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FINAL BASIC ASSESSMENT REPORT

PROPOSED NDUMO GEZISA 132kV SINGLE CIRCUIT OR (132/22kV) MULTI-CIRCUIT POWER LINE

Report No : 12775-46-Rep-001-BAR-Rev1 - Basic Assessment Report

Submitted to:

Department of Environmental Affairs 315 cnr Pretorius & Lilian Ngoyi Street Fedsure Forum Building North Tower 2nd Floor (Departmental reception) Pretoria, 0001 South Africa

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06 February 2014

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environmental affairs

Department: Environmental Affairs **REPUBLIC OF SOUTH AFRICA**

(For official use only)

File Reference Number:

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 September 2012**. 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 on 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 NO

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

Background and Context

Eskom Distribution's – KwaZulu-Natal Operation Unit is in the process of upgrading of the electricity infrastructure in the Makhathini Flats area of northern KwaZulu-Natal. The existing Makhathini 22 kV electrification network is highly constrained in terms of capacity and is unable to supply current and additional electrification requirements in the Candover, Mbazwana and Manguzi areas. Eskom is therefore committed to establishing a new 132 kV network of powerlines and substations on the Makhathini Flats to strengthen the existing electrification network and cater for future electrification loads.

The following electrification network upgrades or expansions are currently underway, either undergoing Environmental Basic Assessment processes or are under construction:

- Nondabuya-Ndumo 132kV powerline and Ndumo 132/22kV substation Environmental Authorisation was obtained on 29 August 2011 and both are currently under construction
- Candover-Mbazwana-Gezisa 132kV powerline and proposed 132/22kV substations at Mbazwana and Gezisa (Manguzi) – currently undergoing Basic Assessment
- Ndumo-Gezisa 22/132kV multi-circuit powerline Currently undergoing Basic Assessment (this application)

The construction of a 22/132 kV multi-circuit powerline between the Ndumo and Gesiza Substations is part of the larger Makhathini electrification project to form a closed circuit (ring) of powerlines on the Makhathini Flats.

Construction and operation of the above proposed 22/132 kV multi-circuit power line is subject to a Basic Assessment (**BA**) in terms of Section 14 of the National Environmental Management Act, No 107 of 1998 (**NEMA**), as amended. In fulfilment of this requirements, Eskom has appointed Zitholele Consulting as the independent environmental assessment practitioner (**EAP**) to undertake the BA process.

Project Description

Study Area

The study area where the proposed activity is to take place is located in northern KwaZulu-Natal to the south of the Mozambique border and between the towns of Ndumo and Manguzi. The study area falls within the Jozini and Umhlabuyalingana Local Municipality area which forms part of the Umkhanyakude District Municipality. The study area is currently dominated by the Tembe Elephant Reserve, ribbon development along the main arterial road (Provincial Road P522) which traverses the study area between the Pongola River in the west and Manguzi Town in the east. The proposed power line will run from the new Ndumo Substation in the west to the new Gesiza Substation in the east. (See Locality Plan in Appendix A1).

132/22 kV Multi-circuit Power line

The proposed 132kV portion of the 22/132 kV multi-circuit power line will consist three conductors in a delta configuration protected by a thinner shield/earth wire above. The 22kV portion of the multi-

cicuit powerline occurs on the same set of pylons but lower down and is itself comprised of 3 conductors also in a delta configuration. The pylons will be stand sectional steel pole structures. The benefit of a multi-circuit power line as opposed to a single circuit 132kV line and 22kV line is the reduction in servitude requirements and does away with the 22kV servitude which would otherwise occupy an area of 22m and be approximately 18m? from the centre line of the 132kV powerline with its associated impacts concerned the 22kV line's servitude and access for construction and maintenance purposes.. Servitude Clearance Requirements

High voltage power lines require a large clearance area for safety precautions. The Occupational Health and Safety Act, 1993 (Act No. 85 of 1993) provides for statutory clearances.

Table 1: Electrical Clearance Specifications for 22/132 kV Multi-Circuit Powerline (Eskom)

Clearances	Minimum Clearance Distance (m)
Ground clearance	6.3
Building structures not part of power line	3.8
Above roads and in townships, proclaimed	7.5
Telecommunication lines	2.0

Table 2: Minimum Clearance Chart for Power lines from Roads (132 kV – KZN Region)

National Roads: any part of structure greater than 60m , from road reserve boundary KZN Main Roads: (any part of structure) greater than 35m from centre line of road or 15m from road fence

KZN District roads: (any part of structure) 20m from central line of the road

Access

Access is required during both the construction and operation/maintenance phases of the power line' life cycle. Where possible, existing access roads and tracks will be used to gain access to construction sites and the servitude. Where no access roads/tracks exist, the access points and roads will be negotiated with the relevant landowner, and are to be established during the construction phase. Access roads will enable the transportation of construction material as well as construction teams to the site and facilitate maintenance activities once the power line has been constructed.

Foundations

The type of terrain encountered, as well as the underlying geotechnical conditions as well as the pylon type required determines the choice of foundation. The actual size and type of foundation to be installed will depend on the soil bearing capacity (actual sub-soil conditions). Foundations will be mechanically excavated where access to the site is readily available. All foundations are back-filled, stabilised through compaction, and capped with concrete at ground level.

Towers (Pylons)

The pylons (towers) can be located approximately 300m to 400m apart on level ground, but the span length can be increased up to 1300m when crossing valleys and depending on the terrain.

A combination of the following pylons are proposed to be used:

- 253a Monopole Suspension Tower;
- 253b Monopole Angle Strain Tower
- 254c Lattice Angle Strain Tower
- 254b Lattice Angle Strain Tower

The pylon footprints for these towers range from between $4m^2$ and $30m^2$ depending on the structure that is used. The pylon also differs in structure to accommodate increased strain when a bend is made in the power line.

The pylons will be approximately 18 - 25 m high (which varies depending on terrain) and require a 36m wide servitude i.e. 18m either side of the centre line of the power line.

Drawings of the proposed pylons to be used are presented in Appendix C

Approval is sought for a corridor 500m wide for the power line to allow for deviations within the approved corridor once a final route has been negotiated with landowners.

Power line Design, Construction and Operation Activities

Design Phase Activities

- environmental survey of study area
- selection of alternative power line corridors and substation sites
- Determination of technically feasible alternatives:
- EIA input into route selection and obtaining government authorisation
- Negotiation of final line route and servitude with affected landowners
- Route survey and **Corridor walk-down:** To ensure that all site specific sensitivities are avoided. During this process the exact co-ordinates of the proposed towers will be established.
- Final design of line and placement of towers

Construction Phase Activities

The construction phase for the proposed project will include the following activities postauthorisation:

- **Construction Camps:** Construction camps will be sited in areas where least disturbance to potentially sensitive environments will be caused.
- Batching Plants: If Readymix concrete is not available, small mobile batching plants will have to be established in the area close to the power line.
- Access: Access will have to be created to allow for large construction vehicles to get onto the proposed servitude.
- Vegetation clearance: A 36m (18m on either side of the power line) servitude is required for the proposed 132kV power line. Trees and shrubs will be cleared where required along the entire length of the servitude (the vegetation will also be maintained by Eskom in the operational phase of the project).
- **Surveying, pegging and soil nominations**: During construction the route will be surveyed, pegged and the soil nominations undertaken for each of the potential pylon foundations.
- **Pylon footings:** Foundations will be laid for the footings of the pylons. The first step is the excavation of the pylon foundations, the reinforcing thereof and finally the concreting of the foundations. The equipment required to excavate the foundations can be manual labour, a TLB or in the case of hard rock a drill rig will be required. The concrete will have to be transported via concrete trucks to the required locations.
- **Steelwork structures:** The towers will be erected in piece-meal; that is to say in segments. After the foundations and footings have been installed the construction team will transport the various steel parts of the towers to the site and start erection of the pylons. This process again requires a lot of manual labour and often mobile cranes are used to assist with the erection of the towers.
- **Stringing:** Once the towers have been erected, cables will be strung between the towers. Once stringing and tensioning is complete the line is considered constructed, where after it will be tested prior to being commissioned.
- Rehabilitation of disturbed areas and protection of erosion sensitive areas
- Testing and commissioning

The construction phase for the proposed project will take, at most, 60 months to complete (from the time Environmental Authorisation has been received.

Operational Phase Activities

During the operational and maintenance phase of the project, Eskom requires access to the servitude for maintenance activities which may include repairs and replacement of various hardware on the towers and the conductor and in very rare cases, repairs to the foundations.

Decommissioning Phase Activities

- The physical removal of the power line infrastructure would entail the reversal of the construction process.
- A rehabilitation programme would need to be agreed upon with the landowners (if applicable) before being implemented.
- Materials generated by the decommissioning process will be disposed of according to the Waste Hierarchy i.e. wherever feasible, materials will be reused, then recycled and lastly disposed of. Materials will be disposed of in a suitable manner, in a suitably licensed facility.

All of the aforementioned decommissioning activities would be subject to a separate Environmental Authorisation process at the appropriate time.

Overview of Environmental Features of the Study Area

The natural topography of the study area is variable with the western portion characterised by an undulating landscape defined by the Pongola River, various drainage channels and upland areas. Conversely, the eastern portion is generally more flat and characterised by large wetland-type habitats on the former coastal plain.

The majority of the Maputaland region falls under rural community land-use. As such, large sections of the study area and surrounding landscape are characterised by rural villages and scattered households, with associated activities, such as subsistence agriculture, livestock farming and natural resource harvesting.

Areas displaying high levels of anthropogenic development or impacts are typically aligned with the main Jozini - eMangusi/Kosi Bay arterial road and the various rural feeder roads, as well as along prominent water courses such as the Pongola River. Beyond these high-impact zones, the land is generally in a natural to semi-natural condition and used primarily for the grazing of cattle and goats.

Two regionally important conservation areas, namely Tembe Elephant Park and Ndumu Game Reserve, are located in this region of Maputaland. The former is situated in the centre of the study area, while the latter is situated to the north-west. Moreover, the smaller, less well known Sileza Nature Reserve is located in the south-eastern portion.

Five broad vegetation communities/units were recognised in the study area, namely:

- Hyphaene moist grasslands;
- Strychnos Terminalia sand bushveld;
- Mixed bushveld;
- •Sand forest; and
- •Riparian vegetation community.

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

Listed activity as described in GN R.544, 545 and 546	Description of project activity
 GN R.544, 18 June 2010 Item 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 kV. 	 Construction of a multi-circuit 22 kV and 132 kV transmission line between the Ndumo and Gesiza substations

GN R.544, 18 June 2010 Item 11(xi) The construction of infrastructure or structures within a watercourse or within 32m of a watercourse.	The power line structures may have to be placed within 32 m of a water course/wetland, where unavoidable.
GN R.544, 18 June 2010 Item 22(ii) The construction of access road outside urban areas where no reserve exists and where the road is wider than 8 m.	Temporary access roads for the construction of the power lines and associated infrastructure may be required. Such roads may exceed the 8m threshold to make allowance for heavy vehicles used in construction.
GN R.544, 18 June 2010 Item 26 Any process or activity identified in terms of Section 53(1) of NEM: Biodiversity Act, 2004	The Ndumo to Gesiza area is known for it's environmental sensitivity due to the presence of Sand Forest patches and the location of the Ndumo and Tembe Elephant Park Nature Reserves. This activity will only apply if such sensitive areas may be affected.
GN R.546, 18 June 2010 Item 4(a)	Eskom may have to construct access roads 6m or more wide for the construction and maintenance of the proposed power line and substation.
GN R546 18 June 2010 Item 13 (a) (c) ii The clearance of an area of 1 hectare or more of vegetation where 75 % or more of the vegetative cover constitutes indigenous vegetation.	Clearing vegetation along servitude will occur and will exceed 1 ha in totality.

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 coordinates 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.

Identification of Reasonable Corridor Alternatives

The following process was implemented in the identification of feasible and reasonable alternatives for the construction and operation of a multi-circuit 22/132 kV powerline connecting the Ndumo and Gesiza substations.

A desktop assessment of the study area was undertaken using GIS biodiversity data provided by Ezemvelo KZN Wildlife and landuse data provided by KZN Met Data. During this desk top assessment, technical input was provided by Eskom to further assist identifying reasonable and feasible alternatives. At this level of assessment, the following potential corridors were identified:

Corridor 1 – Northern Corridor Corridor 2 – Central Corridor Corridors 3A to 3C – South Central Corridors Corridor 3D – Southern Corridor

The 6 corridor alternatives were then assessed by specialists in the following disciplines:

- Avifauna Endangered Wildlife Trust
- Heritage PGS Heritage
- Terrestrial Ecology Golder & Associates
- Surface Water and Wetlands Jones & Wagener
- Visual Jones & Wagener
- Land Use and Capability Zitholele Consulting

Subsequent to the interpretation of the specialists and obtaining feedback from Eskom Technical Designers two additional short sections of corridor (Corridor 3E and 3F) were included for assessment as part of the South Central Corridors.

The Avifauna and Terrestrial Ecology specialists concluded that Corridors 1 – Northern Corridor, Corridor 2 – Central Corridor and Corridor 3D – Southern Corridor and Corridor 3F were all fatally flawed in terms of environmental issues and were declared "NO GO" options. Subsequent to these studies, an additional corridor was identified and included an amalgamation of the South Central corridors into a preferred route i.e. Corridor 3P (Preferred).

The map in Appendix A3 shows the location of all the alternative corridors considered in this process

Please Note

Based on the outcome of the process identifying reasonable corridor alternatives the following Alternatives are assessed and presented in this BAR and are identified as follows:

Alternative A1 - Corridor 3P (Preferred) Alternative A2 – Corridor 3A Alternative A3 – Corridor 3B Alternative A4 – Corridor 3C

A map showing the locations of these alternatives is presented in Appendix A3.

