunity given to review and comment on the Draft Basic Assessment Report (DBAR) for the above mentioned project. DAFF through the Directorate Forestry Regulations and Support is mandated to regulate activities affecting natural forests and tree species protected in terms of the National Forests Act, 1998 (Act No. 84 of 1998). Based on the information provided in the Draft Basic Assessment Report and Vegetation Assessment Report, natural forests and tree species protected in terms of the National Forests Act, 1998 were not recorded along the proposed four powerline routes and two substation sites. Given the above, this Department has no objections to the development as proposed. This letter does not exempt you from considering other environmental legislations.	Mr. Jeffery Maivha DAFF Forestry Regulations and Support - KZN	Comment noted **Kelly Tucker - SiVEST**
Informed SiVEST that he has reviewed the DBARs that he has received and has comments but we should note that it will be his own individual comments and not those of Ezemvelo KZN Wildlife. He will however report back to the Ezemvelo KZN Wildlife Committee and then send through the final official Ezemvelo KZN Wildlife comments to DEA and then to SiVEST.	Dominic Wieners (DW) Ezemvelo KZN Wildlife	Comment was noted **Kelly Tucker - SiVEST**
Agreed with the specialists' recommendations of replacing the sensitive flora with a 5:1 strategy, however but after reading the biodiversity review and recommendation report. Also agrees that the specialist walk down needs to happen at the correct time of the year and that sensitive flora need to be avoided as far as possible. This will be determined through the walk-down phase. Requested for the names of the case officers for the applications at the DEA. The final official Ezemvelo KZN Wildlife comments to DEA and then to SiVEST.		Comment was noted **Kelly Tucker - SiVEST** Sent DEA Case officer details on the 30 April 2015. **Veronique Evans - SiVEST**

The Draft Basic Assessment report for the abovementioned application has been reviewed by the Ezemvelo KZN Wildlife (EKZNW) IEM Planning Committee. Ezemvelo KZN Wildlife is satisfied that the proposed development of alternative 2, with powerline 2B, should not result in significant impacts upon local biodiversity, provided that: 1. Recommendations of the specialists are adhered to, and are included in the final EMPr, including inter alia: a. Relevant permits to be obtained by the applicant for translocation of listed and protected plant species in the affected footprint. A walk-through will need to be undertaken by a suitably qualified vegetation specialist prior to construction in order to give final confirmation of these species. It would be Ezemvelo's preference for the footprints of any pylons to rather avoid the requirement to relocated sensitive species, and the final placement to be adjusted to avoid red listed or protected plant species, rather than risk their demise by translocation. b. No development of new roads through any wetlands, dongas or drainage lines. Existing roads crossing such will need to have adequate storm-water protection put in place should they be required for ongoing maintenance, and any erosion will need to be curtailed by suitable mitigatory measures. c. RP3 raptor protectors must be fitted to the conductors / insulators, according to the Eskom standard. In addition, all bird electrocutions identified during routine maintenance patrols are to be reported by the applicant in order to monitor the effectiveness of the mitigatory measures. 2. The final EMPr is implemented and adhered to.		Comment was noted. Recommendations provided have been included in the EMPr and the recommendations section below. **Kelly Tucker - SiVEST**
Your Letter dated 26 March 2015 refers, the application was received on 16 April 2015. You are advised that the application is in the process of being investigated and that you will be advised accordingly of this Department's comments.	Mr R Ryan / Mrs J Reddy KZN Department of Transport, Infrastructure and Regional Services	Comment noted **Kelly Tucker - SiVEST**
This letter serves as a notice for receipt of the Draft Basic	Mr DJ	Comment noted

Assessment Report for the Proposed Development, dated 23 March 2015. Should any further information be required, please do not hesitate to contact this office.	Maivha DAFF	**Kelly Tucker - SiVEST**
Comments and issues raised by Interested and Affected Parties, as well as responses sent by the EAP during the Public Participation Process have been incorporated into this Final Basic Assessment Report and the Comments and Responses chapter (Appendix E3) for review by all registered stakeholders and for submission to the Department of Environmental Affairs.		

4. COMMENTS AND RESPONSE REPORT

The practitioner must record all comments received from I&APs and respond to each comment before the Draft BAR is submitted. The comments and responses must be captured in a comments and response report as prescribed in the EIA regulations and be attached to the Final BAR as Appendix E3.

5. AUTHORITY PARTICIPATION

Authorities and organs of state identified as key stakeholders:

Include proof that the Authorities and Organs of State received written notification of the proposed activities as appendix E4.

In the case of renewable energy projects, Eskom and the SKA Project Office must be included in the list of Organs of State.

Authority/Organ of State	Contact person (Title, Name and Surname)	Tel No	Fax No	e-mail	Postal address
Please refer to Appendix E4.					

6. CONSULTATION WITH OTHER STAKEHOLDERS

Note that, for any activities (linear or other) where deviation from the public participation requirements may be appropriate, the person conducting the public participation process may deviate from the requirements of that sub-regulation to the extent and in the manner as may be agreed to by the competent authority.

Proof of any such agreement must be provided, where applicable. Application for any deviation from the regulations relating to the public participation process must be submitted prior to the commencement of the public participation process.

A list of registered I&APs must be included as appendix E5.

Copies of any correspondence and minutes of any meetings held must be included in Appendix E6.

SECTION D: IMPACT ASSESSMENT

The assessment of impacts must adhere to the minimum requirements in the EIA Regulations, 2010, and should take applicable official guidelines into account. The issues raised by interested and affected parties should also be addressed in the assessment of impacts.

1. IMPACTS THAT MAY RESULT FROM THE PLANNING AND DESIGN, CONSTRUCTION, OPERATIONAL, DECOMMISSIONING AND CLOSURE PHASES AS WELL AS PROPOSED MANAGEMENT OF IDENTIFIED IMPACTS AND PROPOSED MITIGATION MEASURES

Provide a summary and anticipated significance of the potential direct, indirect and cumulative impacts that are likely to occur as a result of the planning and design phase, construction phase, operational phase, decommissioning and closure phase, including impacts relating to the choice of site/activity/technology alternatives as well as the mitigation measures that may eliminate or reduce the potential impacts listed. This impact assessment must be applied to all the identified alternatives to the activities identified in Section A(2) of this report.

Note: Two alternative substation locations are provided, Substation 1 (North) and Substation 2 (South). Each with two alternative route options for 88kV lines containing both in and out lines in a single route corridor and a single option for a 400kV power line.

The 400 kV lines were not investigated separately. These power lines will be a short distance only and are associated with each of the substation options. These power lines are a short distance from the substation to tie in with the existing 400 kV Power line and fall within the boundaries of the route corridors that were investigated for the 88 kV power line route options.

Please note: The impacts for all the proposed alternatives are similar and for this reason the impacts have been combined when they apply to all the alternatives and where the impacts diverge two (2) separate rows will be created highlighting the difference in terms of significance.

Activity	Impact summary	Significance	Proposed mitigation
Substation Alternative 1 (preferred alternative)			
Biodiversity	***Direct impacts:***		
	Impact on rare and endemic plant species	Medium Negative **(Substation Alternatives)**	- In the event that a protected, rare or endemic plant(s) are encountered during the construction of the Substation or access roads, then the plants will be identified and uplifted and replaced in areas adjacent the disturbance. - Obtain a permit for the upliftment or damage, destruction of the plants. - Proposed roads may be re-directed if required.
		Low Negative **(Power Line Alternatives)**	- In the event that a protected, rare or endemic plant is encountered during the construction of the power line, or access roads, then the plants will be identified and uplifted and replaced in areas adjacent the disturbance. - Obtain a permit for the upliftment or damage, destruction of the plants. - Roads may be re-directed if required. - Tower positions can be moved to accommodate these species if so determined by the specialist or CA.

