



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

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

SECTION A: ACTIVITY INFORMATION

Has a specialist been consulted to assist with the completion of this section? **YES** **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

1.1. Brief Description

Eskom Distribution – Northern Region (from forthwith known as Eskom) proposes the construction of a 18 km (approximate) 132 kV overhead power line linking the existing Mbumbu Substation and the new proposed Tsakani Substation (Refer to **Appendix A** for the Locality Map).

The entire proposed project is part of what is referred to by Eskom Distribution as the Green Valley Network (refer to Figure 1) which is located to the south east of Limpopo and the north east of Mpumalanga. This network is currently experiencing high electrification growth, natural growth of the existing load and network constraints in terms of overload under normal and emergency conditions. The proposed construction of the Tsakani substation and 132 kV power line was initiated in order to:

- Deload the Acornhoek substation (refer to
- Figure 2)
- Deload the Mbumbu Substation.
- Cater for load growth in the Acornhoek area which covers Tinswalo, Champagne, Marieskop and Timbavati.
- Provide network flexibility.
- Improve reliability of the network.

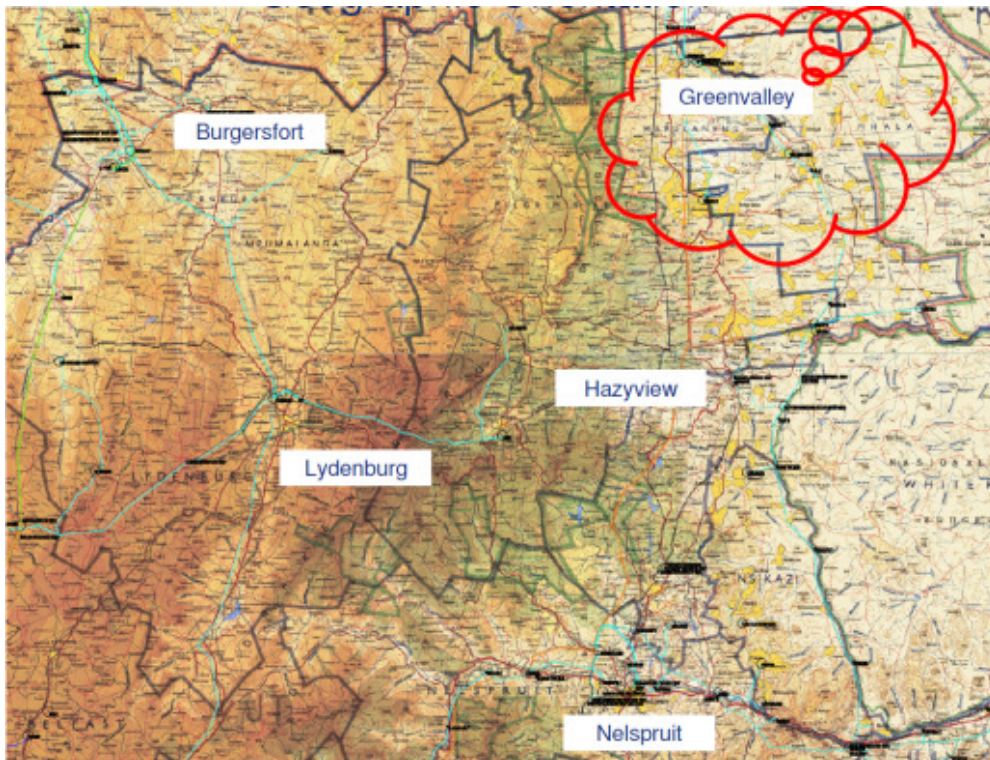


Figure 1: Location of the Green Valley Network



Figure 2: Zoomed in map of the Green Valley Network area (red line indicating a proposed power line connecting Mbumbu to Tsakani Substation)

The proposed project is located in Mpumalanga Province with the nearest small towns / settlements being Thulumahashe, Edinburgh, Ludlow, and Dingleydale. Nelspruit (Mbombela) is about 120 km from the site of the existing Mbumbu Substation. The proposed power line is located predominately within rural areas which are largely characterised by villages and open spaces. One main road provides general access to the proposed project, namely the R40. Access into the inner areas of the proposed project is by means of dirt roads.

1.1.1. 132 kV Power Line Alternatives – Route Description

Two alignment alternatives have been proposed by Eskom (see Figure 3 below):

1. Alternative 1: Green Route; and
2. Alternative 3: Purple Route.

In the Environmental Authorisation Application three alternatives were proposed however upon site inspection it was noted that Alternative 2 would transverse two settlements which would have resulted in community relocation. Therefore only Alternative 1 and Alternative 3 were deemed suitable for assessment in this Basic Assessment Report (BAR).

Alternative	Distance (Approximate)	Route
1 Green Route	18.02 km	This route originates at the existing Mbumbu Substation running in an easterly direction through the northern extent of the Ludlow settlement. From there it terminates at the site of the proposed Tsakani Substation.
3 Purple Route	16.20 km	This route originates from same point as Alternative 1 and travels in a south-eastern direction bypassing the Edinburgh Dam and settlement

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terminating at the same point as Alternative 1.