Latitude (S):

a) Corridor alternatives

In the case of linear activities:

Alternative:

Alternative A1 – Corridor 3P (preferred)

- Starting point of the activity
- Middle/Additional point of the activity
- End point of the activity

Alternative A2 – Corridor 3A

- Starting point of the activity
- Middle/Additional point of the activity
- End point of the activity

Alternative A3 – Corridor 3B

- Starting point of the activity
- Middle/Additional point of the activity
- End point of the activity

Alternative A4 – Corridor 3C

- Starting point of the activity
- Middle/Additional point of the activity
- End point of the activity

27° 00' 16.23" S	32° 15' 12.69" E
27° 04' 31.09" S	32° 28' 09.46" E
27° 01' 18.68" S	32° 38' 56.08" E

Longitude (E):

27° 00' 16.23" S	32° 15' 12.69" E
27° 02' 14.41" S	32° 17' 14.41" E
27° 01' 18.68" S	32° 38' 56.08" E

27° 00' 16.23" S	32° 15' 12.69" E
27° 05' 37.61" S	32° 29' 53.99" E
27° 01' 18.68" S	32° 38' 56.08" E

27° 00' 16.23" S	32° 15' 12.69" E
27° 04' 23.36" S	31° 32' 56.82" E
27° 01' 18.68" S	32° 38' 56.08" E

Refer to Appendix A4 for the co-ordinates taken every 250 m for each linear alternative.

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.

b) Lay-out alternatives

"Layout alternatives" in the context of this application refers to the spatial configuration or alignment of the proposed power lines corridors. All four potential route alignments are shown on the layout map in **Appendix A5**.

Alternative A1 (preferred): Corridor 3P

Description

This corridor traverses from the Ndumo substation in a south easterly direction towards the proposed Pongola River crossing at Makhane's Drift. This corridor will cross the Pongola River to the south of the existing high level pedestrian bridge over the Pongola River. Once across the Pongola River, the corridor parallels to the south west of the gravel District Road D1861 until its junction with the P522. Thereafter the corridor parallels the P522 in an easterly direction and to the south of the P522. 2.4 km from to the west of the junction of the P522 with the R22 the corridor veers away and to the south of the P522 up to a distance of 0.9 km in order to traverse around the Phelandaba township area. Once beyond the township, the proposed corridor traverses back towards the P522 and crosses over the P522 to the north for approximately a further 5.5km where after it runs in a north easterly direction to the Gesiza substation

Alternative A2: Corridor 3A

Description

This corridor traverses from the Ndumo substation in a southerly direction for approximately 3.4 km where it intersects the P522 and runs parallel to the P522 crossing over the Pongola River and traversing to the north of Lulwane settlement area for 6.5 km until returning to parallel to the immediate south of the P522 all the way until it turns north to the Gesiza substation. Portions of this corridor correspond with that of the preferred corridor described above.

Alternative A3: Corridor 3B

Description

This corridor traverses from the Ndumo substation in a due easterly direction for approximately 3.95 km where after it turns in a south easterly direction to cross over the Pongola River at Makhane's Drift. After crossing the Pongola River this corridor continues in a south easterly direction until it intersects and crosses the P522. Thereafter it parallels the P522 in an easterly direction approximately 1 km south of the road up until it crosses back over the P522 to travel direct north to the Gesiza substation

Alternative A3: Corridor 3C

Description

This corridor follows the exact same routing as Corridor 3B until 3.2 km west of the intersection with the R22 where it veers off to the north east to cross over the P522 and continue in a north easterly direction around Phelandaba township area to the Gesiza substation.

c) Technology alternatives

Alternative 1(preferred alternative) – Double- and Multi-circuit Overhead Power line

Where sensitive environmental features are identified, and there is sufficient justification, Eskom will consider the use of double circuit (placing 2 power lines on either side of the same tower structure) or multi-circuit (placing a 132kV line and a 22kV power line on the same tower structure) to minimize impacts.

The use of double- or multi-circuiting has a number of technical disadvantages:

- Faults or problems on one power line may mean that the other power line is also disabled during maintenance, and this will affect the quality of supply to an area.
- Larger and taller towers as well as more towers are required for double- and multi-circuit power lines.

However, in this instance, the combining of the 22 kV and 132 kV powerlines onto a single multicircuit structure is advantageous as it will combine overhead impacts into a central corridor and result in less area required for the powerline servitude i.e. the two separate servitudes are combined into a single servitude.

Alternative 2 (preferred alternative) – Single Circuit Overhead Power line

The use of single circuit overhead power lines to distribute electricity is usually considered the most appropriate technology and has been designed over may years for the existing environmental conditions and terrain as specified by Eskom Specifications and best international practice. Based on all current technologies available, single circuit overhead power lines are considered the most environmentally practicable technology available for the distribution of power. This option is considered appropriate for the following reasons:

- More cost effective installation costs
- Less environmental damage during installation
- More effective and cheaper maintenance costs over the lifetime of the power line

However, the sensitive environment in the study area and the lack of space for numerous servitudes in the developed zones renders this option not as suitable as the Multi-circuit option.

Alternative 3 – Underground Cabling

Underground cabling of high voltage power lines over long distances is not considered a feasible or environmentally practicable alternative for the following reasons:

- Underground cabling will incur significantly higher installation and maintenance costs
- It is more difficult and takes longer to isolate and repair faults on underground cables.
- There is increased potential for faulting at the transition point from underground cable to overhead power line.
- Underground cables require a larger area to be disturbed during construction and maintenance operations and hence have a bigger environmental disturbance footprint.
- Underground cabling requires the disturbance of a greater area when it comes to agriculture and other compatible land uses as the entire servitude becomes available for use as opposed to just the area around the towers.

d) Other alternatives – Tower Design Alternatives

Alternative 1 – Steel Lattice Towers

The steel lattice towers provide the following advantages over the other tower types available:

- Enables multipath earthing which enhances the overall electrical performance of the power line.
- Is visually less obtrusive than the mono-pole options
- Is more practicable that other options i.e. more cost effective and more practical to construct and maintain.
- Is safer to work on than the monopole and wood pole structures.
- Is more durable than the woodpole structures

Photos and drawings of the lattice towers are presented in Appendix A2.

Alternative 2 – Steel Monopoles

The steel monopole may be considered less suitable than the steel lattice towers for the following reasons:

- Is visually more intrusive than the lattice towers.
- Is more expensive than the lattice towers
- Requires more steel than the lattice towers
- Is more difficult to erect
- Is not as safe to work on as the lattice towers

However, in sensitive environments, the steel monopole can often be more favourable as it requires less servitude disruption during construction as the bases of the towers may occupy a smaller area than the steel lattice towers.

Alternative 3 - Woodpoles

Woodpole structures are only used in extreme circumstances where a visual impact needs to be avoided. Wood pole structures may be cheaper to produce and to construct, but they have one tenth of the lifespan of the metal counterparts and are far more susceptible to weather conditions which makes them less efficient and practicable. The woodpole structure are also more susceptible to having the cross arms burnt off by electrical faults as well as being susceptible to deformation with height.

e) No-go alternative

The 'No Go' alternative in the context of this project implies that the power line would not be constructed. If the power line does not go ahead, the negative environmental impacts which have been identified if it does go ahead would not occur. However, if the power line is not constructed and commissioned, the region would be negatively affected by an inadequate and unreliable supply of electricity (basic service) which would inhibit future development in Northern Zululand and would jeopardise the success of the regions Integrated Development Plans and Spatial Development Frameworks, all of which identify the lack of electrical services as inhibitors to future development and quality of life. Therefore, the need for stable and reliable power supply to meet current and future demand will likely outweigh the potential negative impacts to the surrounding environment. It is thereby concluded that the "No-go" option is not in the best interests of future sustainable development in this region.

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

3 PHYSICAL SIZE OF THE ACTIVITY

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

Alternative:

Alternative A1 (preferred) – **Corridor 3P** Alternative A2 – **Corridor 3A** Alternative A3 – **Corridor 3B** Alternative A4 – **Corridor 3C**

Length	of the	activity:
--------	--------	-----------

± 44 000 m
± 47 000 m
± 47 500 m
± 46 000 m

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

Alternative:

Alternative A1 (preferred) – **Corridor 3P** Alternative A2 – **Corridor 3A** Alternative A3 – **Corridor 3B** Alternative A4 – **Corridor 3C**

4 SITE ACCESS

Alternative A1 (preferred) –Corridor 3P

Does ready access to the site exist? If NO, what is the distance over which a new access road will be built

Alternative A2 – Corridor 3A

Does ready access to the site exist?

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

Alternative A3 – Corridor 3B

Does ready access to the site exist?

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

Alternative A3 – Corridor 3C

Does ready access to the site exist?

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

Size of the site/servitude:

(36 m wide) 1 584 000 m ²
(36 m wide) 1 692 000 m ²
(36 m wide) 1 710 000 m ²
(36 m wide)1 656 000 m ²

✓YES	NO







Describe the type of access road planned:

Alternative A1 (Preferred) – Corridor 3P: The preferred corridor largely parallels existing roads and passes through areas where numerous access tracks are already existing and these will be used to gain access to the servitude and it is envisaged that construction of new access routes will not be required. It may be that existing access tracks will need to be slightly widened to permit the passage of construction vehicles.

Alternative A2 – Corridor 3A: This corridor largely follows the same routing as Corridor 3P above except at the start near Ndumo substation where new roads will required to be opened to gain access to the first 3 km of this corridor.

Alternatives A3 – Corridor 3B and A4 – Corridor 3C - These proposed routes are set at least 1000 m from the formal roads that they parallel and large sections are undisturbed bush that will require clearing for the creation off access tracks to the proposed servitudes. Access in the form of an informal single truck-width driven track will be required along the entire length of the power line and also at various points accessing the servitude from public roads and other existing tracks. Typically for the construction of power lines, access is generally created by repetitive passes of the construction vehicles along the servitude and along the same tracks to create a rough driveable track. However, often cutting thick bush to a width of 6 - 8 m and destumping may be required.

Refer to Appendix A6 for the aerial photograph depicting those sections of the proposed corridors that will require the construction of new access roads

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).

See Appendix A1 : 12722-LocalityMap-Rev1-5May2013.pdf

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.

See Appendix A6: Locality Map showing Assessed Corridor

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.

See Appendix A : Sensitivity Map

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.

The area comprising the proposed powerline corridors is large and it is not possible to provide photographs for the entire site. For this reason representative sample pictures are provided in Appendix B.

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.

See 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?			
Alternative A1 (Preferred) –Corridor 3P	YES	✓NO	Please Explain
If the power line is constructed in this corridor, the power line will pass the settled, used for subsistence agricultural or open space where no respect a servitude will have to be registered to permit the construction of will however remain unchanged.	hrough lan egistered s f the powe	ids that a servitude er line. T	are currently e exists and The land use
Alternative A2 – Corridor 3A	YES	✓NO	Please Explain
If the power line is constructed in this corridor, the power line will pass the settled, used for subsistence agricultural or open space where no register hence a servitude will have to be registered to permit the construction of will however remain unchanged.	nrough lan ered servit f the powe	ds that a ude exis r line. T	are currently sts and he land use
Alternative A3 –Corridor 3B	Yes	✓NO	Please Explain
If the power line is constructed in this corridor, the power line will pass through lands that are currently settled, used for subsistence agricultural or open space where no registered servitude exists and hence a servitude will have to be registered to permit the construction of the power line. The land use will however remain unchanged.			
Alternative A3 –Corridor 3C	Yes	✓NO	Please Explain
If the power line is constructed in this corridor, the power line will pass through lands that are currently settled, used for subsistence agricultural or open space where no registered servitude exists and hence a servitude will have to be registered to permit the construction of the power line. The land use will however remain unchanged.			
2. Will the activity be in line with the following?			
(a) Provincial Spatial Development Framework (PSDF)	✓YES	NO	Please explain
The KwaZulu Natal Provincial Spatial Development Framework (PSDF) has identified that one of the primary Provincial Growth and Development Strategies is to grow the economy and that growing the economy is reliant on the provision of reliable and affordable services by government. Such services include, amongst others, the provision of electricity. If electricity cannot be provided the economic potential of the province will not be realised. The KZN PSDF recognises that electricity supply is under stress in the province and that this is hindering development in all sectors.			
(b) Urban edge / Edge of Built environment for the area	YES	NO	Please explain
Not Applicable – Linear servitude outside 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	NO	Please explain
Both the Jozini and Umhlabuyalingana IDPs' have identified that one challenges in the region is the poor to non-existent physical infrastruc such as electricity to the expanded areas, predominantly those boundaries of the former TLC. Both the IDPs and SDFs have identified Local Municipalities is one of the Lead Projects for the region and tha lack of electrical capability in the region along with a decent distribution	e of the m ture to de areas lo d that elec t one of th network.	nain dev liver bas ocated c trification he limita	elopmental sis services butside the n within the tions is the
(d) Approved Structure Plan of the Municipality	✓YES	NO	Please explain
The approved Structure Plan of the municipality has identified that tour economic development potentials in the region and that the developm reliable electricity supply will be hindered.	ism and a nent of the	griculture ese sect	e are major ors without
(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?)	√YES	NO	Please explain
The approval of this application will not compromise the integrity of the Framework for the area, especially if the preferred Corridor 3P is apparallels existing roads and overhead power distribution infrastructur where a large degree of anthropogenic activity has altered the natural estimation.	Environm proved as e and pase environme	nental Mass this ro sses thro nt.	anagement ute closely ough areas
(f) Any other Plans (e.g. Guide Plan)	YES	✓NO	Please explain
		1	
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)?	✓ YES	NO	Please explain
One of the objectives of the IDPs' of both local municipalities is to provide infrastructure and basic services to the expanded areas predominantly outside the former TLC boundaries and this project will assist in achieving that objective in the next $2 - 5$ years			
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.)	✓YES	NO	Please explain
The upgrading of the electrical infrastructure in this area is of prime social importance as the current 22 kV power line servicing the area is frequently over loaded resulting in inconsistent supply to the area. Consultation with local leaders and community members revealed that the provision of stable electricity supply is of prime importance. Without this new 132kV power line, it will not be possible for the region to achieve the electrification and economic objectives that have been in the IDPs.			