Activity	Impact summary	Significance	Proposed mitigation
	Impact on Natural Vegetation	Medium Negative **(Substation Alternatives)**	- Substation siting will result in natural vegetation being destroyed however the choice of site will partially mitigate this impact. - Access to the new Substation will be simple as most roads exist and thus access is readily available and will not result in the need to create new roads, however, existing roads will require upgrading. - No development of roads must occur through wetland areas, erosion dongas and / or drainage lines.
		Low Negative **(Power Line Alternatives)**	- Placement of the new line within the existing servitude or the 500 metre wide corridor will not result in any sensitive vegetation being impacted upon. - Access to the new line will be simple as most roads exist, and thus access is readily available and will not result in the need to create new roads. - Roads may be re-directed if required. - No development of roads must occur through wetland areas, and where possible new roads must not be created.
	Impact on Sensitive vegetation types	Medium Negative **(Substation Alternatives)**	- Try to limit the creation of new access roads, utilise existing roads - Contain the area of construction as much as possible to the identified and approved footprint. - Rehabilitate any laydown areas or roads created for construction purposes only. - Should the need arise to obtain permits, this process needs to be undertaken
		Low Negative **(Power Line Alternatives)**	- Try to erect power line as close to access as feasibly possible and stay out of wet areas and drainage lines. - Don't create new access roads, utilise existing roads
	Impact on natural systems and their potential fragmentation	Low negative **(Substation Alternatives)**	- The proposed Substation and associated power lines will result in landscape fragmentation to a degree. The placement of a Substation within an agricultural area will result in landscape fragmentation, however, the placement and the site selection will mitigate this significantly
		Low Negative **(Power Line Alternatives)**	- Power lines and other linear infrastructural features exist. The receiving environment is already highly transformed through historical activities, and many linear features such as roads and other power lines exist. - The best possible mitigation will be to select the power line alignment that will traverse the most transformed areas.
	Impact on Conservation Areas	Low negative **(Substation Alternatives)**	- No conservation areas have been identified. -
		Low Negative **(Power Line Alternatives)**	- Maintenance of the power line within a predefined corridor will result in the power line not impacting any conservation areas.
	Indirect impacts:		
	Impact of maintenance activities on sensitive environments and vegetation	Low negative **(Substation Alternatives)**	- Maintain an alien free environment around the substation. - Prevent unnecessary activities outside of the substation footprint, and prevent the need for regular driving and restrict driving to existing roads.
		Low Negative **(Power Line Alternatives)**	- Maintain an alien free servitude - Restrict driving to existing roads during maintenance.
	Impact	Medium Negative	- Rehabilitation utilizing plant species indigenous to the

Activity	Impact summary	Significance	Proposed mitigation
	resulting from rehabilitation	**(Substation Alternatives)** Medium Negative **(Power Line Alternatives)**	surrounding area, following removal of a substation and or roads. - Removal of an ongoing disturbance as a result of the roads removal.
	Impact associated with potential alien plant species infestations	Medium Negative **(Substation Alternatives)** Medium Negative **(Power Line Alternatives)**	- The control and management of alien invasive plant species through a management plan to be created, once the decision to decommission is made. - Alien plant species within the site should be managed. - Set aside a budget to rehabilitate areas with natural vegetation as a preventative measure to stop alien infestations and establishment. - Prevent livestock form entering areas where infrastructure has been decommissioned. - Should the need arise to obtain permits, this process needs to be undertaken
	Cumulative impacts:		
	None identified***.***		
Desktop Faunal	***Direct impacts:***		
	Vegetation clearing, disturbance and the use of heavy machinery and human presence along the power line route and at substation locations during construction is likely to negatively affect resident fauna directly and through habitat loss.	Medium Negative	- Construction staff should undergo environmental induction to ensure that they are aware of fauna-related issues and that no fauna are harmed during construction. This pertains especially to fauna such as snakes which are persecuted regardless of the threat they may or may not pose. - The footprint of the development in the vicinity of the rivers should be kept as low as possible and existing access roads should be used wherever possible so that new river crossings are not required. - All hazardous materials should be stored in the appropriate manner to prevent contamination of the site. Any accidental chemical, fuel and oil spills that occur at the site should be cleaned up in the appropriate manner as related to the nature of the spill. - Try to limit fires within the site as there is a risk of runaway veld fires. Refer to Eskom fire management procedures. - If any parts of site such as construction camps must be lit at night, this should be done with low-UV type lights (such as most LEDs), which do not attract insects and which should be directed downwards. - An ECO should be present during construction to ensure compliance as well as ensure that any affected fauna can be removed to safety. - Any active burrows within the footprint should be checked for fauna before construction commences and should it not be possible to adjust the footprint to avoid such features, then the resident fauna should be relocated or excluded from the burrows so that they are not impacted by construction activities. - All construction vehicles should adhere to a low speed limit (30 km/h) to avoid collisions with susceptible species such as snakes and tortoises. - Regular dust suppression during construction, especially along access roads which are used frequently. - No activity should be allowed at the site between sunset

Activity	Impact summary	Significance	Proposed mitigation
			and sunrise. - Any dangerous fauna (snakes, scorpions etc) that are encountered during construction should not be handled or molested by the construction staff and the ECO or other suitably qualified persons should be contacted to remove the animals to safety. - Holes and trenches should not be left open for extended periods of time and should only be dug when needed for immediate construction. Trenches that may stand open for some days, should have places where the loose material has been returned to the trench to form an escape ramp present at regular intervals to allow any fauna that fall in to escape.
	Indirect impacts:		
	None identified.		
	Cumulative impacts:		
	None Identified		
Surface Water	***Direct impacts:***		
	Construction Lay-down Area Potential Impacts: Drainage Line and Watercourse Riparian Habitat Degradation	Medium Negative	- Seasonal scheduling of the construction process: It is important that construction activities must be scheduled to take place where possible over the dry winter season when there is little rainfall and flows are low. - Location of the lay-down area: The location of the lay-down area is not to be within 100m of a drainage line, watercourse or the associated buffer zone. All materials, machinery and vehicles are to be kept in a designated area that is located outside and at least 50m away from the identified wetlands.
	Wetland Habitat Loss	High Negative	- Avoid all Delineated Wetlands. To prevent this potential impact, all delineated wetlands and the associated buffer zones must be avoided to avert wetland loss. This can be achieved with careful and strategic placement of the proposed power line and substation in accordance with the recommendations in the surface water report.
	Human Degradation Impacts: Surface Water Resource Fauna and Flora Physical Degradation	Low Negative	- Minimising Human Physical Degradation: Construction workers are not allowed in the demarcated the riparian habitats associated with the drainage lines and/or watercourses unless it is in the authorised RoW areas. - Preventing Loss or Harm to Fauna and Flora: No animals are to be hunted, captured, trapped, removed, injured, killed or eaten. Additionally, no riparian vegetation is to be removed, harvested or damaged. Should any party be found guilty of such offences, stringent penalties should be imposed. The appointed Environmental Control Officer (ECO) is to be contacted should the possible removal of any fauna be required during the construction phase. - Preventing the Usage of Riparian Habitats for Sanitation Purposes: No “long drop” or chemical toilets are allowed in any surface water features or their applicable buffers. These must be in designated areas within the construction site. Riparian habitats may also not be allowed to be used for sanitation purposes. Suitable temporary chemical sanitation facilities are to be provided. Temporary chemical sanitation facilities must be placed at least 100 meters from the riparian habitats. Temporary chemical sanitation facilities must be placed over a bunded or a sealed surface area and adequately maintained to prevent pollution

Activity	Impact summary	Significance	Proposed mitigation
			impacts. - Preventing Water Extraction from Drainage Lines and Watercourses. No water is to be extracted unless a water use license is granted for specific quantities.
	Service Road Establishment and Subsequent Vehicle Degradation Impacts to Riparian Habitats	Low negative	- Preventing Vehicle Degradation Impacts. Service roads must not be planned through wetlands. Alternative routes must be planned and established that circumvent wetlands completely.
	Indirect impacts:		
	Vehicle and Machinery Impacts: Drainage Line and Watercourse Compaction and Degradation	Medium Negative	- Prohibition of Vehicles and Machinery in Wetlands. All wetland and the associated buffer zones within close proximity (200m) of construction areas are to be demarcated as "highly sensitive" areas and must be avoided. To prevent potential impact, no vehicles or machinery are allowed in the delineated wetlands and the associated buffer zones. Should access be required to towers either side of a wetland, the wetland is to be circumvented. Strictly, no vehicle may traverse a wetland. Similarly, no machinery is to be brought into or allowed to operate in a wetland or the associated buffer zone. - Preventing Soil and Wetland Contamination. All vehicles and machinery are to be checked for oil, fuel or any other fluid leaks before entering the construction areas. All vehicles and machinery must be regularly serviced and maintained before being allowed to enter the construction areas. No fuelling, re-fuelling, vehicle and machinery servicing or maintenance is to take place in the highly sensitive areas. The construction site is to contain sufficient safety measures throughout the construction process. These include, but are not limited to, oil spill kits, and fire extinguishers. Fuel, oil or hazardous substances storage areas must be bunded to prevent oil or fuel contamination of the ground and/or wetlands or associated buffer zones. - Prevention of Hazardous Materials in Wetlands. No hazardous materials are to be stored or brought into the highly sensitive areas. Should a designated storage area be required, the storage area must be placed at the furthest location from the highly sensitive areas. Appropriate safety measures as stipulated above must be implemented.
	Erosion, Increased Run-off and Sedimentation to Surface Water Resources	Low Negative	- Preventing Increased Run-off, Erosion and Sedimentation Impacts. Vegetation clearing is to take place in a phased manner, only clearing areas that will require construction immediately. Vegetation clearing must not take place in areas where construction will only take place in the distant future. Vegetation must not be completely removed and must be undertaken according to standard Eskom vegetation clearance standards and policies. - Adequate structures must be put into place (temporary or permanent where necessary in extreme cases) to deal with run-off and sediment volumes. The use of silt fencing and potentially sandbags or hessian "sausage" nets can be used to prevent erosion in susceptible construction areas near wetlands.