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	NO	Please explain
The power lines do not need any municipal services other than access power line; and the preferred corridor is easily accessible via existing ro responsible for the design and construction of required access roads.	roads for bads. The	maintena Propone	ance of the ent will be
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.)	ƳYES	NO	Please explain
The infrastructure planning of the Local Municipalities has highlighted that in order to achieve their planned infrastructure development, it is imperative that the 132 kV line is constructed to improve power supply to the affected areas. Without the establishment of this proposed 132 kV power line, it will not be possible for the Local Municipalities concerned to provide the infrastructure they have			
7. Is this project part of a national programme to address an issue of national concern or importance?	ƳYES	NO	Please explain
Electricity shortage, the growing demand for electricity and the need to communities is a national concern and priority.	provide b	basic serv	vices to all
8. Alternative A1 (preferred) and A2 – Corridor 3P and 3A 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.)	ƳYES	NO	Please explain
Corridor 3P and 3A have been located parallel to existing road and or as well as in areas where a large degree of anthropogenic developm natural environment. Thus, a new power line will be erected in an area and linear road development have already been integrated into the er and structure design has been optimised to minimise visual intrusion an additional power line.	verhead 2 ent has c where or nvironme nd the cu	22 kV inf occurred verhead nt for ove mulative	rastructure, to alter the power lines er 20 years effect of an

8. Alternative A3 and A4 – Corridor 3B and 3C 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	√NO	Please explain
There are currently no high voltage power lines running in the same corridors and the degree of anthropogenic alteration of the landscap sections of the proposed corridors being dominated by undisturbed na highly protected Sand Forest. Thus, the construction of overhead power be considered favourable land use by Ezemvelo KZN Wildlife (Biodiver by organisations such as the Wildlife & Environmental Society of Souther	area as e is relat atural for er lines in rsity Prote ern Africa	these tw tively little est of wh these are ectorate i (WESSA	o proposed → with large ich some is →as may not n KZN) and).
9. Alternative A1 (Preferred) and A2 – Corridor 3P and 3A Is the development the best practicable environmental option for this land/site?	✓YES	NO	Please explain
In the instance of these two corridors there are already overhead parallel to the proposed corridors as well as Road P522 and associ which makes it preferable to place a new powerline in this already de areas that are less impacted on by human development and agriculture	22 kV p ated antl eveloped	owerlines hropogen area as o	traversing c activities opposed to
9. Alternatives A3& A4 – Corridors 3B and 3CIs the development the best practicable environmental option for this land/site?	√YES	NO	Please explain
There are currently no high voltage power lines running in the same area as these two proposed corridors and the degree of anthropogenic alteration of the landscape is relatively little with large sections of the proposed corridors being dominated by undisturbed natural forest of which some is highly protected Sand Forest. Thus, the construction of overhead power lines in these areas may not be considered favourable land use by Ezemvelo KZN Wildlife (Biodiversity Protectorate in KZN) and by organisations such as the Wildlife & Environmental Society of Southern Africa (WESSA)			
10. Will the benefits of the proposed land use/development outweigh the negative impacts of it?	✓YES	NO	Please explain
The anticipated negative impacts of the development are all of low to m following mitigation (see section D) for Corridors 3P and 3A and the ma development i.e. improved reliability of electrical supply and increased in economic growth and alleviation of poverty is of high significance.	The anticipated negative impacts of the development are all of low to moderate significance following mitigation (see section D) for Corridors 3P and 3A and the main benefit of the development i.e. improved reliability of electrical supply and increased supply to the region resulting in economic growth and alleviation of poverty is of high significance		
11. Will the proposed land use/development set a precedent for similar activities in the area (local municipality)?	YES	✓NO	Please explain
The upgrade of electrical supply is not for profit gain, but is to provide essential services to an area and hence will not set a precedent. Additional upgrades will only occur in the region if the demand for the basic service requires it.			
12. Will any person's rights be negatively affected by the proposed activity/ies?	YES	✓NO	Please explain
As the Traditional Authority (TA) or Ngonyama Trust are the responsible organisations for providing permission for the development to proceed, some individual residents within the proposed powerline servitude (i.e. 36 m wide) may not have a choice of whether to allow a pylon structure to be placed on their property. The exact route will however be surveyed and aligned as far as practically possible to avoid houses, agricultural lands etc. The proposed powerline servitude, on receipt of Environmental Authorisation, will be procured through a willing landowner principal (similar to willing buyer willing seller principal). All processes have followed an extensive stakeholder consultation process and therefore no juristic or natural person's right is anticipated to be adversely affected.			

13. Will the proposed activity/ies compromise the "urban edge" as defined by the local municipality?	YES	√NO	Please explain
This is a linear activity that will fall well outside the defined "urban isolated activity that will not encourage further urban development association with its servitude.	edge" ai nt along	nd is con its servi	sidered an tude or in
14. Will the proposed activity/ies contribute to any of the 17 Strategic Integrated Projects (SIPS)?	✓YES	NO	Please explain
 This Project in support of the following SIPS: SIP 9: Electricity Generation to support socio-economic develo SIP 10: Electricity Transmission and Distribution for all. 	pment.		
15. What will the benefits be to society in general and to communities?	the lo	ocal Ple	ase explain
The potential benefit of the proposed power line between the Ndumo a the stimulation of the local economy (specifically tourism and agricu reliable electricity to improve service delivery to all sectors. Furth employment benefits during the construction phase of the project. In a to many households in the area, a stable electricity supply will have and proposed new developments in the area, including tourism and greatly boost the economic growth potential of the area and the KwaZu	and Gesiz ulture) th hermore iddition to a positive agricultur lu-Natal l	za substa rough the there wil providin e impact re, which Province.	tions lies in e supply of l be some g electricity on existing will in turn
The DAEARD has embarked on a project which included compiling a master plan for the Makhathini Flats which proposes agricultural activities such as sugar cane and cotton, tourism and associated agri-industrial developments. These developments aim to provide employment for local communities and to improve food security Some of these projects will not be viable without electricity.			Makhathini associated for local ble without
The proposed Mbazwana and Gezisa substations will provide an additional supply of electricity to the Makhathini Flats area. A large number of households in this region currently do not have electricity and are reliant on alternative sources for lighting and cooking purposes. A dedicated, additional supply of electricity will enable many previously un-serviced households to receive electricity.			
Should the proposed developments not be undertaken, the risk for elepower outages, which are currently occurring in the area on a relatively significantly. In addition, the ability to supply new customers would be anticipated that the demand for electricity in the study area will s Eskom's existing 22kV electrical system. This will consequently have on existing and proposed new developments in the area, including tour	ectrical fa y frequen e severel oon exco a signific ism and a	aults and t basis, w y limited eed the cant nega agriculture	associated vill increase in that it is capacity of tive impact e.
16. Any other need and desirability considerations related to th activity?	e propo	sed Ple	ase explain
 Improving the network reliability may reduce the number of communities their cooking and heating requirements which in turn will have the follow Reduction in the harvesting pressure on natural woodlands in t Improved health of persons in these communities through the r smoke fumes. Assisting in the controlled development of townships through the electrical supply 	es reliant of wing beno he regior reduction ne provisi	on domes efits: in the inh on of a re	atic fires for alation of aliable
17. How does the project fit into the National Development Plan for	2030?	Ple	ase explain
The National Development Plan for 2030 has a vision that South Africa will have an energy sector that promotes economic growth and development through adequate investments in energy infrastructure and the provision of guality energy services.			

18. Please describe how the general objectives of Integrated Environmental Management as set out in section 23 of NEMA have been taken into account.

This proposed 132kV power line development has been adequately assessed by competent Environmental Assessment Practitioners and discipline specialists. All potential impacts that may have a significant impact on the receiving environment have been identified and adequately assessed as required by the NEMA 2010 EIA regulations and mitigation measures developed and the impact significance reassessed. The conclusions of the environmental impact assessment have been concisely summarised to adequately inform decision-making by the competent authority. A comprehensive Public Participation Process was also undertaken, which conformed to requirements in Chapter 6 of the Environmental Impact Assessment Regulations. Furthermore, all Interested and Affected Parties will be given ample time (as per the requirements of the EIA Regulations) to review and comment on all documents and reports and the affected landowners will be empowered to be able to state their concerns and issues adequately.

19. Please describe how the principles of environmental management as set out in section 2 of NEMA have been taken into account.

The primary objective of the project is to contribute to the provision of stable electricity supply to the Northern Zululand region of KwaZulu-Natal. The provision of a stable electricity supply with spare capacity will encourage future development in the area and will potentially improve the economic situation through job creation.

The social, economic and environmental impacts have been identified and rated by the EAP with the assistance of numerous specialists.

The environmental impact of power lines is well understood and the tower structures selected for this development have been chosen to reduce visual impacts, impacts on cultivated land and impact on avifauna.

A heritage survey, surface water and wetlands assessment as well as an ecological and avifauna studies were also undertaken as part of the basic assessment process and recommendations have been made by all the specialists for inclusion in the EMPr.

Eight alternative corridors were identified and assessed as part of the Basic Assessment and a single preferred corridor was found to be more environmentally suitable than the others based on the conclusions of the specialists studies and ranking the significance of each aspect identified by the relevant specialist.

The Environmental Basic Assessment was advertised and members of the public were given the opportunity to register as I&AP as described in Section C: public participation and the issues and responses report (See Appendix E).

Most of the negative impacts associated with the project will occur during the construction phase. Where negative impacts are unavoidable they will be mitigated according to stipulations in the EMPr. Those impacts that can be addressed during the design phase have been identified and the mitigations recommended will form part of the design. The impacts of the proposed power line on wetlands and sensitive vegetation will be reduced by on site placement of towers to avoid placing them in wetland areas or in sensitive vegetation. Bird diversion designs will be implemented on towers and on the conductor to prevent/reduce bird electrocutions and bird strikes.

Recommendations and mitigations presented in the EMPr will reduce the disturbance to ecosystems and the loss of biodiversity. Where negative impacts are unavoidable, strict management and rehabilitation is recommended to minimise the potential negative impacts. The use of potentially polluting substances will be managed according to requirements in the EMPr. The EMPr will hold the developer responsible for any unnecessary negative impacts of the development on the environment.

The EMPr will include a rehabilitation plan and the cost to of rehabilitation required due to pollution or unnecessary environment degradation resulting from the activity will be the responsibility of the developer.

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
Constitution of the Republic of South Africa (Act 108 of 1996)	The Constitution paves the way for the protection of the natural environment and heritage resources through the recognition of the right to a health and safe environment.	South African Government	1996
National Environmental Management Act (Act No 107 of 1998)	NEMA is the key environmental management legislation and states in s2(4)(k) that "the environment is held in public trust for the people, the beneficial use of resources must serve the public interest and the environment must be protected as the people's common heritage" thereby paving the way for EIA process to assess developments that may have a harmful impact on the environment.	National and Provincial Department of Environmental Affairs	1998
National Heritage Resources Act (Act No 25 of 1999)	Under section 38(1) of the NHRA any person who intends to construct a powerline or other linear development exceeding 300m in length must notify the responsible heritage resources agency of its intention. The responsible heritage resources authority may require a heritage impact assessment where powerlines are being proposed	South African Heritage Resources Agency/AMAFA	1999
Environmental Impact Assessment Regulations (GN R543-546 of 2010)	The EIA regulations describe the EIA process to be followed including the public participation process, and the listed activities that may have a harmful impact on the environment and must be assessed.	National and Provincial Department of Environmental Affairs	2010
National Environmental Management: Biodiversity Act (Act No 10 of 2004)	The Biodiversity Act provides for the management and protection of the country's biodiversity within the	National and Provincial Department of Environmental Affairs And Ezemvelo KZN	2004

	framework established by NEMA. It provides for the protection of species and ecosystems in need of protection, sustainable use of indigenous biological resources, and equity in bio- prospecting. Some Critical Biodiversity Areas and vulnerable and endangered ecosystems have been identified by the vegetation specialist in the study site.	Wildlife	
National Environmental Management: Protected Areas Act (Act 57 of 2003)	The Protected Areas Act provides for the protection and conservation of ecologically viable areas representative of the country's biological diversity, its natural landscapes and seascapes. The proposed alternative routes runs through a non-statutory protected area.	National and Provincial Department of Environmental Affairs And Ezemvelo KZN Wildlife	2003
National Forests Act (Act 84 of 1998)	The development of the proposed project may result in damage or destruction of a tree under the National Forests Act	Department of Agriculture, Forestry and Fisheries (DAFF)	1998
National Veld and Forest Fires Act (Act 101 of 1998)		Department of Agriculture, Forestry and Fisheries (DAFF)	1998
Promotion of Access to Information Act (Act No 2 of 2000)		National Department of Environmental Affairs	2000
National Water Act (Act No. 36 of 1998)	This Act provides for the protection and management of water resources. A Water Use Licence Application is made to authorise water use activities pertaining to the altering of the bed and banks of a watercourse and diverting the flow of water in a watercourse. A WULA may be required on this project for the construction of tower structures within 500m of a watercourse or wetlands.	Department of Water Affairs	1998
Conservation of Agricultural Resources Act (Act No 43 of 1983)	In terms of section 6 of the Act, the Minister may prescribe control measures with which all land users have to comply. The control measure may relate to the regulating of the flow pattern of run-off water, the control of weeds and invader plants, and the restoration or reclamation of eroded land or	Department of Agriculture	1983

	land which is otherwise disturbed or denuded. This act will regulate construction activities to prevent the spreading of invasive species		
	and to ensure successful rehabilitation of the receiving environment.		
Occupational Health and Safety Act (Act No 85 of 1993)	The OHSA governs and ensures the protection of employees in the workplace. A number of permanent and contract skilled and semi- skilled workers will be involved in the construction of the different aspects of the project. Their appointment and work periods will be subject to the provisions of the OHSA. This act and its regulations also govern the design and operation of power lines.	Department of Labour	1993
Electricity Regulations Act (Act No 4 of 2006)	This act establishes a national regulatory framework for the electricity supply industry; and provides for licences and registration as the manner in which generation, transmission, distribution, reticulation, trading and the import and export of electricity are regulated. The erection of new electricity distribution infrastructure is thus regulated in terms of this act.	National Energy Regulator of South Africa	2006
National Energy Act (Act no 34 of 2008)	The Act allows for the regulation and maintenance of security of energy supply in South Africa. The act empowers the energy regulator to invest in the maintenance of energy infrastructure, which includes the installation of electrical infrastructure in area where the grids is operating at near maximum	South African National Energy Development Institute	2008
National Environmental Management: Waste Act (Act No 59 of 2008)	Requires sustainable integrated waste management and implementation of the waste hierarchy.	Department of Environmental Affairs	

12 WASTE, EFFLUENT, EMISSION AND NOISE MANAGEMENT

a) Solid waste management

Will the activity produce solid construction waste during the construction/initiation phase?

If YES, what estimated quantity will be produced per month?

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

Waste generated during the construction phase will be collected in designated areas, in facilities designed to safely store the waste. Waste separation for reuse and recycling will take place. Once sufficient volumes of waste have been collected, or once a month, whichever occurs first, the waste will be transported to the nearest suitably licensed/acceptable solid waste disposal facility waste facility. Receipts / waybills will be obtained from the facility for record purposes. An Integrated Waste Management Plan for this project is presented in Appendix J

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

No licensed landfill currently exists in the uMkhanyakude DM for the disposal of general or hazardous waste. The following protocol must be incorporated into the Integrated Waste Management plan for the project:

- The project is advised to use the existing Municipal disposal facilities at either Lulwane (Skhemelela waste handling facility or Mangizi dumpsite (not licensed) for small quantities of general waste.
- Recyclable material should be separated out and a recycling plan implemented.
- Hazardous waste must be transported to the nearest registered hazardous landfill facility;

An Integrated Waste Management Plan for this project is presented in Appendix J.

Will the activity produce solid waste during its operational phase?

YES **VNO**

If YES, what estimated quantity will be produced per month?

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

✓YES	NO
	± 6 m ³

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?

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?

YES **✓NO**

✓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?

If YES, what estimated quantity will be produced per month?

Will the activity produce any effluent that will be treated and/or disposed of on site?

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?

YES **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 YES dust associated with construction phase activities?

If YES, is it controlled by any legislation of any sphere of government?

YES	√NO
YES	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:

d) Waste permit

Will any aspect of the activity produce waste that will require a waste permit in terms of the NEM:WA?

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?

If YES, is it controlled by any legislation of any sphere of government?

✓YES	NO
YES	✓NO

✓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.

If NO, describe the noise in terms of type and level:

Construction Phase: Noise control regulations and SANS 10103: Short term noise impacts are anticipated during the construction phase of the project relating to the operation of heavy machinery. It is however anticipated that the noise will be localised and contained within the construction site. The applicant must adhere to the relevant provincial noise control legislation (if any) as well as SANS 10103. Working hours should be restricted to 07h00 to 18h00 Monday to Friday excluding public holiday.

Operational phase: A corona can be produced from water droplets forming on the conductor and crackling noise being formed from the breakdown of air molecules. (Eskom GFS 0009 Revision 2 Document, May 2004)

13 WATER USE

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

 ✓ Municipal Construction Phase 	Water board	✓Groundwater Construction phase	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:	max litres	20 000
Does the activity require a water use authorisation (general authorisation or water use	YES	✓NO

license) from the Department of Water Affairs?

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

NB: A Water Use License (WUL) will not be required for the abstraction of water from a natural source. However, a water use license may be required as all the corridors cross several water features (i.e. Pongola River in the west of the study area and various pans, seep zones and channel wetlands in the eastern portions of the study area. Due to the strategic nature of the proposed development an exemption from a WUL might be possible for the final route alignment and for application for a General Authorisation to cross the Pongola River may be required. DWA will be consulted to determine the way forward in respect to obtaining the necessary WUL licences once the final powerline alignment has been determined (this can only be done post environmental authorisation).

14 ENERGY EFFICIENCY

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

The entire powerline design has been optimised over the years to prevent or reduce energy losses between the point of generation and use and hence is considered to be energy efficient.

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

N/A

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 **✓NO**

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	Province	Kwa Zulu- Natal
description/physical	District Municipality	Umkhanyakude DM
addroce	Local Municipality	Jozini and Umhlabuyalingana LMs
auuress.	Ward Number(s)	See Appendix D1
	Farm name and	See Appendix D1
	number	
	Portion number	See Appendix D1
	SG Code	See Appendix D1

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.

See Appendix A2 for Property Description List and Property Boundary Map for all the Corridors

Current land-use zoning as per local municipality IDP/records:	Tribal lands, agriculture, Open Space and unspecified
	In instances where there is more than one current land-use zoning, please attach a list of

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? Not for any of YES the alternatives.

√ NO

1. GRADIENT OF THE SITE

Indicate the general gradient of the site.

Alternative A1, A2, A3 & A4 (Corridor 3P, 3A, 3B & 3C)

Flat	1:50 – 1:20	1:20 – 1:15	1:15 – 1:10	1:10 – 1:7,5	1:7,5 – 1:5	Steeper
✓95% of corridor			✓5% of corridor			ulan 1.5

2. LOCATION IN LANDSCAPE

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

Alternative A1, A2, A3 & A4 (C	orric	lor 3P, 3A, 3B & 3C):						
2.1 Ridgeline		2.4 Closed valley		2.7 Undulating plain / low hills	✓			
2.3 Side slope of hill/mountain	✓	2.5 Open valley 2.6 Plain		2.9 Seafront				
See Appendix A8 for Topography Map for all Corridors								

3. GROUNDWATER, SOIL AND GEOLOGICAL STABILITY OF THE SITE

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

	Alternative A1:Corridor 3P Alternative A2: Corridor 3A: ✓YES NO		Alternative A3: Corridor 3B:			Alternative A3: Corridor 3C				
Shallow water table (less than 1.5m deep)	✓YES	NO	✓YES	NO	✓YES	NO		✓YES	NO	-
Dolomite, sinkhole or doline areas	YES	✓NO	YES	✓NO	YES	✓NO		YES	√NO	

Seasonally wet soils (often close to water bodies)	✓YES	NO	✓YES	NO	✓YES	NO	ƳYES	NO
Unstable rocky slopes or steep slopes with loose soil	YES	√NO	YES	√NO	YES	√NO	YES	√NO
Dispersive soils (soils that dissolve in water)	YES	✓NO	YES	✓NO	YES	√NO	YES	✓NO
Soils with high clay content (clay fraction more than 40%)	YES	✓NO	YES	✓NO	YES	✓NO	YES	√NO
Any other unstable soil or geological feature	YES	√NO	YES	✓NO	YES	√NO	YES	✓NO
An area sensitive to erosion	YES	√NO	YES	✓NO	YES	√NO	YES	✓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.

See Appendix A9 for Soil Map or all Corridors

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).

Alternative A1- Corridor 3P									
✓Natural veld with scattered aliens ^E	Natural veld with heavy alien infestation	Veld dominated by alien species ^E	Gardens						
36% of Corridor									
✓Cultivated land	Paved surface	 ✓ Building or other structure 	Bare soil						
10% of Corridor		36 % of Corridor							
	 ✓ Natural veld with scattered aliens^E 36% of Corridor ✓ Cultivated land 10% of Corridor 	✓ Natural veld with scattered aliens ^E Natural 36% of Corridor ✓ Cultivated land 10% of Corridor	✓ Natural veld with scattered aliens ^E Natural veld with heavy alien infestation Veld dominated by alien species ^E 36% of Corridor ✓						

Alternative A1 Carridar 3D

Alternative A2- Corridor 3A

✓Natural veld - Natural veld with good condition ^E scattered aliens ^E	Natural veld with heavy alien infestation ^E	Veld dominated by	Gardens
--	--	-------------------	---------

13% of Corridor	39% of Corridor		alien species ^E	
Sport field	 ✓ Cultivated land 3% of Corridor 	Paved surface	 ✓ Building or other structure 46% of Corridor 	Bare soil

Alternative A3- Corridor 3B

✓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
44% of Corridor	35% of Corridor			
Sport field	 ✓ Cultivated land 5% of Corridor 	Paved surface	✓ Building or other structure	Bare soil

Alternative A4- Corridor 3C

✓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
47% of Corridor	20% of Corridor			
Sport field	✓Cultivated land	Paved surface	✓ Building or other structure	Bare soil
	9% of Corridor		24% of Corridor	

Note: "Building or other structure" in this instance means a rural homestead surrounded by cleared bush used for subsistence agriculture or grazing.

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.

See Appendix D3 for Ecological Report for all Corridors and Land Use Map
5. SURFACE WATER

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

Alternative A1 – Corridor 3P

Perennial River	✓YES	NO	UNSURE
Non-Perennial River	✓YES	NO	UNSURE
Permanent Wetland	✓YES	NO	UNSURE
Seasonal Wetland	✓YES	NO	UNSURE
Artificial Wetland	YES	√NO	UNSURE
Estuarine / Lagoonal wetland	YES	√NO	UNSURE

Alternative A2 – Corridor 3A

Perennial River	✓YES	NO	UNSURE
Non-Perennial River	✓YES	NO	UNSURE
Permanent Wetland	✓YES	NO	UNSURE
Seasonal Wetland	✓YES	NO	UNSURE
Artificial Wetland	YES	√NO	UNSURE
Estuarine / Lagoonal wetland	YES	√NO	UNSURE

Alternative A3 – Corridor 3B

Perennial River	✓YES	NO	UNSURE
Non-Perennial River	✓YES	NO	UNSURE
Permanent Wetland	✓YES	NO	UNSURE
Seasonal Wetland	✓YES	NO	UNSURE
Artificial Wetland	YES	√NO	UNSURE
Estuarine / Lagoonal wetland	YES	√ NO	UNSURE

Alternative A4 – Corridor 3C

Perennial River	✓YES	NO	UNSURE
Non-Perennial River	✓YES	NO	UNSURE
Permanent Wetland	✓YES	NO	UNSURE
Seasonal Wetland	✓YES	NO	UNSURE
Artificial Wetland	YES	√NO	UNSURE
Estuarine / Lagoonal wetland	YES	√NO	UNSURE

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

Freshwater Lakes and the surrounding Subtropical Alluvial Vegetation

The Freshwater Lake vegetation unit is found within the lower floodplain of the Pongola River. Here large lakes form in the winding riverbed and allow riparian vegetation to prosper as shown in the photo below. The vegetation surrounding the lakes as well as the riverbanks is classified as Subtropical Alluvial Vegetation. Dominant species include *Ficus spp. Acacia xanthophloea* and

Combretum erythrophyllum. The pictures below firstly show one of the larger lakes in the study area and secondly the two crossing points over the Pongola River, through the Subtropical Alluvial Vegetation is shown.



Photo 1: Freshwater Lakes





Photo 2: Vegetation adjacent to the Pongola River at two of the proposed river crossings

Lowveld Riverine Forest and Floodplains

Another vegetation unit found along the lower reaches of the rivers is called the Lowveld Riverine Forest. This unit is similar to the Subtropical Alluvial Vegetation, but here the trees have grown so large and the canopy is closed hence the name refers to a forest rather than just vegetation. The photo below illustrates a snapshot of this vegetation unit, showing the dense tree cover all along the river banks. Main species include *Ficus sycomorus* and *Diospyros mespiliformis*.



Photo 3: Lowveld Riverine Forest



Photo 4: Subtropical Freshwater Wetlands found inside Tembe Elephant Reserve

Subtropical Salt Pans

There are a few Subtropical Salt Pans within the study area to the southwest. These pans originate in areas where there is no drainage from the waterlogged areas and over time the salt content of the soils increases to the point where the system is described as brackish or even saline.

Delineated Wetlands and Buffer Zones

Using the methodology for the delineation of wetlands by DWA described in the sections above, there are a variety of wetlands present on site. These are areas where all or several of the abovementioned criteria were identified. It should, however, be noted that several of the wetlands could also be classified as riparian zones as they form perennial rivers and streams on site.

Table 1: Wetland types identified on site

System	Ecoregion	Landscape Setting	Hydrogeomorphic Unit	Hydrological Regime
		Valley Floor	Channel	Perennial
	Louwold	Velley Floor	Floodplain	Seasonal
	Lowveid	Valley Floor	Valleyhead seep	Seasonal
		Valley Floor	Depression	Perennial
Inland		Plain	Channelled valley bottom wetland	Seasonal/Perennial
	Natal Coastal	Plain	Un-channelled valley bottom wetland	Seasonal
	Plain	Plain	Seep	Temporary
		Plain	Valleyhead seep	Seasonal
		Plain	Depression/Flat	Temporary

From the Surface Water Resource map presented in Appendix A8 in it can be seen that none of the proposed corridors can avoid crossing any riparian areas or wetlands. The following was noted from the analysis:

- All the corridors cross over the Pongola River and the associated riparian systems. Corridor 1
 meanders over this section three times and will have a significantly larger impact on this
 section that the other alternatives which only cross the system once;
- The long channelled-valley bottom system that traverses through the centre of the site is crossed by all the alternative corridors;
- The south western part of the study area is littered with large depressions, flats, valley-head and seep wetlands. These are large temporary wetlands that form on the very flat low-lying areas during very high rainfall events due to the lack of drainage in the area.

The map also includes buffer zones. The two zones illustrated include a 100 m buffer (red) and a 500 m buffer (pink). The 100 m buffer is the preferred no-go zone for the placement of pylons and should be sufficient to ensure that no impact occurs to the wetlands and riparian zones. The 500 m buffer is included to illustrate the area that the Department of Water Affairs highlighted. If any activity takes place within this 500 m buffer that could potentially impact on a water resource a Water Use License will be required. As the exact corridor, servitude and tower positions are not available at this stage, the need for a Water Use License will have to be re-evaluated once all those parameter are in place.

See Appendix D1 for the Surface Water Impact Specialist Report and

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:

Alternatives A1 -Corridor 3P, Altern	rnative A2 –Corridor	3A, Alternative	A3 –Corridor	3B and
Alternative A4 – Corridor 3C				

✓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	Harbour	Gravovard
base/station/compound	Tarbour	Glaveyalu
Spoil heap or slimes dam ^A	Sport facilities	✓Archaeological site
Quarry, sand or borrow pit	Golf course	Other land uses (describe)

The maps showing the Landuse for the corridors is presented in Appendix A7.