Activity	Impact summary	Significance	Proposed mitigation
			- All impacted construction areas near and in surface water resources are to be adequately sloped to prevent the onset of erosion.
	Vehicle Degradation Impacts: stringing of power lines through surface water resources	Low negative	- Preventing Vehicle Degradation Impacts: Previously, recommendations to prohibit vehicle access into wetlands must be upheld. For the stringing process specifically, stringing of the power lines must be undertaken by hand and the number workers allowed to cross through surface water resources should be minimised. Once this has been undertaken, access must be strictly prohibited in the highly sensitive areas unless a RoW has been established allowing limited access during the construction phase only. The ECO must be on site to observe the stringing process through the surface water resources to ensure that potential impacts are minimised and where required, adequate mitigation measures to address impacts are undertaken.
	Cumulative impacts:		
	- None identified.		
Geographical and physical Aspects	***Direct Impacts***		
	None identified.		
	Indirect Impacts		
	Soil erosion through vegetation clearance and soil compaction by heavy duty construction vehicles	Low negative	Refer to EMPr attached in Appendix G: - All vehicles to remain within the designated vehicle tracks; and - Minimum / no movement in areas already eroded.
	Contamination of soils through indiscriminate disposal of construction waste and accidental spillage of petroleum products.	Low negative	Refer to EMPr in Appendix G: - Storage of any materials shall not take place within 32m of any watercourses or sensitive environments. - Fuel, oil and any other hazardous substances and harmful materials shall be stored in suitable containers within adequately bunded areas (with 110% of the capacity of the volume of the container) in a dry, secure environment, with concrete or sealed flooring. - Material Safety Data Sheets shall be kept for all hazardous materials and substances and a copy of the Material Safety Data sheets shall be made available to all workers to ensure that the required safe handling and necessary precautions are taken when suing the materials. - The PC will ensure that materials storage facilities are cleaned/ maintained on a regular basis, and that leaking containers are disposed of in a manner that allows no spillage onto the bare soil or surface water.
	Cumulative Impact		
	None identified.		

Activity	Impact summary	Significance	Proposed mitigation
Agricultural Potential and Soils	***Direct impacts:***		
	Loss of agricultural land and / or production as a result of the proposed substation construction	Medium Negative **(Substation Alternative 1)**	- Avoid active cultivated land by building in the centre of the assessment area, which is characterised by low value agricultural land (grazing land). - Due to the overarching site characteristics and the nature of the proposed development viable mitigation measures are limited and will most likely revolve around erosion control: - Clearing activities should be kept to a minimum. - In the unlikely event that heavy rains are expected activities should be put on hold to reduce the risk of erosion. - If additional earthworks are required, any steep or large embankments that are expected to be exposed during the 'rainy' months should either be armoured with fascine like structures. - If earth works are required then storm water control and wind screening should be undertaken to prevent soil loss from the site
		Medium Negative **(Substation Alternative 2)**	
	Loss of agricultural land and / or production as a result of the proposed substation construction	High Negative **(Power line Alternative 1A**)	- Interact with impacted landowners to discuss where they would ideally like to see the power lines situated on their property to have the least impact on their farming practices, the negotiation phase should form part of the final survey / line route selection. - Employ a low impact routing to avoid / skirt high value agricultural land. This is particularly important for the various agricultural areas identified in Section 5 of this report. - The utilisation of optimal tower designs can further reduce the potential impacts. - Attempt to place towers on the edge of existing agricultural areas and span active agricultural fields as far as possible. Following existing roads and utilising the edge of road servitudes is highly recommended due to the existing impacts associated with these areas. - Ensure adequate compensation is paid to land owners where necessary. - Employ erosion control: - Clearing activities should be kept to a minimum. - In the unlikely event that heavy rains are expected, activities should be put on hold to reduce the risk of erosion. - If additional earthworks are required, any steep or large embankments that are expected to be exposed during the
		High Negative **(Power line Alternative 1B)**	

Activity	Impact summary	Significance	Proposed mitigation
		High Negative **(Power line Alternative 1A + Power line Alternative 1B)**	'rainy' months should be armoured with fascine like structures. - If earth works are required then storm water control and wind screening should be undertaken to prevent soil erosion.
	Loss of agricultural land and / or production as a result of the proposed substation construction	Low Negative **(Power line Alternative 2A)**	- Due to the overarching route characteristics, and the nature of the proposed development, viable mitigation measures are limited and will most likely revolve around erosion control: - Clearing activities should be kept to a minimum. - In the unlikely event that heavy rains are expected, activities should be put on hold to reduce the risk of erosion. - If additional earthworks are required, any steep or large embankments that are expected to be exposed during the 'rainy' months should be armoured with fascine like structures. - If earth works are required then storm water control and wind screening should be undertaken to prevent soil erosion. - Interact with landowners during the routing process. - The utilisation of optimal tower designs can further reduce the potential impacts. - Attempt to place towers on the edge of existing agricultural areas and span active agricultural fields as far as possible. Following existing roads and utilising the edge of road servitudes is highly recommended due to the existing impacts associated with these areas.
		Low Negative **(Power line Alternative 2B)**	
		Low Negative **(Power line Alternative 2A + Power line Alternative 2B)**	
	Indirect impacts:		
	None identified.		
	Cumulative impacts:		
	None identified.		
Avifauna Impacts	***Direct impacts:***		
	Collision of birds with overhead power line	Medium negative	- The primary mitigation measure is to select the optimal route. In this case it is believed that the southern route or Alternative 2 should be selected as it requires significantly shorter length of power line, and traverses grassland that is more degraded

Activity	Impact summary	Significance	Proposed mitigation
	cables, in particular the earth wire.		than on the northern route. - It will be important for a suitably qualified avifaunal specialist to conduct an avifaunal walk through assessment in order to identify the exact spans of line requiring collision mitigation measures. The high risk areas have been roughly identified by this report but this should be refined when final tower/pylon positions are available. - High risk sections of line should be fitted with the best Eskom approved anti bird collision line marking device available at the time of construction. These devices should be installed on the earth wire according to Eskom standards. - It will be important for Eskom to report all bird collisions detected during maintenance line patrols, so that the significance of this impact and the effectiveness of mitigation can be accurately evaluated.
	Electrocution of birds on pylons/towers and in substation yard	High negative	- Refer to the Eskom Bird guidelines and policies - It will be important for Eskom to report all bird electrocutions detected during maintenance line patrols, so that the significance of this impact and the effectiveness of mitigation can be accurately evaluated. - Within the substation yard there are numerous hardware components which could electrocute birds. However due to the complexity of this hardware, and the species likely to frequent substation yards (mostly non Red-Listed) it is recommended that mitigation only be considered if a problem is detected once the substation is operational.
	Indirect impacts:		
	Disturbance of birds in the area during construction of the proposed project	Medium to low negative	- It will be important for a suitably qualified avifaunal specialist to conduct an avifaunal walk through assessment in order to determine whether any Red-Listed bird species are breeding on the servitude. This could include breeding on the existing power line tower structures. If such breeding birds are identified case specific management recommendations will be developed by the specialist. - In addition to the above exercise, general environmental best practices should suffice for reducing the disturbance as far as possible. These include; strict management of staff, vehicles and machinery on site; and completing construction within the shortest possible time.
	Destruction and alteration of habitat available to birds in the area during construction of the proposed project	Low negative	- All of the natural vegetation along the servitude and on the substation site should be protected as far as possible, although it is acknowledged that some removal is inevitable. It is recommended that vegetation removal is kept to an absolute minimum however. - In addition to the above exercise, general environmental best practices should suffice for reducing the disturbance of vegetation as far as possible. These include; strict management of staff, vehicles and machinery on site
	Cumulative impacts:		
	None Identified		
Heritage	***Direct impacts:***		
	Five heritage sites occur on the footprint. These include four Grave Sites and one Later Iron Age	High Negative	- Shift the power line trajectory in order to accommodate the proposed buffer zones (first and preferred option) - Call for a second phase Heritage Impact Assessment This may entail application for a permit to allow for a rescue excavation or the exhumation and translocation of graves (second option)