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

N/A			

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	NO
Core area of a protected area?	YES	√NO

Buffer area of a protected area?	✓YES	NO
Planned expansion area of an existing protected area?	YES	√NO
Existing offset area associated with a previous Environmental Authorisation?	YES	√NO
Buffer area of the SKA?	YES	√NO

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

A map showing the **Protected/Conservation** areas in the region relative to all the Alternative Corridors is presented in **Appendix A1**.

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:

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:

A specialist was appointed to undertake a heritage site survey of all the alternative corridors. The **Heritage Report** is presented in **Appendix D4**. The report identified a number of potential heritage sites located within or close to each alternative corridors. However the report concludes that the sites are not extensive and if identified prior to tower siting and final line alignment, these sites can be avoided and protected.

Will any building or structure older than 60 years be affected in any way? Is it necessary to apply for a permit in terms of the National Heritage Resources Act, 1999 (Act 25 of 1999)?

YES	√NO
YES	√NO

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

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:

An estimation of 52% of the entire population is economically active. Only 27% of this population group is employed which means that the unemployment rate is as high as 74% for the area.

Economic profile of local municipality:

The economy is largely based on agricultural activities and tourism. Construction work is periodic construction work. The local economy is further characterised by the absence of beneficiation

strategies. Raw products are transported to other industrial centres for further processing and this result in the erosion of the job creation potential of the area. The Public Sector remains the dominant provider of employment opportunities. This has a significant economic impact to the small number of employees in this sector. The informal sector is, however, expanding, primarily based on the taxi industry, informal financial services and taverns.

Level of education:

In 2007, 22% of the total adult population in the Municipality had no formal education, whilst a further 39% only had some primary education. Only 4% of the adult population had higher education.

b) Socio-economic value of the activity

What is the expected capital value of the activity on completion?	R 72,441	094.10
What is the expected yearly income that will be generated by or as a result of the activity?	N/A	
Will the activity contribute to service infrastructure?	✓YES	NO
Is the activity a public amenity?	✓YES	NO
How many new employment opportunities will be created in the development and construction phase of the activity/ies?	± 50 - 100	
What is the expected value of the employment opportunities during the development and construction phase?	Unknown	
What percentage of this will accrue to previously disadvantaged individuals?	Eskom E affirmative policies' enforced	BEE and action will be
How many permanent new employment opportunities will be created during the operational phase of the activity?	±2-5	
What is the expected current value of the employment opportunities during the first 10 years?	R unknow	n
What percentage of this will accrue to previously disadvantaged individuals?	Eskom E affirmative policies' enforced	BEE and action will be

9. BIODIVERSITY

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			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

Alternative A1: Corridor 3P

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	18%	See description in text and figures that follow below and in Appendix D3
 ✓ Near Natural (includes areas with low to moderate level of alien invasive plants) 	36%	See description in text and figures that follow below and in Appendix D3
Degraded (includes areas heavily invaded by alien plants)	%	
 ✓ Transformed (includes cultivation, dams, urban, plantation, roads, etc) 	46%	See description in text and figures that follow below and in Appendix D3

Alternative A2: Corridor 3A

Habitat Condition	Percentage of	Description and additional Comments and			

	habitat condition class (adding up to 100%)	Observations (including additional insight into condition, e.g. poor land management practises, presence of quarries, grazing, harvesting regimes etc).
✓Natural	13%	See description in text and figures that follow below and in Appendix D3
 ✓ Near Natural (includes areas with low to moderate level of alien invasive plants) 	39%	See description in text and figures that follow below and in Appendix D3
Degraded (includes areas heavily invaded by alien plants)	%	
 ✓ Transformed (includes cultivation, dams, urban, plantation, roads, etc) 	48%	See description in text and figures that follow below and in Appendix D3

Alternative A3: Corridor 3B

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	44%	See description in text and figures that follow below and in Appendix D3
 ✓ Near Natural (includes areas with low to moderate level of alien invasive plants) 	35%	See description in text and figures that follow below and in Appendix D3
Degraded (includes areas heavily invaded by alien plants)	%	
 ✓ Transformed (includes cultivation, dams, urban, plantation, roads, etc) 	21%	See description in text and figures that follow below and in Appendix D3

Alternative A3: Corridor 3C

	Percentage of	Description and additional Comments and
	habitat	Observations
Habitat Condition	condition	(including additional insight into condition, e.g. poor
	class (adding	land management practises, presence of quarries,
	up to 100%)	grazing, harvesting regimes etc).

✓Natural	47%	See description in text and figures that follow below and in Appendix D3
 ✓ Near Natural (includes areas with low to moderate level of alien invasive plants) 	20%	See description in text and figures that follow below and in Appendix D3
Degraded (includes areas heavily invaded by alien plants)	%	
 ✓ Transformed (includes cultivation, dams, urban, plantation, roads, etc) 	33%	See description in text and figures that follow below and in Appendix D3

Complete the table to indicate: C)

- the type of vegetation, including its ecosystem status, present on the site; and whether an aquatic ecosystem is present on site. (i)
- (ii)

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

The Ecological Specialist Report is presented as Appendix D3 of this report.

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 following information has been extracted from the Terrestrial Ecological Assessment. For the complete document, please consult Appendix D3.

FLORA ASSESSMENT

Surrounding landscape matrix

The natural topography of the study area is variable with the western portion characterised by an undulating landscape defined by the Pongola River, various drainage channels and upland areas. Conversely, the eastern portion is generally more flat and characterised by large wetland-type habitats on the former coastal plain.

The majority of the Maputaland region falls under rural community land-use. As such, large sections of the study area and surrounding landscape are characterised by rural villages and scattered households, with associated activities, such as subsistence agriculture, livestock farming and natural resource harvesting.

Areas displaying high levels of anthropogenic development or impacts are typically aligned with the main Jozini - eMangusi/Kosi Bay arterial road and the various rural feeder roads, as well as along prominent water courses such as the Pongola River. Beyond these high-impact zones, the land is generally in a natural to semi-natural condition and used primarily for the grazing of cattle and goats.

Evidence suggests that fire is frequently used in grassland and bushveld areas to promote grass production. Other prominent non-rural land-uses observed in the landscape matrix include timber plantations. These are predominantly sited in eastern portion of the study area.

Two regionally important conservation areas, namely Tembe Elephant Park and Ndumu Game Reserve, are located in this region of Maputaland. The former is situated in the centre of the study area, while the latter is situated to the north-west. Moreover, the smaller, less well known Sileza Nature Reserve is located in the south-eastern portion.

Study area characteristics

Five broad vegetation communities/units were recognised in the study area. These were recognised based on species composition, physiognomy, moisture regime, slope and disturbance characteristics. These are:

- Hyphaene moist grasslands;
- Strychnos Terminalia sand bushveld;
- •Mixed bushveld;
- •Sand forest; and
- •Riparian vegetation community.

Although recorded as such, there is natural variation within the vegetation communities as a result of various natural influences, as well as current and historic anthropogenic disturbance. The characteristics of the recognised vegetation communities are detailed as follows

Hyphaene Moist Grasslands

This vegetation community occurs on the very sandy, leached soils of the former coastal plain in the eastern portion of the study area. The topography is generally flat, with occasional depressed zones providing moister patches characterised by hygrophilous vegetation.

The vegetation in the *Hyphaene* moist grassland vegetation community is typified by open, grasslands with scattered individual or pockets of the palm *Hyphaene coriacea* (Error! Reference source not found.). In larger *Hyphaene* pockets other common woody species were noted, including *Combretum molle, Dichrostachys cinerea* and *Phoenix reclinata.* These woody thickets have an approximate height of 2 to 4 m.

The grassland component of this vegetation community is variable. Depressed areas are seasonally wet, and are dominated by hygrophilous grasses and sedges. Drier areas support a variety of grasses and forbs, as well woody suffrutex species such as *Eugenia capensis*.

Fire coupled with high soil moisture levels are the primary agents maintaining this vegetation community in a grass dominated state. It is noted that cattle and to a lesser extent goat grazing is common, as is the harvesting of palm oil from *Phoenix reclinata*. The pine (*Pinus* sp.) plantations are also primarily found in this vegetation community.



The Ecological Report is presented in Appendix D3 and Maps showing Ecological zones and sensitivities are presented in Appendix A7.

SECTION C: PUBLIC PARTICIPATION

1. ADVERTISEMENT AND NOTICE

Publication name	a. The Mercury	
	b. The Zululand Observer	
	c. Vryheid Herald	
Date published	a. 22/02/2012	
	b. 24/02/2012	
	c. 24/02/2012	
Site notice position	Latitude	Longitude
	See Appendix E1.	
Date placed	19-23 February 2013	
Publication name	a. The Mercury	
Date published	a. 18/11/2013	
Site notice position	Latitude	Longitude
	See Appendix E1.	
Date placed	18-22 November 2013	

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

Copies of the **advertisements** placed in the newspapers and photographed locations of the **site notices** are presented 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)		
Please see Appendix E2 for a complete list of the Key Stakeholders.				

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.

Proof of Notification of Key Stakeholders is presented in Appendix E2.

3. ISSUES RAISED BY INTERESTED AND AFFECTED PARTIES

Summary of key issues raised:

COMMENTS, QUESTIONS AND ISSUES	DETAILS OF PERSON RAISED BY	MEDIA	RESPONSE(S)
Electricity supply is very erratic and	Ndumu River	Visit – verbal	These issues have been noted and
experience days without power. Any	Lodge	corresponde	have been assessed as part of this
electrical upgrade to the region will be		nce	Basic Assessment. The purpose of
greatly welcomed.			the proposed new powerline is to
However, powerline routing must not			increase electrical supply stability in
traverse the Ndumu River Lodge property			the region. The identification of
as it is a tourism venue.			potential corridors has taken into
			account the location of various
			tourism activities and has avoided
			proposed routing that would have
			potentially affected the Ndumu
			River Lodge has been found to be
			unsuitable during the Basic
			Assessment Process.
Electricity supply is very erratic and	Masizwane	Site visit –	These issues have been noted and
experience days without power. Any	Lodge	verbal	have been assessed as part of this
electrical upgrade to the region will be		corresponde	Basic Assessment. The purpose of
greatly welcomed.		nce	the proposed new powerline is to
However, powerline must not pass through			increase electrical supply stability in
the Masizwane Private Game Reserve			the region. The identification of
			potential corridors has taken into
			account the location of various
			these facilities where possible. The
			proposed routing that would have
			potentially affected the Masizwane
			Private Game Reserve has been
			found to be unsuitable during the
			Basic Assessment Process.
Electric supply is erratic and impacts	Sicabazini	Reply Sheet	The purpose of the proposed new
negatively on the operations of the	Community		powerline is to increase electrical
community centre	Centre		supply stability in the region
The lack of stable electrical supply in the	Umhlabuvalin	Ad hoc	Eskom has recognised this need in

region is negatively affecting development	gana Ward	meeting –	the greater region and this
opportunities	Councillors	verbal	proposed powerline is one a series
		corresponde	in electrical grid strengthening in
		nce	the region. The purpose of the
			proposed new powerline is to
			increase electrical supply stability in
			the region
The proposed town planning scheme for	Umhlabuyalin	Ad hoc	During the identification of the
Phelendaba area must be taken into	gana Ward	meeting –	potential powerline corridors, the
account when locating the powerline	Councillor 11	verbal	proposed planning scheme for
		corresponde	Phelendaba was consulted.
		nce	However, final comment will be
			provided by the Umhlabuyalinga
			Town Planner during the Draft BAR
			comment period and that comment
			will be addressed and form part of
			the Final BAR and final alignment
			of the proposed powerline.
The lack of stable electrical supply in the	Technical	Meeting –	Eskom has recognised this need in
region is negatively affecting development	Services	verbal	the greater region and this
opportunities. The time taken by Eskom to	Manager –	corresponde	proposed powerline is one a series
deliver the new powerlines is a concern as		nce	in electrical grid strengthening in
the power improvements are urgenity	gana Livi		the region. The purpose of the
			increase electrical supply stability in
			the region Eskom has prioritised
			this project but the environmental
			assessment process is partly
			responsible for the delays.
The proposed powerline routing must be in	Technical	Meeting –	The Draft BAR showing the
keeping with the town planning scheme for	Services	verbal	proposed alignments will be
the region.	Manager –	corresponde	presented to the Umhlabuyalingana
	Umhlabuyalin	nce	LM Town Planners for comment.
	gana LM		
There is strong support for the project from	Honourable	Focus Group	Noted
the mayor's office and the local councillors	Mayor -	Meeting	
emphasised that the region has been	Umhlabuyalin		
waiting for the provision of electricity from	gana LM		
Eskom for a while now. The mayor urged			
the EAP to accelerate the authorisation			
process.			
How employment opportunities will be	Councillor	Focus Group	The Environmental Practitioners
created through this project	Sponelo	weeting	are not involved in the creation of
	eme		employment opportunities.
			will be created during the
			construction phase of the project
			and Eskom has policies in place
			encouraging a portion of the
			opportunities to be made available
			to the local community.
This proposal is not taking into account the	Ntandokuhle	Traditional	The proposed powerline is a
electrical requirements of the outlying rural	Danie	Council	distribution line for bulk electricity.
areas.		Focus Group	Once this line is established then

		Meetings	the smaller reticulation powerlines taking power to the outlying rural communities will then be able to be established. The stated lack of service delivery will be communicated to Eskom.
What are the challenges for establishing the power line along the existing P522 road which is the most preferred route for the EAP.	Ntandokuhle Danie	Traditional Council Focus Group Meetings	Specialist studies have been undertaken to assess the challenges and these are described in the Basic Assessment Report. However, the principle challenges faced by an alignment along the P522 are finding space between or around the residential properties and the protection of critically endangered Sand Forest vegetation.
KZN Wildlife will not support any routing that requires destruction of the critically endangered Sand Forest vegetation.	Ezemvelo KZN Wildlife Biodiversity Department	Meeting	Noted and has been taken into account in assessing of the alternative corridors.
KZN Wildlife will not support any routing through KZN Wildlife Parks or Reserves.	Ezemvelo KZN Wildlife Biodiversity Department	Meeting	Noted and has been taken into account in assessing of the alternative corridors.
KZN Wildlife supports the principal of maintaining overhead services in the same corridor.	Ezemvelo KZN Wildlife Biodiversity Department	Meeting	Noted and has been taken into account in assessing of the alternative corridors.

4. COMMENTS AND RESPONSE REPORT

The practitioner has recorded all comments received from I&APs and responded to each comment for inclusion into the Final BAR for submission to DEA. The comments and responses are captured in a comments and response report as prescribed in the EIA regulations and be attached to the Final BAR as Appendix E3.

The I&AP Comment and Response Report is presented in Appendix E3.

5. AUTHORITY PARTICIPATION

Authorities and organs of state identified as key stakeholders:

Authority/Organ of State	Contact person (Title, Name and Surname)	Tel No	Fax No	e-mail	Postal address
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Department of Water Affairs (DWA)	Mr Thys Badenhorst	(031) 336- 2783	(031) 307- 7279	BadenhorstT@dwa.gov.za	Chief Director: KZN Region Department of Water Affairs (DWA) P O Box 1018 DURBAN 4000
Department of Co- operative Governance & Traditional Affairs	Sipho Buthelezi	(034) 312- 5380			Department of Co-operative Governance & Traditional Affairs (KZN) Private Bag X9078 PIETERMARITZBURG 3200
Department of Economic Development and Tourism	Ms Carol Coetzee	(033) 264- 2500	(033) 264- 2580	mthembus@kznded.gov.za	Head of Department Economic Development and Tourism Private Bag X9152 PIETERMARITZBURG 3201
Zululand District Municipality	Mr Johannes de Klerk	(035) 874 5500	(035) 874 5589/91	mm@zululand.org.za	Municipal Manager Zululand District Municipality Private Bag X76 ULUNDI3838
Ezemvelo KZN Wildlife	Ms Dinesree Thambu	(033) 845- 1425	(033) 845- 1499	thambud@kznwildlife.com	Principal Conservation Planner Ezemvelo KZN Wildlife P O Box 13053 CASCADES 3202
uPhongolo Local Municipality	Mrs F Jardim	(034) 413- 1223	(034) 413- 1706	mm@uphongola.org.za	Municipal Manager uPhongolo Local Municipality P O Box 191 PONGOLA 3170
Department of Agriculture, Forestry and Fisheries	Mr Makhosi Mdamba	(035) 780- 6700	(035) 789- 0662	Makhosi.Mdamba@kzndae.go v.za	Department of Agriculture, Forestry and Fisheries (KZN) 65 Victor Street DUNDEE
Kwanyawo Traditional Council	Mr Thandukuhle Zwane	082 773 3146			Kwanyawo Traditional Council P O Box 141 INGWAVUMA 3968
Mathenjwa Traditional Council	Mr Thandukuhle Mathenjwa	072 548 5515		dan@matenjwa.com	Mathenjwa Traditional Council Private Bag X2247 INGWAVUMA 3968
Mathenjwa Traditional Council	Mrs Violah Mathenjwa	076 169 5202			Mathenjwa Traditional Council Private Bag X2247 INGWAVUMA 3968
Mathenjwa Traditional Council	Mrs Lilian Mathenjwa	079 405 2808			Mathenjwa Traditional Council Private Bag X2247 INGWAVUMA 3968
Department of Co- operative Governance & Traditional Affairs	Mrs R. T. Mthembu	076 774 9234	035 573 1744		Department of Co-operative Governance & Traditional Affairs Private Bag X503 MKHUZE 3965
uMhlabuyalingana Local Municipality	Councillor Sbonele Tembe	073 424 0916		<u>dlamini@webmail.co.za</u>	P O Box 536 KWANGWANASE 3973
uMhlabuyalingana Local Municipality	Councillor N. C. Mdletshe	079 616 1729		cgidla@yahoo.com	P O Box SIBHAYI 3967
uMhlabuyalingana Local Municipality	Councillor B. H. Ngubane	079 111 0787			P O Box 69 KWANGWANASE 3973

uMhlabuyalingana Local Municipality	Councillor T. U. Gumede	072 587 8744		P O Box 4418 KWANGWANASE 3973

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

The proof of notification of Authorities and Organs of state is presented in Appendix E4, E4a & E4b.

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

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.

A list of registered I&APs is included in **Appendix E5**.

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

Copies of correspondence and meetings are 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.

The detailed Environmental Impact Assessment Matrix is presented in **Appendix F** and the findings are summarised in the following tables:

PLANNING AND DESIGN PHASE

Activity	Impact summary	Pre-mitigation				Proposed mitigation	Post-Mitigation				Impact Statement
		Sign	ficance				Sign	ificance	10		
Heritage Sites	Direct impacts: Damage to heritage and archaeological sites as a result of position of the towers.	<u>A1</u> L-	<u>Α</u> Ζ L-	M-	M-	Select route within corridor least likely to impact on heritage sites. Appoint heritage specialist at design phase to assist with identification of sites and placement of towers. Avoid location of towers on or near heritage sites	L-	Α2 L-	<u>A3</u> L-	L-	Heritage sites of various significance were identified in close proximity to all the proposed corridor alignments. However, implementation of the proposed mitigation measures will result in the potential negative impact being of LOW significance for all 4 corridors.
	<i>Direct impacts:</i> Damage to heritage sites and archaeological sites as a result of the alignment of access roads.	M-	M-	M-	M-	Ensure access plan detailing exact access routes is developed prior construction. Appoint heritage specialist to review proposed access plan and routes to verify that they do not pass through or close to heritage sites.	L-	L-	L-		Heritage sites of various significance were identified in close proximity to all the proposed corridors. However, the implementation of the proposed mitigation measures will result in the potential impact being of LOW significance for all 4 corridors.
Avifauna	Direct impacts: Interference with bird flight paths and increased potential for bird collisions with conductor.	M-	M-	M-	M-	Select alignment within chosen corridor least likely to impact on avifaunal flight paths. Appoint avifaunal specialist to assist with specific location of towers within corridor to avoid flight paths and to advise alignment in vicinity of wetlands in eastern region of corridors. Appoint avifauna specialist to advise on placement of Bird diverters and anti-roost protection on towers.	L-	L-	L-		Collision of certain large flying bird species such as Great White Pelican, Pink-backed Pelican, and Saddle - billed Stork, Yellow-billed Stork, Woolly-necked Stork, Lesser Flamingo, Black-bellied Bustard and Secretary bird with the proposed lines is a distinct possibility, and this impact is predicted to be of Moderate Significance across all alternatives, after mitigation. Bird activity is not expected to vary from one corridor to

Activity	Impact summary	Pre-	Pre-mitigation			Proposed mitigation	Post-Mitigation				Impact Statement
Activity	Impact summary	Pre- Sigr				Proposed mitigation	Post	-Mitigat ificance			Impact Statement another due to a uniform habitat distribution across all the corridors. However, the slight advantage of Corridor 3P and 3A over the other corridors is the already existing presence of the 22 kV powerline running parallel and in the 3P and 3A corridors. A parallel second power line would increase the visibility of this hazard to flying birds and thus it would be expected to result in lower rates of bird collisions particularly if additional mitigation measures were applied. Corridors 3B and 3C are characterised by more dense vegetation providing habitat for roosting and nesting birds and thus should not be interfered with by the proposed
	Direct impacts: Bir electrocutions	I L-	L-	L-	L-	Ensure tower design and type is best for discouraging birds from roosting. Also ensure that suitable bird repelling structure, such as bird guards are considered in the design. Ensure that the cross arms of the delta structures in areas of heavy bird activity areas are all fitted with anti-roosting spikes. Highly recommended that the steel monopole design be considered and incorporates	L-	L-	L-	L-	remain in its present protective state. Electrocution is possible on a 132kV power line, especially where large raptors and vultures feature prevalently. Fortunately, it is unlikely that vultures will occur in the study area but numerous large eagles and buzzards may be present, so the impact of electrocution is likely to be of Low Significance across all alternatives for the proposed power line if the proposed mitigations are implemented.

Activity	Impact summary	Pre-mitig Significa	gation Ince		Proposed mitigation	Post Sign	-Mitigati ificance	ion		Impact Statement
					the standard bird perch. Critical that all clearances between live and earth components are greater than 1.8 meters. If this is the case then the impact of bird electrocution will be very minimal.					
	Direct impacts: Avifaunal habitat destruction due to vegetation clearance	L- L-	H-	H-	Select corridor requiring the least amount of clearing of indigenous bush for access construction and maintenance. Limit bush clearing to area under the conductors and not the full 36 m servitude.	Ŀ	Ŀ	M-	M-	Due to the fact that Corridors 3P and 3A are located within areas where anthropogenic settlement has already resulted on habitat destruction the expected impact of a powerline of either of these corridors is expected to be low. Corridors 3B and 3C are located on the fringes of human settlements and there is more likelihood of requiring a greater degree of removal of indigenous vegetation to create the cleared servitude and access routes.
	Direct impacts: Disturbance of breeding activities	L- L-	M-	M-	Select Corridor with least potential to impact on breeding activities of endemic birds. Appoint specialist during final positioning and alignment of powerline in order to assist with identification of roosts or nests in order to attempt to avoid these where practically possible.	L-	L-	L-	L-	Due to the fact that Corridors 3P and 3A are located within areas where anthropogenic settlement it as anticipated that roosting and nesting bird species have avoided these areas. Corridors 3B and 3C are located on the fringes of human settlements and there is more likelihood of the existence of bird roosts or breeding nests in these less disturbed areas
Social a	and <i>Direct impacts:</i> Loss of	L- L-	L-	L-	Avoid placement in crop lands	L-	L-	L-	L-	There are no large continuous

Activity	Impact summary	Pre-r	Pre-mitigation			Proposed mitigation	Post	-Mitigat	ion		Impact Statement	
<u> </u>		Significance					Sign	ificance		1		
Socio- economic	agricultural land due to area occupied by the towers Direct Impacts: Visual impact on tourism route/operations	H-	H-	M-	M-	directly wherever possible. This can be readily achieved on all routes. Position towers in such a way to be sensitive to tourism	M-	M-	L-	L-	areas of agriculture on any of the corridors and hence the alignment of the powerline and its towers can be arranged to avoid damage to or loss of agricultural lands. Corridors 3P and 3A will be highly visible along the P522	
	and residential homes					venues. In the case of the northern corridor, keep tower positions in same alignment as existing tower positions. In case of new corridors site towers out of view of lodges. Sensitively position towers to take into account view from residential properties Only remove vegetation from the servitude that is a danger to the proposed power line; Ensure that as much natural vegetation as possible is retained within the corridor once the servitude is cleared to ensure visual screening;					and the associated ribbon developments while Corridors 3B and 3C will be less visible due to screening that will be provided by forest vegetation between the road, associated ribbon development and the proposed powerline corridors. However, a visual impact already occurs along Corridors 3P and 3A due to the presence of ribbon development and the existing 22 kV powerline and the impact is currently being assimilated to a degree. Whereas these will be totally new negative impacts to Corridors 3B and 3C. Most biophysical impacts compound one another, however in the case of visual impact, often stakeholders prefer to have impacts in areas of existing impact.	
	Cumulative impacts:											
Vegetation	Direct <i>impacts:</i> Increased potential for loss of indigenous	M-	M-	H-	H-	Select corridor and route least likely to impact on indigenous	L-	L-	M-	M-	The following natural bush clearing will be required for each	

Activity	Impact summary	Pre-mitigation			Proposed mitigation	Post-Mitigation Significance				Impact Statement	
	vegetation due to alignment of power line and position of towers.					vegetation. Where possible locate towers and alignment in areas of least dense indigenous bush and tree cover to minimise the amount of bush clearing required. Also attempt to select a route where minimal bush clearing is required for the purposes of access.					of the corridors: 3P - 19.04 km; 3A - 17.82 km; 3B - 25.43 km; 3C - 24.83 km. Corridor 3A will require the least amount of clearing of indigenous bush as it is located closer to the P522 road within the ribbon development zone wherein most of the natural vegetation has already been cleared for development. Corridor 3P lies on the fringe of the development zone and requires a little more bush clearing. Corridors 3B and 3C traverse large areas of undisturbed natural bush which has not been impacted on by development
	Direct impacts: Increased potential for loss of species biodiversity due to alignment of power line and position of towers	M-	L-	H-	H-	Select corridor with least potential to impact on critically endangered Sand Forest. Where possible locate towers and alignment in areas identified as consisting of species typical and numerous in the area. Make use of specialist during alignment to do this and to avoid Sand Forest communities.	L-	L-	M-	M-	The vegetation mapping shows that all the potential corridors pass through Sand Forest communities. However, on the ground studies have shown that the Sand Forest Communities and ecotypes in Corridor 3P and 3A have been impacted on by anthropogenic activity and it may be possible to select an alignment that can avoid these remnant communities in both these corridors. The Sand Forest Communities and other ecotypes along corridors 3B and 3C are relatively intact and it will be difficult to avoid taking a powerline through them.
	Direct Impacts: Increased	M-	L-	H-	H-	Select corridor with least	L-	L-	M-	M-	The vegetation mapping shows