Activity	Impact summary	Significance	Proposed mitigation
	Site.		
	Indirect impacts:		
	None Identified.		
	Cumulative impacts:		
	None Identified.		
Visual	***Direct Impacts***		
	Large construction vehicles and equipment during the construction phase may change the visual character of the study area and expose sensitive receptors to visual impacts associated with the construction phase.	Low Negative	- Locate construction camp and storage areas in zones of low visibility i.e. behind tall trees or in lower lying areas. - Minimise vegetation clearing and rehabilitate cleared areas as soon as possible. - Maintain a neat construction site by removing rubble and waste materials regularly. - Make use of existing gravel access roads where possible.
	Indirect impacts:		
	None Identified		
	Cumulative impacts:		
	Change to the visual character of the surrounding area and visual impact on potentially sensitive visual receptors that may perceive the substation to be an unwelcome intrusion.	Medium negative	- Locate the substation as far away from sensitive receptor locations where possible. - Where possible, locate the substation behind tall trees so that it is less visible from local homesteads.
Socio-economic	***Direct Impacts***		
	Positive economic impacts as a result of higher coal export tonnage, as well as temporary and permanent employment opportunities, thereby contributing positively to the expansion and strengthening of local economic activities.	High Positive	N/A: Mitigation not required.
	Indirect impacts:		
	None identified.		
	Cumulative impacts:		
	None identified.		
Dust	***Direct impacts:***		
	None identified.		
	Indirect impacts:		
	Dust impacts on surrounding environment associated with construction	Low negative	- Generation of dust shall be minimised and dust nuisance for the surrounding areas shall be kept to a minimum wherever possible. - Dust from exposed soil surfaces shall be minimised at all times, only using water spray during extremely windy conditions - Reasonable measures must be undertaken by the

Activity	Impact summary	Significance	Proposed mitigation
	activities		contractor to ensure that any exposed areas and material stockpiles are adequately protected against the wind. - Dust screens of a suitable height should be erected wherever required and possible. - All exposed surfaces should be minimised in terms of duration of exposure to wind and stormwater.
	Cumulative impacts:		
	None identified.		
Noise	***Direct impacts:***		
	None identified.		
	Indirect impacts:		
	Noise impacts on surrounding environment associated with construction activities (Construction vehicles and equipment)	Low Negative	- The contractor shall adhere to the local by-laws and regulations regarding the noise and associated hours of operations. - The contractor shall limit noise levels (e.g. install and maintain silencers on machinery). The provisions of sans 1200a sub-clause 4.1 regarding "built-up" area shall apply to all areas within audible distance of residents whether in urban, peri-urban or rural areas. - Construction and demolition activities generating output of 85db or more, shall be limited to normal working hours and not allowed during weekends. - Should the contractor need to work outside normal working hours, any affected individuals shall be informed prior to the work taking place. - No amplified music shall be allowed on site.
	Cumulative impacts:		
	None identified.		
Waste	***Direct impacts:***		
	None identified.		
	Indirect impacts:		
	Generation of additional waste/ litter and building rubble/hazardous material during the construction phase	Medium Negative	Waste management mitigation measures as detailed in the EMPr (attached in Appendix G) includes: - Solid waste (construction waste and builders rubble) will be collected by independent contractors and disposed of at the registered licensed municipal landfill site in with proof of safe disposal as required. - The contractor shall ensure that all litter is collected from the work area. Similarly, all bins shall be emptied regularly and the waste disposed of at a permitted landfill site. - The contractor shall ensure that the construction site, working and eating areas are maintained in a clean, hygienic and orderly state. - Separate bins should be provided for various materials to facilitate recycling. The bins should have liner bags for easy control and safe disposal of waste. - The excavation and use of rubbish pits on site is forbidden. - The burning of waste is forbidden. - All vehicles and equipment must be maintained in a good condition in order to minimise the risk of leakage and possible contamination of the soil or storm water by fuels, oils and hydraulic fluids. - Sufficient quantities of suitable hydrocarbon absorption or remediation materials must be present on site at all times.
	Cumulative impacts:		
	None identified.		
No-go option			

Activity	Impact summary	Significance	Proposed mitigation
Socio-economic	***Direct impacts:***		
	Socio - Economic	High Negative	Negative socio-economic impacts as a result of inadequate supply of electricity to the Transnet railway system thereby preventing an increased export tonnage of coal. This will prevent job creation in the area and hinder South Africa's economic growth in the coal export sector
	Indirect impacts:		
	None identified.		
	Cumulative impacts:		
	None identified.		

A complete impact assessment in terms of Regulation 22(2)(i) of GN R.543 must be included as Appendix F.

2. ENVIRONMENTAL IMPACT STATEMENT

Taking the assessment of potential impacts into account, please provide an environmental impact statement that summarises the impact that the proposed activity and its alternatives may have on the environment after the management and mitigation of impacts have been taken into account, with specific reference to types of impact, duration of impacts, likelihood of potential impacts actually occurring and the significance of impacts.

Substation Alternative 1 (Not Preferred)

Botanical	The proposed grassland area that will receive the S/S is the most diverse grassland that was encountered in the entire study area, and is significantly more diverse than the grasslands that were encountered at the Option 2. Further the proposed power line alignment to be followed is also sub-optimal from a vegetation as well as accessibility.
Fauna	There are reasonably large numbers of listed mammals and reptiles potentially present within the study area. Most of these are grassland species that would be associated with the remnant fragments of grassland. As the substation alternative 1 is located within intact grassland, it is the less preferred alternative and Alternative 2.
Surface Water	There are four (4) wetlands that may potentially be affected by the proposed development for this alternative. This includes three (3) hillslope seep wetlands and one (1) channelled valley bottom wetland. The general condition of the 1.5km assessment area is relatively natural compared with the surrounding area and the condition of the wetlands is relatively good with limited existing impacts apart from grazing and erosion in some areas. Additionally, the presence of a perched water table within the assessment area means that even where wetlands are not present within the 50cm threshold, water near the surface may well be present in other areas where the proposed substation may be placed which would have an influence on the suitability of the foundation for the substation. Therefore, even though potential impacts to wetlands can be avoided with careful placement of the substation away from the wetlands, this area is not deemed to be ideal for the construction of the substation. This option is therefore not preferred from a surface water perspective.
Agricultural	The construction of the proposed substation will entail the clearing of vegetation and leveling of the area. This will effectively eliminate the lands agricultural

Potential and Soils	potential in terms of crop production and grazing for as long the development persists. However, the total land area lost to this development is only 0.48 ha and influences low value agricultural land. The surrounding land will continue to function as they did prior to the development. If the substations are placed in the centre of their respective assessment areas they will avoid active cultivated fields and both are then acceptable from an agricultural perspective. However, Substation Alternative 2 is preferred as the selection of this Alternative will then allow Alternative Corridor 2A to be selected.
Heritage	Five sites were located during the survey. These include one Late Iron Age Site and four Grave Sites. The Iron Age Site as well as the Grave Sites are protected by heritage legislation as they all appear to the older than 60 years. There is no archaeological reason why the proposed mining expansion may not take place on the project area as planned with mitigation measure in mind.
Avifauna	From an avifaunal perspective there is little difference between the habitats on the two substation sites. Based on the findings from the avifauna study Alternative 2 is the best possible option and should be selected for construction.
Visual	- The substation would be highly visible from the tar arterial road, due to the relatively flat terrain and short nature of the prevailing natural vegetation. - In addition, a farmhouse located within the substation assessment area from where the proposed substation would be highly visible.
Socio-Economic	N/A
Geotechnical	The geology of the two sites is similarly underlain by transported and residual soils overlying dolerite and shale bedrock. Underlying the residual shale is completely to highly weathered shale bedrock of the Pietermaritzburg Formation. The sites are generally characterised by deep weathering profiles of predominantly sandy silty/clayey materials occurring below the silty/clayey colluvial layer which occurs from surface to an average depth of 0.4 metres below existing ground level. Due to the low soil consistencies and the shallow occurrence of groundwater beneath the majority of Substation alternative 2, substation alternative 1 can be considered to be the less problematic option for the proposed development, provided that the necessary foundation requirements are met. Substation Alternative 1 also has more occurrences of soils suitable for use in bulk fills. Founding conditions are similar on both sites.

Substation Alternative 2 (Preferred Alternative)

Botanical	The receiving grassland area is relatively well utilised from a grazing perspective with the benchmark status of the grassland considered lower than the grassland at Option 1 based on the grass sward composition, as well as the limited herbaceous plant species diversity. Further, no protected plant species were encountered at this specific site, and if they were to be encountered a search and rescue would be simple and rapid to undertake.
Fauna	There are reasonably large numbers of listed mammals and reptiles potentially present within the study area. Most of these are grassland species that would be associated with the remnant fragments of grassland. As the substation alternative 1 is located within intact grassland, it is the less preferred alternative. Alternative 2 is the more preferred option as it located on previously transformed habitat.

Surface Water	There are five (5) wetlands that could potentially be impacted by the proposed development for this alternative. This includes four (4) hillslope seep wetlands, and one (1) channelled valley bottom wetland. Should the current location for the proposed substation be situated at alternative 2 within the 1.5 km assessment area, this area would be ideal as it is sufficiently distanced from any of the wetlands and should not have any impact. This option is therefore viewed as preferred from a surface water perspective.
Agricultural Potential and Soils	The construction of the proposed substation will entail the clearing of vegetation and leveling of the area. This will effectively eliminate the lands agricultural potential in terms of crop production and grazing for as long the development persists. However, the total land area lost to this development is only 0.48 ha and influences low value agricultural land. The surrounding land will continue to function as they did prior to the development. If the substations are placed in the centre of their respective assessment areas they will avoid active cultivated fields and both are then acceptable from an agricultural perspective. However, Substation Alternative 2 is preferred as the selection of this Alternative will then allow Alternative Corridor 2A to be selected.
Heritage	Five sites were located during the survey. These include one Late Iron Age Site and four Grave Sites. The Iron Age Site as well as the Grave Sites are protected by heritage legislation as they all appear to the older than 60 years. There is no archaeological reason why the proposed mining expansion may not take place on the project area as planned with mitigation measure in mind.
Avifauna	From an avifaunal perspective there is little difference between the habitats on the two substation sites. Based on the findings from the avifauna study Alternative 2 is the best possible option and should be selected for construction.
Visual	- The substation would be highly visible from the tar arterial road, due to the relatively flat terrain and short nature of the prevailing natural vegetation. - In addition, a farmhouse located within the substation assessment area from where the proposed substation would be highly visible.
Socio-Economic	N/A
Geotechnical	The geology of the two sites is similarly underlain by transported and residual soils overlying dolerite and shale bedrock. Underlying the residual shale is completely to highly weathered shale bedrock of the Pietermaritzburg Formation. The sites are generally characterised by deep weathering profiles of predominantly sandy silty/clayey materials occurring below the silty/clayey colluvial layer which occurs from surface to an average depth of 0.4 metres below existing ground level. Due to the low soil consistencies and the shallow occurrence of groundwater beneath the majority of Substation alternative 2, substation alternative 1 can be considered to be the less problematic option for the proposed development, provided that the necessary foundation requirements are met. Substation Alternative 1 also has more occurrences of soils suitable for use in bulk fills. Founding conditions are similar on both sites.

Power Line Alternative 1A (Favourable Alternative)

Botanical	The proposed alignment to be followed by **Option 1A** will traverse the most diverse grasslands that were encountered within the study area. A number of protected plant species occur within the proposed corridor. New access will be

	required for the last section of the **Option 1** alignment which will result in loss of natural vegetation which is undesirable.
Fauna	There are reasonably large numbers of listed mammals and reptiles potentially present within the study area. Most of these are grassland species that would be associated with the remnant fragments of grassland. Substation Alternative 2 with the power line Alternative 2B which are identified as are the preferred alternatives for the development. The power line itself also traverses a significant extent of previously transformed habitat and the total extent of intact habitat that would be lost under this combination of alternatives would be low and is likely to amount to less than 1-2ha. This alternative is less preferred as the amount of intact habitat that would be lost is greater than that of Alternative 2B.
Surface Water	There are a total of eight (8) wetlands that may potentially be impacted by the proposed power line for this alternative. More specifically, this includes four (4) un-channelled valley bottom wetlands, three (3) channelled valley bottom wetlands and one (1) hillslope seep wetland. However, with careful placement, the proposed power line can be routed to avoid several wetlands thereby decreasing the potential impact. However, channelled valley bottom wetlands 2 and 4 occupy the entire width of the proposed assessment corridor and thus will need to be spanned should this option be chosen, which is likely to result in potential impacts during the construction and operation phase. These two wetlands, however, are not very wide and can be easily spanned at the narrowest point. Therefore, no towers will need to be placed in the wetlands further reducing the potential impact. Lastly, un-channelled valley bottom wetland 3 follows the route of the corridor for some distance through the plantation areas, thereby restricting the possible placement of the power line to avoid destruction of the plantation. It is therefore important that (should this option be chosen) the power line should be placed to the south and outside of the wetland to avoid potential impacts. Should the above be taken into account, this option is viewed as favourable from a surface water perspective.
Agricultural Potential and Soils	The findings of this assessment indicate that Alternative Corridors 1A and 1B could impact high value agricultural land and thus the selection of these alternatives **is not recommended** from an agricultural perspective.
Heritage	Five sites were located during the survey. These include one Late Iron Age Site and four Grave Sites. The Iron Age Site as well as the Grave Sites are protected by heritage legislation as they all appear to the older than 60 years. There is no archaeological reason why the proposed mining expansion may not take place on the project area as planned with mitigation measure in mind.
Avifauna	From an avifaunal perspective there is little difference between the habitats on the two substation sites. However the turn in power line route associated with each substation site differ significantly. The southern option or Alternative 2 is preferred from an avifaunal perspective as it requires significantly shorter length of power line to be constructed, with consequent lower risk to birds. In addition the southern route passes through grassland that is believed to be more degraded than that in the north, so destruction of habitat will also be less significant. Corridor 2B is slightly preferred over 2A. **Overall then the order of preference of the alternatives is as follows: Both lines in Option 2A > Both lines in Option 2B > one line in each of Option 2A and 2B > both lines in Option 1A > Both lines in Option 1B > one line in each of 1A and 1B.**
Visual	Commercial forestry plantations located on the western side of the tar arterial

	road would partially screen views of the power line.
Socio-Economic	N/A

Power Line Alternative 1B (Not Preferred Alternative)

Botanical	The power line will be required to traverse relatively steep side slopes that have quite diverse vegetation components due to topography, aspect and the protection afforded these areas from historic cultivation. Rocky areas exist which act as reservoirs of species diversity therefore interfering with these areas is undesirable. Further, in order to construct the power line along the side slope portion of **Option 1 b** will result in the need to construct an access road, which coupled with the access road requirements where **Option 1 a** and **b** combine, makes this option the least preferred.
Fauna	There are reasonably large numbers of listed mammals and reptiles potentially present within the study area. Most of these are grassland species that would be associated with the remnant fragments of grassland. Substation Alternative 2 with the power line Alternative 2B which are identified as are the preferred alternatives for the development. The power line itself also traverses a significant extent of previously transformed habitat and the total extent of intact habitat that would be lost under this combination of alternatives would be low and is likely to amount to less than 1-2ha. This alternative is less preferred as the amount of intact habitat that would be lost is greater than that of Alternative 2B.
Surface Water	There are a total of seven (7) wetlands that could potentially be affected by the proposed power line for this alternative. More specifically this includes three (3) channelled valley bottom wetlands, two (2) hillslope seep wetlands, one (1) un-channelled valley bottom wetland and one (1) artificial man-made impoundment. This option contains on less wetland than that of alternative 1a that could potentially be affected by the proposed development. However, potential impacts to some of the wetlands can be avoided by routing the power line away from the wetlands to avoid impacts. Despite this, this option contains more wetlands (5 in total) when compared with alternative 1 a that will need to be spanned, given that each occupies the width of the corridor. This includes channelled valley bottom wetlands 3, 4 and 5, un-channelled valley bottom wetland 4 and hillslope seep wetland 3. All of the above wetlands can be spanned should the proposed power line cross at the narrower areas. Therefore, no towers will need to be placed within the wetlands. However, the wetlands in this corridor are extremely eroded and any additional disturbance may result in further erosion impacts. This option is therefore regarded as not preferred from a surface water perspective.
Agricultural Potential and Soils	The findings of this assessment indicate that Alternative Corridors 1A and 1B could impact high value agricultural land and thus the selection of these alternatives **is not recommended** from an agricultural perspective.
Heritage	Five sites were located during the survey. These include one Late Iron Age Site and four Grave Sites. The Iron Age Site as well as the Grave Sites are protected by heritage legislation as they all appear to the older than 60 years. There is no archaeological reason why the proposed mining expansion may not take place on the project area as planned with mitigation measure in mind.
Avifauna	From an avifaunal perspective there is little difference between the habitat on the two substation sites. However the turn in power line route associated with each

	substation site differ significantly. The southern option or Alternative 2 is preferred from an avifaunal perspective as it requires significantly shorter length of power line to be constructed, with consequent lower risk to birds. In addition the southern route passes through grassland that is believed to be more degraded than that in the north, so destruction of habitat will also be less significant. Corridor 2B is slightly preferred over 2A. **Overall then the order of preference of the alternatives is as follows: Both lines in Option 2A > Both lines in Option 2B > one line in each of Option 2A and 2B > both lines in Option 1A > Both lines in Option 1B > one line in each of 1A and 1B.**
Visual	- Commercial forestry plantations located on the western side of the tar arterial road would partially screen views of the power line. - However, the alignment runs higher up the mountainous terrain, thus making it more visible to the surrounding area.
Socio-Economic	N/A

Power Line Alternative 1A + Alternative 1B (Not Preferred Alternative)