Activity	ity Impact summary Pre-mitig		Pre-mitigation			Proposed mitigation	Post Sian	-Mitigati ificance	on		Impact Statement	
	potential for loss of rare or endangered species due to alignment of power line and position of towers.					potential to impact on critically endangered Sand Forest. Where possible locate towers and alignment in areas identified as consisting of species typical and numerous in the area. Make use of specialist during alignment to do this and to avoid Sand Forest communities.					that all the potential corridors pass through Sand Forest communities. However, on the ground studies have shown that the Sand Forest Communities and ecotypes in Corridor 3P and 3A have been impacted on by anthropogenic activity and it may be possible to select an alignment that can avoid these remnant communities in both these corridors. The Sand Forest Communities and other ecotypes along corridors 3B and 3C are relatively intact and it will be difficult to avoid taking a powerline through them.	
Wetland Impacts	Direct Impacts: Impact of powerline on Pongola River and impact of Pongola River flow on powerline.	L-	L-	L-	Ŀ	Ensure that the towers for the span are located above the 1:100 year flood level where possible. If not possible, then the towers must be located on the edge of the 1: 100 year flood level where flows are expected to be low. Ensure tower designed to tolerate impact.	L-	L-	Ŀ	L-	Corridors 3P, 3B and 3C will all cross the Pongola River at Makhane's drift. Corridor 3A proposed tp cross the Pongola River at parallel to the P522 road bridge where the existing 22 kV crosses. The Makhane's Drift crossing is considered preferable due to a narrower flood plain and the availability of high ground which will permit easy spanning of the floodplain.	
	Direct Impacts: Pongola River crossing – impact on riverine vegetation	M-	M-	M-	M-	Select route with least potential to impact on riverine vegetation.	L-	L-	L-	L-	In the case of all the corridors, agriculture has already caused the approaches to the rivers in the floodplains to be cleared of most vegetation and there is evidence of alien species infestation. The impact of the powerline on riverine vegetation	

Activity	Impact summary	Pre-r Sian	Pre-mitigation Significance			Proposed mitigation	Post Sign	-Mitigat	ion		Impact Statement
							<u> </u>				is expected to be low for all potential corridors.
	Direct Impacts: Damage to Muzi wetlands through direct impact or associated run-off impacts	M-	M-	M-	M-	Select corridor traversing wetlands in those areas where the wetlands have already been subjected to a high level of anthropogenic transformation or degradation. Use findings of specialist study to select route within corridor with least potential to impact on water sources and to assist in placement of the towers to avoid these features. Ensure wetland assessments undertaken to position towers outside required legal buffers. Obtain a Water Use Licence for the construction of a powerline in the preferred corridor on issuing of the Environmental Authorisation.	L-	L-	L-	L-	All the corridors traverse the extensive wetland systems in the eastern portion of the study area. However, Corridors 3P and 3A traverse these wetlands in areas where they have already been substantially transformed and impacted on anthropogenic activities and hence the impact of the powerline along either of these two corridors is expected to be less than for Corridors 3B and 3C where the wetlands are less impacted on and closer to their natural functioning.
Visual	<i>Direct Impacts:</i> Pylons become visually dominant on skylines and in open areas.	H-	H-	L-	L-	Select corridor least likely to create a negative visual impact. Where possible avoid placing towers in front of homesteads, lodges, sense of place areas, against skyline views - in areas where vegetation screening can minimise visual impact.	L-	L-	L-	L-	Corridors 3P and 3A will be highly visible along the P522 and the associated ribbon developments however, the visual impact is in keeping with the visual impact that is expected along a service corridor defined by ribbon development. Corridors 3B and 3C will be less visible due to screening that will be provided by forest vegetation between the road, associated ribbon development and the proposed powerline corridors. However, a

Activity	Impact summary	Pre-mitigation				Proposed mitigation	Post-Mitigation				Impact Statement
		Signi	ficance	•			Sign	ificance			
											visual impact already occurs along Corridors 3P and 3A due to the presence of ribbon development and the existing 22 kV powerline and the impact is currently being assimilated to a degree. Whereas these will be totally new negative impacts to Corridors 3B and 3C. Most biophysical impacts compound one another, however in the case of visual impact, often stakeholders prefer to have impacts in areas of existing impact.
Ecological	Direct Impacts: Habitat loss and degradation through vegetation clearing	M-	M-	H-	H-	Select corridor and route least likely to require habitat transformation though excessive bush clearing or platform cutting (soil disturbance) Where possible locate towers and alignment in areas of where habitat transformation has already occurred	L-	L-	H-	H-	Habitat loss is likely to be less of an impact along Corridors 3P and 3A due to the location in and along the fringe of developed areas where a substantial degree of bush clearing has already occurred. Corridors 3B and 3C traverse areas where there has been significantly less anthropogenic impact on the indigenous vegetation and hence construction of a powerline along either of these routes will impact negatively and significantly on ecological habitats.
	<i>Direct Impacts:</i> Habitat fragmentation through vegetation clearing	L-	L-	H-	H-	Select corridor and route least likely to result in habitat fragmentation though	L-	L-	H-	H-	Further habitat fragmentation is likely to be less along Corridors 3P and 3A where a significant

Activity	Impact summary	Pre-r Sign	Pre-mitigation Significance			Proposed mitigation	Post Sign	-Mitigat ificance	ion		Impact Statement			
						excessive bush clearing for the powerline route and for the creation of access roads. Where possible locate towers and alignment in areas of where habitat fragmentation has already occurred					degree of habitat fragmentation has already occurred due to anthropogenic activities. Furthermore, the degree of new access roads required is significantly less for these corridors than for Corridors 3B and 3C. The greater the extent of new access roads required, the greater the destruction of natural habitats.			
	Direct Impacts: Habitat transformation and destabilisation i.e cutting and filling and potential to cause soil erosion	M-	L-	H-	H-	Select route within corridor that requires least amount of invasive road construction works. Access plan to be determined prior to construction to ensure best access routes are selected to keep cutting to a minimum. Repair existing access routes before making new access routes.	L-	L-	M-	M-	Further habitat transformation as a result of road construction is likely to be less along Corridors 3P and 3A where access exists off of formal roads and existing access tracks. A number of new access roads will have to be created in order to access large sections of Corridors 3B and 3C. The greater the extent of new access roads required, the greater the destruction of natural habitats.			
	Direct Impacts: Terrestrial faunal impacts	L-	L-	M-	M-	Select corridor and route least likely to impact on terrestrial fauna. Where possible locate towers and alignment in areas of where habitat transformation has already occurred	M-	M-	M-		Terrestrial fauna impacts are likely to be less along Corridors 3P and 3A because impacts already experienced due to existing linear activities and anthropogenic development. These corridors have already been significantly transformed by anthropogenic activities. Also already existing access to these corridor alignments will prevent further impacts on terrestrial fauna			

Activity	Impact summary	Pre-r Sign	Pre-mitigation Significance			Proposed mitigation	Post-Mitigation Significance				Impact Statement
Landuse:	Direct Impacts: Impact on residential areas	M-	M-	L-	L-	Select corridor least likely to require the movement of homes to create space for the construction and operation of a powerline.	L-	M-	Ŀ	L-	Corridors 3B and 3C are more appropriate for the construction of a powerline in order to reduce potential impacts to existing residential homes and areas. Corridor 3P is slightly more favourable than Corridor 3A as it is located on the fringe of the development zone while Corridor 3P traverses through the residential zones.
	Direct Impacts: Introduction of a non-compatible landuse into an area due to inappropriate alignment of the power line.	L-	M-	M-	M-	Select corridor and route least likely to introduce new incompatible landuse into new areas	L-	M-	M-	M-	The fact that linear overhead services and ribbon development already occurs along Corridors 3P and 3A favours these corridors to prevent introducing incompatible landuse to the more pristine areas characterising Corridors 3B and 3C.
Economic Development	<i>Cumulative Impacts</i> : Strengthening of the grid will ensure uninterrupted electricity supply in Northern Zululand.	H+	H+	H+		The new 132 kV Power line must be constructed to achieve this result in the region and to ensure the success and efficiency of all the other grid strengthening activities that are being planned in the region.	H+	H+	H+		Strengthening of the will assist with improving economic development in the region, alleviating poverty and assist with provision of basic services to all - HIGH POSITIVE IMPACT

CONSTRUCTION PHASE

Activity	Impact summary	Pre-mitigation				Proposed mitigation	Post	Mitigati	on		Impact Statement			
		Signi	Significance				Signi	ificance						
		A1	A2	A3	A4		A1	A2	A3	A4				
Heritage Sites	Direct impacts: Damage to or	L-	L-	L-	L-	Ensure all identified sites are	L-	L-	L-	L-	Heritage	sites	of	various

Activity	Impact summary	Pre-mitigation				Proposed mitigation	Post	Post-Mitigation			Impact Statement		
		Signi	ficance				Sign	ificance					
	destruction of archaeological and heritage sites as a result of construction activities					clearly demarcated prior to construction and that all persons on site are sensitised to the issue and the significance. Stop work if new site exposed during construction. Notify relevant authorities.					significance were identified in close proximity to all the proposed corridor alignments. However, implementation of the proposed mitigation measures will result in the potential negative impact during construction being of LOW significance for all 4 corridors.		
Avifauna	<i>Direct Impacts:</i> Disturbance of breeding activities	L-	L-	M-	M-	Strict control should be maintained over all activities during construction. Appoint specialist during final positioning and alignment of powerline in order to assist with identification of roosts or nests in order to attempt to avoid these where practically possible. During Construction, if any of the "Focal Species" identified in this report are observed to be roosting and/or breeding in the vicinity (within 500m of the power line), the EWT is to be contacted for further instruction.	L-	L-	L-	L-	Due to the fact that Corridors 3P and 3A are located within areas where anthropogenic settlement it as anticipated that roosting and nesting bird species have avoided these areas. Corridors 3B and 3C are located on the fringes of human settlements and there is more likelihood of the existence of bird roosts or breeding nests in these less disturbed areas		
	<i>Direct impacts:</i> Disturbance of birds, damage to nests or nesting grounds	L-	L-	M-	M-	Identify areas where known nesting grounds are located and avoid taking access roads near these areas. Sensitise employees to issue. Ensure all	L-	L-	M-	M-	There will be some disturbance to bird life during construction but this can be reduced by implementing simple mitigation measures. Corridors 3B and		

Activity	Impact summary	Pre-mitigation				Proposed mitigation	Post-Mitigation				Impact Statement
		Signi	ficance				Signi	ficance		-	
						construction remains in minimal footprint area. Ensure access roads clearly marked and adhered to at all times.					3C are characterised by undisturbed indigenous forest areas and thus are at risk of potential disturbance of breeding bird species.
	<i>Direct Impacts:</i> Avifauna habitat destruction	L-	L-	H-	±-	Strict control should be maintained over all activities during construction, in particular heavy machinery and vehicle movements, and staff. Use existing access tracks where possible. Limit bush clearing to area under the conductors and not the full 36 m servitude.	L-	L-	L-	L-	Due to the fact that Corridors 3P and 3A are located within areas where anthropogenic settlement has already resulted on habitat destruction the expected impact of the construction activities is expected to be low. Corridors 3B and 3C are located on the fringes of human settlements and there is more likelihood of requiring a greater degree of removal of indigenous vegetation to create the cleared servitude and access routes.
Social and Socio- economic	Direct impacts: Damage to agricultural lands by construction activities.	L-	Ŀ	L-	L-	Negotiate access to agricultural lands with landowner. Sensitise employees to issue. Ensure all construction remains in agreed footprint area. Ensure access roads clearly marked and adhered to.	L-	L-	L-	L-	Impact to agricultural lands will be low if mitigation measures implemented. There is very little agricultural land along any of the proposed corridors.
	Direct Impacts: Disturbance of tourism activities	L-	L-	L-	L-	None required	L-	L-	L-		The impact on tourism activities will be low due to proposed location of corridors away from

Activity	Impact summary	Pre-r Sign	nitigatio ificance	on		Proposed mitigation	Post Sign	-Mitigati	ion		Impact Statement
											prime tourism areas.
	<i>Cumulative impacts:</i> Creation of temporary jobs during construction	M+	M+	M+	M+	Contractor to employ as many local labourers as is feasibly possible.	H+	H+	H+	H+	Construction phase will create temporary jobs for unskilled labour and drivers. This will result in a significant moderate positive impact in the area.
Vegetation	Direct impacts: Unnecessary loss of rare and endangered species due to bush clearing and access activities	L'	L-	M-	M-	Ensure specialist identifies presence of rare and endangered species prior to construction. Carry out search and rescue at all sites – appropriate routing of vehicle access.	L'	L-	M-	M-	If no controls are in place then there is a chance that some rare or endangered species will be damage during these activities. This risk is higher for Corridors 3B and 3C.
	Direct impacts: Unnecessary loss of indigenous vegetation due to uncontrolled access activities	M-	M-	M-	M-	Ensure access routes are planned, clearly demarcated and suitable for the vehicles that will be using them. Ensure drivers are sensitised and disciplined to the issue. Vehicle access through riparian or wetland system to be limited to pre-existing formal access only	L-	L-	L-	L-	Poor management of construction vehicle access can result in the development of multiple tracks on a servitude.
	Direct Impacts: Bush clearing through riparian and riverine vegetation may result in unnecessary loss of riparian and riverine vegetation.	L-	L-	L-	L-	Bush clearing through these areas must be kept to a minimum and must permit access on foot only i.e. clearance of a narrow strip only and selective trimming for the purposes of maintaining	L-	L-	L-	L-	Poor management of clearing the servitude through riparian and riverine vegetation can result in unnecessary damage to these sensitive environments

Activity	ity Impact summary Pre-mitigation			on		Proposed mitigation	Post	Mitigati	on		Impact Statement
		Signi	ficance				Signi	ficance			
						electrical clearances.					
	Direct Impacts: Control of invader species along servitude and access roads.	M+	M+	M+	M+	Ensure policies are strictly and consistently enforced through construction phase.	M+	M+	M+		The bush clearing and invader species management policies of Eskom encourage clearing and management of invader species in the entire project area - POSTIVE IMACT
	<i>Indirect Impacts:</i> Bush clearing along servitude and access routes may increase the risk of invader species encroachment.	M-	M-	M-	M-	An invader species eradication and management plan must be developed for the construction phase and must be implemented consistently throughout construction phase	L-	L-	L-	L-	The clearing of indigenous vegetation creates an opportunity for encroachment by invader species in to areas that are relatively pristine.
	<i>Indirect Impacts:</i> Vegetation removal can increase erosion potential	M-	M-	M-	M-	Bush clearing may only occur through cutting or trimming. No scalping or ploughing of the earth is permitted.	L-	L-	L-	L-	If the servitude, access routes and construction areas are denuded, there will be a significant increase in erosion
	<i>Indirect Impacts:</i> Vegetation removal can result in the loss of topsoil	M-	M-	M-	M-	Bush clearing may only occur through cutting or trimming. No scalping or ploughing is permitted. Topsoil removed from foundation sites or drum stations must be removed and stored for rehabilitation and protected from erosion during storage.	L-	L-	L-	L-	If the servitude, access routes and construction areas are denuded, there will be a significant increase in erosion and loss of topsoil
	<i>Indirect Impacts:</i> Hardening of soil surfaces by construction	M-	M-	M-	M-	All hardened surfaces will be ripped during the rehabilitation	L-	L-	L-	L-	Hardening of soil surfaces will prevent the re-establishment of