Botanical	The proposed alignment to be followed by **Option 1A** will traverse the most diverse grasslands that were encountered within the study area. A number of protected plant species occur within the proposed corridor. New access will be required for the last section of the **Option 1** alignment which will result in loss of natural vegetation which is undesirable. Additionally, the power line **Option 1B** will be required to traverse relatively steep side slopes that have quite diverse vegetation components due to topography, aspect and the protection afforded these areas from historic cultivation. Rocky areas exist which act as reservoirs of species diversity therefore interfering with these areas is undesirable. Further, in order to construct the power line along the side slope portion of **Option 1B** will result in the need to construct an access road, which coupled with the access road requirements where **Option 1A** and **1B** combine, makes this option the least preferred.
Fauna	There are reasonably large numbers of listed mammals and reptiles potentially present within the study area. Most of these are grassland species that would be associated with the remnant fragments of grassland. Substation Alternative 2 with the power line Alternative 2B which are identified as are the preferred alternatives for the development. The power line itself also traverses a significant extent of previously transformed habitat and the total extent of intact habitat that would be lost under this combination of alternatives would be low and is likely to amount to less than 1-2ha. This alternative is less preferred as the amount of intact habitat that would be lost is greater than that of Alternative 2B.
Surface Water	There are a total of twelve (12) wetlands that could potentially be affected by the proposed power line for this alternative. More specifically, this includes five (5) channelled valley bottom wetlands, four (4) un-channelled valley bottom wetlands, two (2) hillslope seep wetlands and one (1) artificial man-made impoundment. This option contains the highest number of wetlands that could potentially be affected by the proposed development. However, potential impacts to some of the wetlands can be avoided by routing the power line away from the wetlands to avoid impacts. Despite this, this option also contains the most wetlands (6 in total) that will need to be spanned given that each occupies the width of the corridor. This includes channelled valley bottom wetlands 2, 3, 4 and 5, un-channelled

	valley bottom wetland 1 and hillslope seep wetland 3. All of the above wetlands can be spanned should the proposed power line cross at the narrower areas. Therefore, no towers will need to be placed within the wetlands. However, the wetlands in alternative corridor 1b are extremely eroded and any additional disturbance may result in further erosion impacts. This option is therefore regarded as not preferred from a surface water perspective.
Agricultural Potential and Soils	The findings of this assessment indicate that Alternative Corridors 1A and 1B could impact high value agricultural land and thus the selection of these alternatives **is not recommended** from an agricultural perspective.
Heritage	Five sites were located during the survey. These include one Late Iron Age Site and four Grave Sites. The Iron Age Site as well as the Grave Sites are protected by heritage legislation as they all appear to the older than 60 years. There is no archaeological reason why the proposed mining expansion may not take place on the project area as planned with mitigation measure in mind. -
Avifauna	From an avifaunal perspective there is little difference between the habitats on the two substation sites. However the turn in power line route associated with each substation site differ significantly. The southern option or Alternative 2 is preferred from an avifaunal perspective as it requires significantly shorter length of power line to be constructed, with consequent lower risk to birds. In addition the southern route passes through grassland that is believed to be more degraded than that in the north, so destruction of habitat will also be less significant. Corridor 2B is slightly preferred over 2A. **Overall then the order of preference of the alternatives is as follows: Both lines in Option 2A > Both lines in Option 2B > one line in each of Option 2A and 2B > both lines in Option 1A > Both lines in Option 1B > one line in each of 1A and 1B.**
Visual	- As indicated above, route Alternative 1b is not preferred as the alignment runs higher up the mountainous terrain. As such, it is not preferable to align either 88kV power line within this corridor. - In addition, splitting the in and out power lines between the two proposed route alternatives would magnify the visual impact and expose more potentially sensitive farmsteads to visual impacts of the proposed power lines.
Socio-Economic	N/A

Power Line Alternative 2A (Favourable)

Botanical	Option 2 a is the most preferred option as this ties in with the Nzalo S/S Option 2 being the Optimal siting. The vegetation that will be traversed is depauperate in terms of plant species, the grassland is in a deteriorated state due to past management practices, the vegetation is relatively homogenous due to the topography, slope, aspect and underlying geology being almost the same along the entire alignment, which precludes, for example, vegetation hotspots.
Fauna	There are reasonably large numbers of listed mammals and reptiles potentially present within the study area. Most of these are grassland species that would be associated with the remnant fragments of grassland. Substation Alternative 2 with the power line Alternative 2B which are identified as are the preferred alternatives for the development. The power line itself also traverses a significant extent of previously transformed habitat and the total extent of intact habitat that

	would be lost under this combination of alternatives would be low and is likely to amount to less than 1-2ha. This alternative is less preferred as the amount of intact habitat that would be lost is greater than that of Alternative 2B.
Surface Water	There are four (4) wetlands that could be potentially impacted by this alternative. This includes two (2) channelled valley bottom wetlands, one (1) hillslope seep wetland and one (1) artificial man made impoundment. Impacts to half of the wetlands can be avoided with careful placement of the power line away from the wetlands to avoid impacts. However, channelled valley bottom wetlands 5 and 6 will need to be crossed given the extent of the wetlands which occupy the width of the corridor. These two wetlands are not particularly wide and can easily be spanned by the power lines. Therefore, no tower are to be placed within these wetlands should this option be chosen. Should the above be taken into account, this option is viewed as favourable from a surface water impact perspective.
Agricultural Potential and Soils	**Alternative Corridor 2A** and **2B** share virtually identical agricultural potential and value and are both suitable to accommodate for the proposed development.
Heritage	Five sites were located during the survey. These include one Late Iron Age Site and four Grave Sites. The Iron Age Site as well as the Grave Sites are protected by heritage legislation as they all appear to the older than 60 years. There is no archaeological reason why the proposed mining expansion may not take place on the project area as planned with mitigation measure in mind.
Avifauna	From an avifaunal perspective there is little difference between the habitats on the two substation sites. However the turn in power line route associated with each substation site differ significantly. The southern option or Alternative 2 is preferred from an avifaunal perspective as it requires significantly shorter length of power line to be constructed, with consequent lower risk to birds. In addition the southern route passes through grassland that is believed to be more degraded than that in the north, so destruction of habitat will also be less significant. Corridor 2B is slightly preferred over 2A. Overall then the order of preference of the alternatives is as follows: **Both lines in Option 2A > Both lines in Option 2B > one line in each of Option 2A and 2B > both lines in Option 1A > Both lines in Option 1B > one line in each of 1A and 1B.**
Visual	Wide-open vistas would typically be experienced as the alternative traverses relatively flat terrain where short natural vegetation still prevails. As such, the power line alternative would be highly visible from the tar arterial road and several surrounding farmsteads.
Socio-Economic	N/A

Power Line Alternative 2B (Preferred Alternative)

Botanical	Option 2 b is preferred, however, the corridor passes through an area which has slightly better condition grassland as it is removed from the land tenants and thus the effects of grazing have been reduced. The placement of a power line within this corridor will still return a value of very low significance in terms of the impacts imposed on the vegetation of the receiving environment.
Fauna	There are reasonably large numbers of listed mammals and reptiles potentially present within the study area. Most of these are grassland species that would be associated with the remnant fragments of grassland. Substation Alternative 2

	with the power line Alternative 2B which are identified as are the preferred alternatives for the development. The power line itself also traverses a significant extent of previously transformed habitat and the total extent of intact habitat that would be lost under this combination of alternatives would be low and is likely to amount to less than 1-2ha.
Surface Water	Only two (2) wetlands may potentially be affected by the proposed power line for this alternative. This includes one (1) hillslope seep wetland and one (1) channelled valley bottom wetland. Potential impacts to hillslope seep wetland 9 can be completely avoided with careful placement of the proposed power line away from the wetland. However, channelled valley bottom wetland 6 will need to be spanned. Although, this wetland can easily be spanned and potential impacts can be minimised with adequate mitigation measures. Given the minimal potential impact anticipated for the proposed development of the power line, this option is viewed as the preferred from a surface water perspective.
Agricultural Potential and Soils	**Alternative Corridor 2A** and **2B** share virtually identical agricultural potential and value and are both suitable to accommodate for the proposed development. However, Corridor **Alternative 2A** the preferred option from an agricultural perspective as it traverses fewer forests blocks.
Heritage	Five sites were located during the survey. These include one Late Iron Age Site and four Grave Sites. The Iron Age Site as well as the Grave Sites are protected by heritage legislation as they all appear to the older than 60 years. There is no archaeological reason why the proposed mining expansion may not take place on the project area as planned with mitigation measure in mind.
Avifauna	From an avifaunal perspective there is little difference between the habitats on the two substation sites. However the turn in power line route associated with each substation site differ significantly. The southern option or Alternative 2 is preferred from an avifaunal perspective as it requires significantly shorter length of power line to be constructed, with consequent lower risk to birds. In addition the southern route passes through grassland that is believed to be more degraded than that in the north, so destruction of habitat will also be less significant. Corridor 2B is slightly preferred over 2A. **Overall then the order of preference of the alternatives is as follows: Both lines in Option 2A > Both lines in Option 2B > one line in each of Option 2A and 2B > both lines in Option 1A > Both lines in Option 1B > one line in each of 1A and 1B.**
Visual	Clusters of tall exotic trees on the western side of the tar arterial road would partially screen views of the proposed power line from the tar arterial road.
Socio-Economic	N/A

Power Line Alternative 2A + Alternative 2B (Technically Preferred Alternative)

Botanical	In terms of the vegetation assessment undertaken, the most suitable option, purely from a vegetation perspective, is that **Option 2** for the Nzalo Substation is the Preferred Option. Concomitant to this, the vegetation, the landscape, and receiving environment traversed by the corridor **Option 2A** and **2B** are far more suitable and able to accept the construction of a power line. From a vegetation perspective **Option 2A** would be the Most Preferred Option of the four line route alternatives.
Fauna	There are reasonably large numbers of listed mammals and reptiles potentially present within the study area. Most of these are grassland species that would be

	associated with the remnant fragments of grassland. Substation Alternative 2 with the power line Alternative 2B which are identified as are the preferred alternatives for the development. The power line itself also traverses a significant extent of previously transformed habitat and the total extent of intact habitat that would be lost under this combination of alternatives would be low and is likely to amount to less than 1-2ha.
Surface Water	There are four (4) wetlands that could be potentially impacted by this alternative. This includes two (2) channelled valley bottom wetlands, one (1) hillslope seep wetland and one (1) artificial man made impoundment. Impacts to half of the wetlands can be avoided with careful placement of the power line away from the wetlands to avoid impacts. However, channelled valley bottom wetlands 5 and 6 will need to be crossed given the extent of the wetlands which occupy the width of the corridor. These two wetlands are not particularly wide and can easily be spanned by the power lines. Therefore, no tower are to be placed within these wetlands should this option be chosen. Should the above be taken into account, this option is viewed as favourable from a surface water impact perspective.
Agricultural Potential and Soils	**Alternative Corridor 2A** and **2B** share virtually identical agricultural potential and value and are both suitable to accommodate for the proposed development.
Heritage	Five sites were located during the survey. These include one Late Iron Age Site and four Grave Sites. The Iron Age Site as well as the Grave Sites are protected by heritage legislation as they all appear to the older than 60 years. There is no archaeological reason why the proposed mining expansion may not take place on the project area as planned with mitigation measure in mind.
Avifauna	From an avifaunal perspective there is little difference between the habitats on the two substation sites. However the turn in power line route associated with each substation site differ significantly. The southern option or Alternative 2 is preferred from an avifaunal perspective as it requires significantly shorter length of power line to be constructed, with consequent lower risk to birds. In addition the southern route passes through grassland that is believed to be more degraded than that in the north, so destruction of habitat will also be less significant. Corridor 2B is slightly preferred over 2A. **Overall then the order of preference of the alternatives is as follows: Both lines in Option 2A > Both lines in Option 2B > one line in each of Option 2A and 2B > both lines in Option 1A > Both lines in Option 1B > one line in each of 1A and 1B.**
Visual	- As indicated above, route Alternative 2a is not preferred. As such, it is not preferable to align either 88kV power line within this corridor. - In addition, splitting the in and out power lines between the two proposed route alternatives would magnify the visual impact and expose more potentially sensitive farmsteads to visual impacts of the proposed power lines.
Socio-Economic	N/A

No-go alternative (compulsory)

Socio - Economic	Negative socio-economic impacts as a result of inadequate supply of electricity to the Transnet railway system thereby preventing an increased export tonnage of coal. This will prevent job creation in the area and hinder South Africa's economic growth in the coal export sector.

SECTION E. RECOMMENDATION OF PRACTITIONER

Is the information contained in this report and the documentation attached hereto sufficient to make a decision in respect of the activity applied for (in the view of the environmental assessment practitioner)?	✓YES

If "NO", indicate the aspects that should be assessed further as part of a Scoping and EIA process before a decision can be made (list the aspects that require further assessment).

If "YES", please list any recommended conditions, including mitigation measures that should be considered for inclusion in any authorisation that may be granted by the competent authority in respect of the application.

Recommendations of the Biodiversity Specialist

- In the event that a protected, rare or endemic plant(s) are encountered during the construction of the Substation or access roads, then the plants will be identified and uplifted and replaced in areas adjacent the disturbance.
- Relevant provincial permits should be obtained before translocation of listed and protected plant species takes place and before construction commences.
- Where the power lines run adjacent to existing power lines or access roads, the existing roads should be used and no additional permanent roads should be constructed for the power line.
- No development of roads must occur through wetland areas, and where possible new roads must not be created.
- Contain the area of construction as much as possible to the identified and approved footprint.
- Rehabilitate any laydown areas or roads created for construction purposes only.
- Try to erect power line as close to access as feasibly possible and stay out of wet areas and drainage lines.
- The best possible mitigation will be to select the power line alignment that will traverse the most transformed areas.
- Maintain an alien free environment in the servitude corridor.
- Prevent unnecessary activities outside of the substation footprint, and prevent the need for regular driving and restrict driving to existing roads.
- Utilise helicopters and camera technology to check the power lines.
- The control and management of alien invasive plant species through a management plan to be created, once the decision to decommission is made.
- Maintain an alien free servitude
- Set aside a budget to rehabilitate areas with natural vegetation as a preventative measure to stop alien infestations and establishment.
- Prevent livestock form entering areas where infrastructure has been decommissioned.

Recommendations of the Surface Water Specialist:

- It is highly recommended that the proposed power line corridor alternative 2b and substation alternative 2 be selected as this will reduce potential impacts to wetlands to a minimum. As per previous recommendations, the final proposed power line route is to avoid wetlands as far as possible and no towers are to be placed within wetlands, as all wetlands in corridor alternative 2b can be adequately spanned.
- Consultation with the Department of Water Affairs will be required to determine the need for any authorisations (for example, a General Authorisation) or licenses (for example, a Water Use License) will be required once the final tower positions have been determined. Given the

above, it will be likely that a follow-up wetland specialist assessment will need to be undertaken that meets with the requirements of the required authorisation or license.

- In terms of the EIA Regulations (2010) promulgated under the NEMA (1998), the proposed development is likely to trigger Activity 11 listed in Government Notice R. 544 (Listing Notice 1) should any towers or the substation need to be within 32 metres of a delineated wetland, thereby requiring Environmental Authorization.
- With regards to the NWA, a WUL or a GA may be required once the final location of the substation and power line route (along with tower positions) have been determined. The above however, should be confirmed in consultation with the DEA and DWA.
- Specialist recommendations centre on adopting the proposed preferred alternative corridor and substation location. Additionally, it is recommended that consultation with the Department of Water Affairs will be required to determine the need for any authorisations (for example, a General Authorisation) or licenses (for example, a Water Use License) that may be required once the final tower positions have been determined.
- It will be likely that a follow-up wetland specialist assessment will need to be undertaken that meets with the requirements of the required authorisation or license.

Recommendations of the Agricultural Potential and Soils Specialist

- Storage of any materials shall not take place within 32m of any watercourses or sensitive environments.
- Fuel, oil and any other hazardous substances and harmful materials shall be stored in suitable containers within adequately bunded areas (with 110% of the capacity of the volume of the container) in a dry, secure environment, with concrete or sealed flooring.
- Material Safety Data Sheets shall be kept for all hazardous materials and substances and a copy of the Material Safety Data sheets shall be made available to all workers to ensure that the required safe handling and necessary precautions are taken when suing the materials.
- The PC will ensure that materials storage facilities are cleaned/ maintained on a regular basis, and that leaking containers are disposed of in a manner that allows no spillage onto the bare soil or surface water.
- Interact with impacted landowners to discuss where they would ideally like to see the power lines situated on their property to have the least impact on their farming practices, the negotiation phase should form part of the final survey / line route selection.
- Employ a low impact routing to avoid / skirt high value agricultural land. This is particularly important for the various agricultural areas identified in Section 5 of this report.
- The utilisation of optimal tower designs can further reduce the potential impacts.
- Attempt to place towers on the edge of existing agricultural areas and span active agricultural fields as far as possible. Following existing roads and utilising the edge of road servitudes is highly recommended due to the existing impacts associated with these areas.
- Ensure adequate compensation is paid to land owners where necessary.
- Employ erosion control:
- Clearing activities should be kept to a minimum.
- In the unlikely event that heavy rains are expected, activities should be put on hold to reduce the risk of erosion.
- If additional earthworks are required, any steep or large embankments that are expected to be exposed during the 'rainy' months should be armoured with fascine like structures.
- If earth works are required then storm water control and wind screening should be undertaken to prevent soil erosion.
- The utilisation of optimal tower designs can further reduce the potential impacts.
- Attempt to place towers on the edge of existing agricultural areas and span active agricultural fields as far as possible. Following existing roads and utilising the edge of road servitudes is

highly recommended due to the existing impacts associated with these areas.