Activity	Impact summary		nitigatio ificance	on		Proposed mitigation	Post-Mitigation Significance				Impact Statement
	activities can prevent the revegetation of an area and promote erosion					phase to assist with rapid vegetation re-establishment.					vegetation.
Ecological	<i>Indirect Impacts:</i> Construction activities will cause fragmentation of habitats during construction.	M-	M-	M-	M-	Must be limited by minimising clearance wherever possible; by ensuring good discipline of vehicle movements on site and staying on one track.	L-	L-	L-	L-	Activities during construction will divide up the continuity of habitats and prevent natural movements.
Surface water and wetlands	Direct impacts Physical damage to wetlands and streams through encroachment by construction activities	M-	M-	M-	M-	Ensure all wetlands and streams are identified and all access routes, laydown area, drum stations etc are not located within the buffer zones of these features.	L-	L-	L-	L-	If unplanned and uncontrolled, these activities may impact negatively on the perennial wetlands and streams within all the corridors.
	Direct Impacts: Bush clearing can result in increased stormwater run-off and soil erosion	M-	M-	M-	M-	Bush clearing may only be achieved through cutting - no scalping will be permitted. Destumping of trees on stream and river banks will not be permitted.	L-	L-	L-	L-	Poor bush clearing practices can result in increased stormwater flow and soil erosion.
Noise	Direct Impacts: Operation of construction equipment and vehicles will increase noise levels	L-	L-	L-		Ensure all vehicles and equipment are in good working order and within allowable noise ranges. Equipment exceeding allowable must be equipped with silencers or removed from site. Operations should occur during acceptable working hours. All noise	L-	L-	L-	L-	Noise levels will increase at the construction areas only.

Activity	Impact summary	Pre-mitigation				Proposed mitigation	Post-Mitigation				Impact Statement
-		Signi	ificance	ļ			Sign	ficance			
Air Dallution	Direct Immedia Manament of					complaints shall be recorded, investigated and rectified immediately. Construction camps and batching plants must be sited outside of conservation/game farms/nature reserve areas. Contractor employees to be sensitised to requirement to keep all noise to a minimum.					Dust will be generated at
Air Pollution	Direct Impacts: Movement of vehicles will result in dust impacts	L-	L-	L-	L-	Where sensitive environments are identified or complaints received dust suppression must be implemented. Vehicle speeds must be limited to slow speeds on gravel roads and tracks. Dust complaints must be recorded, investigated and addressed immediately.	L-	L-	L-	L-	Dust will be generated at construction sites and along access roads.
Fires	Direct Impacts: Movement of vehicles through dry grassland can cause fires. Work forces increase the risk of fire in an areas.	M-	M-	M-	M-	No open fires will be permitted on site. Smoking may only occur during controlled breaks at a designated smoking area with appropriate fire protection facilities. Long grass to be trimmed or flattened along access routes. Contractor to join the local fire protection association.	L-	L-	L-	L-	Risk of fire is high during the winter months and requires risk management
Traffic	Direct Impacts: Construction	L-	L-	L-	L-	Construction vehicle drivers	L-	L-	L-	L-	The number of vehicles is not

Activity	Impact summary	Pre-mitigation				Proposed mitigation	Post	Post-Mitigation			Impact Statement			
		Signi	ficance		_		Sign	ificance						
	will result in increased traffic flow in specific routes in the region which may impact on other users					must be considerate to all other road users at all times					expected to increase flow volumes on provincial roads substantially.			
	<i>Indirect Impacts</i> : Deterioration of public and private roads due to passage of construction vehicles.	L-	L-	L-	L-	Ensure vehicles are not overloaded. Repair damage caused by construction vehicles to private roads immediately. adhere to speed limits. don't drive in certain areas when wet. Ensure photographs of access routes and roads are obtained for all routes prior to construction.	L-	L-	L-	L-	Movements of construction equipment on construction roads can cause damage.			
Operations	Direct Impacts: Spillage of hazardous substances into the natural environment	M-	M-	M-	M-	All vehicles and equipment must be in good working order. Equipment/vehicles with permanent leaks must be removed from site. Drip trays must be available with all vehicles and all areas where hazardous substances are being used.	L-	L-	L-	L-	The potential for spills of hazardous substances from leaking fuel tanks, diffs and from handling errors exists but can be managed.			
	<i>Direct Impacts:</i> Poor waste management can cause environmental damage	L-	L-	L-	L-	An integrated waste management plan must be compiled during site establishment and must be implemented continuously throughout the construction phase.	L-	L-	L-	L-	Poor waste management can lead to soil, water and air pollution.			
Activity	Impact summary	Pre-	Pre-mitigation			Proposed mitigation	Post-Mitigation				Impact Statement			
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		Sign	Significance				Significance							
Economic	Cumulative Impacts:	H+	H+	H+	H=	The new 132 kV Powerline	H+	H+	H+	H+	Construction phase will create			
Development	Strengthening of the grid will					must be constructed to achieve					temporary jobs for unskilled			
	ensure uninterrupted electricity					this result in the region and to					labour and drivers. This will			
	supply in Northern Zululand.					ensure the success and					result in a significant moderate			
						efficiency of all the other grid					positive impact in the area.			
						strengthening activities that are								
						being planned in the region.								

OPERATIONAL PHASE

Activity	Impact summary	Pre-mitigation Significance			Proposed mitigation	Post-Mitigation Significance				Impact Statement		
		A1	A2	A3	A4	1	A1	A2	A3	A4	1	
Fires	Direct impacts: Ignition of veld due to conductor failure or flash overs	L-	L-	L-	L-	Regular line inspections to ensure the integrity of the line.	M-	M-	M-	M-	Fires do occur on occasion as a result of conductor failure. However, design has been optimised to prevent such events wherever possible	
Avifauna	<i>Direct impacts:</i> Electrocution of avifauna and collisions with the conductor	L-	L-	L-	L-	Ensure that all these bird diversion structures remain in working order at all times. If an increase in bird strikes is observed, then bird diverter and bird guard placement may have to reviewed and improved.	L-	L-	L-	L-	This impact will be low during operation due to the placement of bird diverters to increase the visibility of the conductor. The tower structure to be used reduces the probability of bird electrocutions and bird guards will be implemented where required.	
Servitude Maintenance	Direct Impacts: Overgrown servitude and associated electrical clearance problems	M-	M-	M-	M+	Eskom to ensure that the vegetation clearance and line maintenance occurs as per Eskom Policies.	L-	L-	L-	L-	This impact has been rated moderate due to the number of issues raised by landowners in the area relating to poor servitude maintenance.	
	Direct Impacts: Poor maintenance of access tracks results in erosion of these tracks.	M-	M-	M-	M-	Eskom to ensure that the access maintenance occurs as per Eskom Policies. Suggest cooperating with landowner to maintain access tracks.	L-	L-	L-	L-	This impact has been rated moderate due experience of other eskom lines where maintenance of the access tracks is non-existent and significant erosion features have developed	
	Indirect Impacts:Poor lockmanagementonEskomservitudegatesexposeslandownerstoillegaltrespassersandprovides	M-	M-	M-	M-	Eskom to ensure that the access maintenance servitude gates and locks occurs as per Eskom Policies. Suggest cooperating with landowner to	L-	L-	L-	L-	This impact has been rated moderate due experience of other eskom lines where lock management on servitude gates has assisted criminal access to private land.	

Activity	Impact summary	Pre-r	Pre-mitigation			Proposed mitigation		-Mitigat	ion		Impact Statement
	access to criminals and creates	Sigii							;		
	a poaching risk.					maintain bootinty.					
Provision of electricity	<i>Indirect Impacts:</i> Faulting causing Loss of stable electricity supply i.e. outages which impacts negatively on businesses hospitals, schools etc.	L-	L-	L-	L-	Strict maintenance regime must be upheld to ensure faulting levels remain low.	L-	L-	L-	L-	This impact has been rated Low as the commissioning of this proposed powerline will reduce the risk of faulting and power outages in the region
Economic Development	CumulativeImpacts:Strengthening of the grid willensure uninterrupted electricitysupply in Northern Zululand	H+	H+	H+	H+						Strengthening of the will assist with improving economic development in the region, alleviating poverty and assist with provision of basic services to all - HIGH POSITIVE IMPACT

NO GO OPTION

Activity	Impact summary	Pre-r	Pre-mitigation			Proposed mitigation	Post-Mitigation				
		Sign	Significance				Sign	ificanc	e		
		A1	A2	A3	A4		A1	A2	A3	A4	
Biophysical	Direct impacts: Environment remains in the	L+	L+	L+	L+	No mitigation required					
Environment	current status quo										
Socio-	Indirect impacts: The current unreliable supply of	H-	H-	H-	H-	Construct and energise the proposed 132 kV	H+	H+	H+		
Economic	electricity in the region and the lack of capacity to					powerline between the Ndumo and Gesiza					
Environment	supply planned economic growth and delivery of					substations					
	basic services will negatively impact the socio-										
	economic growth of the region resulting in failure of										
	the Provincial, District and Local Municipalities to										
	achieve the stated IDP targets and objectives.										

The complete impact assessment methodology and ranking tables are presented in Appendix F

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 <u>after</u> 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.

Based on consideration of the specialist assessment reports of the preferred and alternative route options and the assessment of all identified impacts as presented in the Impact Assessment section of this report, the critical impacts of the preferred and alternative corridors are summarised in the following table:

Impact Type	Signifi	cance Points a	Discussion		
	Corridor 3P	Corridor 3A	Corridor 3B	Corridor 3C	
Heritage Impacts	14 LOW	14 LOW	14 LOW	14 LOW	The potential impact to heritage sites is the same along all three corridors and can readily be mitigated by careful sighting of the towers with the assistance of a heritage specialist.
Avifauna Impacts	19 LOW	19 LOW	34 MODERATE	34 MODERATE	The development of the power line along Corridors 3P and 3A has a potentially lower impact to bird life due to the fact that these corridors traverse in close proximity to an existing overhead 22 kV powerline as well as being located primarily in the already disturbed ribbon development zone adjacent to provincial road P522.
Social and Socio- economic Impacts	23 LOW	23 LOW	17 LOW	17 LOW	The development of the power line along the any of the 4 alternative corridors may have a low impact to social and socio-economic activities because the overhead and ground level impacts already exist in the area and the receiving environments are currently assimilating the negative impact. However, Corridors 3P and 3A are located closer to residential properties and therefore have a higher negative impact that the other

Impact Assessment Summary Table

No-go alternative (compulsory)

The 'No Go' alternative in the context of this project implies that the power line would not be constructed. If the power line does not go ahead, the negative environmental impacts which have been identified if it does go ahead would not occur. However, if the power line is not constructed and commissioned, the region would be negatively affected by an inadequate and unreliable supply of electricity (basic service) which would inhibit future development in Northern Zululand and would jeopardise the success of the regions Integrated Development Plans and Spatial Development Frameworks, all of which identify the lack of electrical services as inhibitors to future development and quality of life. Therefore, the need for stable and reliable power supply to meet current and future demand will likely outweigh the potential negative impacts to the surrounding environment. It is thereby concluded that the "No-go" option is not a viable or acceptable option, and should therefore be discounted.

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	NO

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.

The EAP therefore recommends that the Preferred Alternative (A1) – Corridor 3P, which essentially parallels the provincial road P522 between Ndumo and Manguzi between the Ndumo and Gesiza Substations, as described in this Basic Assessment Report, be authorised. In the opinion of the EAP derived from specialist input, the construction and operation of the proposed activity in the preferred Corridor 3P is not fatally flawed and all potential impacts can be mitigated to an acceptable level. The construction of this multi-circuit 22/132 kV powerline is critical for the ongoing electrification of Manguzi, Northern KwaZulu-Natal, where economic development and poverty alleviation has been retarded by an inadequate supply of electricity to the region.

Apart from the general mitigation measures included in the EMP, the following should form specific clauses in the authorisation:

- Micro-siting of towers must occur in consultation with a vegetation specialist and Ezemvelo KZN Wildlife (the latter as prescribed for portions where sand forest occurs) to avoid further loss of the critically endangered Sand Forest.
- The EMP for the operation of the powerline must include specific access and bush clearing requirements in order to ensure that there is no unnecessary damage to indigenous vegetation within and adjacent to the powerline servitude where possible and in consultation with Eskom design engineers.
- Input into the siting of the towers within the authorised corridor will be done at the Pongola River crossing at Makhane's Drift and the Muzi wetlands in accordance with conditions stipulated by DWA and in consultation with a wetland specialist
- the use of bird diverters and bird guards must be obtained during the design phase from an avifauna specialist with specific attention to the Pongola River crossing at Makhane's Drift and the Muzi wetlands in the eastern area of the corridor.
- The clearing of bush along the servitude during construction and maintenance must not be for the entire 36 m wide servitude, but must be of an extent required for the purposes of access, construction and safe operational working.
- The EMP must include all the mitigation actions recommended by the Specialists and in the Impact Assessment Report.



Is an EMPr attached?

The EMPr must be attached as Appendix G.



The Environmental Impact Management Report in presented in 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.

WARREN KOK

NAME OF EAP

SIGNATURE OF EAP

DATE

SECTION F. APPENDICES

Appendix A: Maps

Appendix B: Photographs

Appendix C: Facility Illustrations

Appendix D: Specialist Reports (Including Terms of Reference)

Appendix E: Public Participation

Appendix F: Impact Assessment

Appendix G: Environmental Management Programme (EMPr)

Appendix H: Details of EAP and Expertise

Appendix I: Specialist Declaration of Interest

Appendix J: Additional Information