Recommendations of the Avifauna Specialist

- It will be important for a suitably qualified avifaunal specialist to conduct an avifaunal walk through assessment just before construction in order to determine whether any Red-Listed bird species are breeding on the servitude. This could include breeding on the existing power line tower structures. If such breeding birds are identified case specific management recommendations will be developed by the specialist.
- All of the natural vegetation along the servitude and on the substation site should be protected as far as possible, although it is acknowledged that some removal is inevitable. It is recommended that vegetation removal is kept to an absolute minimum however.
- Refer to Eskom Bird Guidelines and Policies.
- It will be important for Eskom to report all bird electrocutions detected during maintenance line patrols, so that the significance of this impact and the effectiveness of mitigation can be accurately evaluated.
- Within the substation yard there are numerous hardware components which could electrocute birds. However due to the complexity of this hardware, and the species likely to frequent substation yards (mostly non Red-Listed) it is recommended that mitigation only be considered if a problem is detected once the substation is operational.

Recommendations of the Heritage Specialist

- Shift the power line trajectory in order to accommodate the proposed buffer zones for the identified heritage resources.
- Call for a second phase Heritage Impact Assessment This may entail application for a permit to allow for a rescue excavation or the exhumation and translocation of graves (second option).
- A buffer zone of 50m must be strictly maintained around the Later Iron Age Site. No development or removal and alternation of items or features may take place within this buffer zone.
- A buffer zone of 20m must be maintained around the identified Grave Sites. No development or removal and alternation of items or features may take place within this buffer zone. Should the developer expand within 20m from the grave sites then a fence with an entrance gate must be erected around the site.
- Should the developer wish to expand within the buffer zones then mitigation measures must be initiated under the auspices of the local heritage agency Amafa. This will include a second phase heritage impact assessment, the application for a permit, and the possible exhumation of certain graves.
- Apart from these concerns there is no archaeological reason why the proposed project may not take place on the project area as planned. It should, however, be pointed out that the KwaZulu-Natal Heritage Act requires that operations exposing archaeological and historical residues should cease immediately pending an evaluation by the heritage authorities. It is also possible that community consultation, may indicate contemporary graves that were not visible during the initial heritage survey of the project area. These must also be evaluated during a second phase heritage impact assessment.

Recommendations of the Visual Specialist

- Locate construction camp and storage areas in zones of low visibility i.e. behind tall trees or in lower lying areas.
- Minimise vegetation clearing and rehabilitate cleared areas as soon as possible.
- Maintain a neat construction site by removing rubble and waste materials regularly.

- Make use of existing gravel access roads where possible.
- Locate the substation as far away from receptor locations (such as farmsteads) where possible.
- Where possible, locate the substation behind tall trees so that it is less visible from the tar arterial road that runs through the study area.
- Make use of fittings that focus the light and prevent light spill.
- Direct perimeter lighting in a downward direction toward the site.
- Limit the use of flood lighting where possible.
- Align the power line as far away from receptor locations (such as farmsteads) where possible.
- In order to consolidate the visual impact, align the two power lines so that they run parallel to each other within the same route corridor alternative.

Recommendations of the Geotechnical Specialist

- Due to the low soil consistencies and the shallow occurrence of groundwater beneath the majority of Substation alternative 2, substation alternative 1 can be considered to be the less problematic option for the proposed development, provided that the necessary foundation requirements are met. Substation Alternative 1 also has more occurrences of soils suitable for use in bulk fills. Founding conditions are similar on both sites.
- A most important factor in the promotion of a stable site is the control and removal of both surface and groundwater from the site. It is important that the design of the stormwater management system allow for the drainage of accumulated surface water. Such water should be directed away from the site towards natural drainage lines.
- Surface drainage of building platforms should also be designed to direct water away from fill edges to prevent over-topping of the fill crest and erosion of the fill embankment slopes. It is important that grassing of fill embankments be carried out as soon as possible after construction. Most substation sites have a subsoil drainage network beneath the substation platform, and a similar design should be provided for either of the two sites, in view of the occurrence of a shallow perched groundwater table, particularly on Site Sub B3. (Site Sub B3 is Alternative 2).
- Worley Parsons noted that their recommends relate to the positions of the inspection pits, and they recommend that the variations in the subsoil conditions be evaluated during construction to avoid unnecessary expense and delays.

Recommendations of KZN Wildlife

- Recommendations of the specialists are adhered to, and are included in the final EMPr.
- Relevant permits to be obtained by the applicant for translocation of listed and protected plant species in the affected footprint. A walk-through will need to be undertaken by a suitably qualified vegetation specialist prior to construction in order to give final confirmation of these species. It would be Ezemvelo's preference for the footprints of any pylons to rather avoid the requirement to relocated sensitive species, and the final placement to be adjusted to avoid red listed or protected plant species, rather than risk their demise by translocation.
- No development of new roads through any wetlands, dongas or drainage lines. Existing roads crossing such will need to have adequate storm-water protection put in place should

they be required for ongoing maintenance, and any erosion will need to be curtailed by suitable mitigatory measures.

- RP3 raptor protectors must be fitted to the conductors / insulators, according to the Eskom standard.
- In addition, all bird electrocutions identified during routine maintenance patrols are to be reported by the applicant in order to monitor the effectiveness of the mitigatory measures.
- The final EMPr is implemented and adhered to.

General Recommendations of the EAP

- All feasible mitigation measures recommended by the various specialists should be strictly implemented, where applicable to the authorised power line alignment and substation.
- A Final Site-Specific EMPr should be approved by DEA prior to construction, which will need to include detailed specialist reports and mitigation measures for the authorised powerline corridor, including the positioning of the structures and the substation.
- It is recommended that a five (5) year validity period be granted for the Environmental Authorisation

Is an EMPr attached? **✓YES**

The EMPr must be attached as Appendix G.

The details of the EAP who compiled the BAR and the expertise of the EAP to perform the Basic Assessment process must be included as Appendix H.

If any specialist reports were used during the compilation of this BAR, please attach the declaration of interest for each specialist in Appendix I.

Any other information relevant to this application and not previously included must be attached in Appendix J.

Jenny Barnard - **SiVEST (Pty) Ltd**

NAME OF EAP

11 June 2015

SIGNATURE OF EAP

DATE

SECTION F: APPENDIXES

The following appendixes must be attached:

Appendix A: Maps
Appendix B: Photographs
Appendix C: Facility illustration(s)
Appendix D: Specialist reports
- Appendix D1: Biodiversity Impact Assessment
- Appendix D2: Desktop faunal Review
- Appendix D3: Surface Water Impact Assessment
- Appendix D4: Agricultural Potential and Soils Assessment
- Appendix D5: Heritage Impact Assessment
- Appendix D6: Visual Impact Assessment
- Appendix D7: Geotechnical Impact Assessment

Appendix E: Public Participation
- Appendix E1: Proof of Advertisements and Site Notices
- Appendix E2: Proof of Written Notification to Stakeholder
- Appendix E3: Comments and Response Report **(To be included in the FBAR)**
- Appendix E4: Proof of Written Notification to Authorities and Organs of State
- Appendix E5: I&APs Database
- Appendix E6: Correspondence and Meeting Minutes **(To be included in the FBAR)**

Appendix F: Impact Assessment
Appendix G: Environmental Management Programme (EMPr)
Appendix H: Details of EAP and expertise
Appendix I: Specialist's declaration of interest
Appendix J: Additional Information
- Appendix J1: Competent Authority Consultation
- Appendix J2: EIA Downgrade Motivation
- Appendix J3: Coordinate Spreadsheets
- Appendix J4: Eskom Guideline Documents

List of abbreviations

BA	Basic Assessment
BAR	Basic Assessment Report
BSA	Basic Social Assessment
C&RR	Comments and Response Report
CBA	Critical Biodiversity Area
ESA	Ecological Support Area
DAFF	Department of Agriculture, Forestry and Fisheries
DBAR	Draft Basic Assessment Report
DS	Distribution Station
DWA	Department of Water Affairs
EMF	Electric and Magnetic Fields
EMPr	Environmental Management Programme
FBAR	Final Basic Assessment Report
GIS	Geographic Information System
GN	Government Notice
HIA	Heritage Impact Assessment
I&AP	Interested and Affected Party
IDP	Integrated Development Plan
kV	Kilovolt
MTS	Main Transmission Substation
NCDTEC	Northern Cape Department of Environmental Affairs and Nature Conservation
NEMA	National Environmental Management Act, 1998 (Act No.107 of 1998)
NEMBA	National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004)
NFA	National Forests Act, 1998 (Act No. 84 of 1998)
NHRA	National Heritage Resources Act, 1999 (Act No. 25 of 1999)
NNR	No Natural Area Remaining
NPAES	National Protected Area Expansion Strategy
NWA	National Water Act, 1998 (Act No. 36 of 1998
ONA	Other Natural Area
PPP	Public Participation Process
PV	Photovoltaic
REIPPP	Renewable Energy Independent Power Producer Programme
SAHRA	South African Heritage Resources Agency
SANBI	South African National Biodiversity Institute

SANRAL	South African National Roads Agency SOC Limited
SDF	Spatial Development Framework
SG	Surveyor General
SOC	State Owned Company