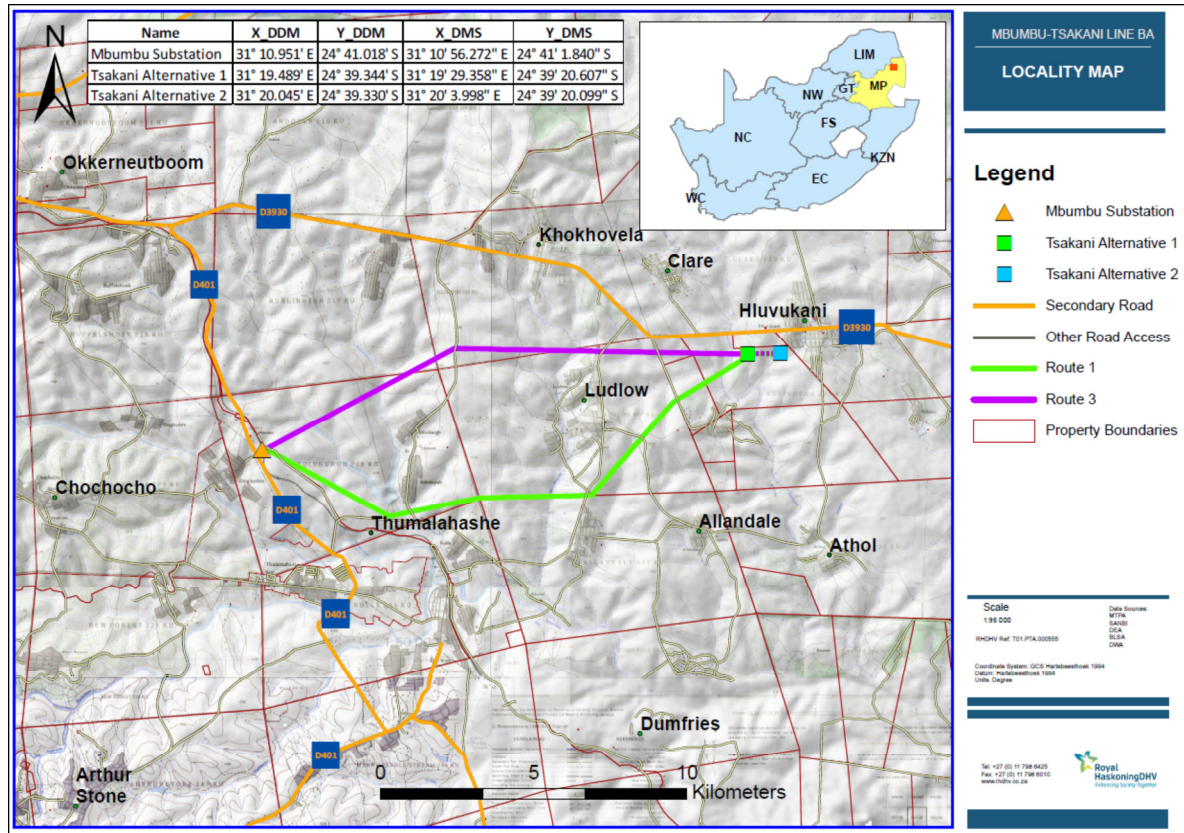


Figure 3: Proposed alternative route options

The above alignment alternatives will be evaluated during this Basic Assessment Study to determine the most environmentally feasible alignment/s.

1.1.1. Proposed Tsakani Substation – Site Description

An area of land approximately 150 m X 150 m (i.e. 1.5 ha) is required for the construction of the substation. Two site alternatives have been identified for the proposed Tsakani Substation as depicted in Figure 3. Both site alternatives for the proposed Tsakani Substation are located on a portion of land belonging to Mnisi and Amashangana Tribal Authorities. The nearest settlement is Hluvukani. The two site alternatives are situated on land which is dominated by degraded and transformed bushveld. The grass and forb layer is overgrazed and uninhabited. It is proposed that the site is accessed through a paved road from the gravel road off the D3930.

1.2. Technical Description – 132 kV Power Line

In South Africa, thousands of kilometres of high voltage power lines (i.e. 765 kV, 400 kV or 275 kV) transmit electricity generated at power stations to Eskom's major substations. At these major substations, the voltage is reduced, and the electricity is distributed to smaller substations all over the country through sub-transmission lines and power lines (i.e. 132 kV, 88 kV or 66 kV lines). At the substations the voltage is further reduced and the power is distributed to local users via numerous small power lines (i.e. 22 kV and 11 kV lines) referred to as reticulation lines. The power generated by Eskom can only be utilised from these points of supply, which transform the power into a usable voltage.

1.2.1. 132 kV Transmission Towers

Power line conductors are strung on in-line (suspension) transmission towers and bend (strain) transmission towers. The structures proposed to be used for the 132 kV power line for this project area the 132 kV steel monopole structures (refer to Figure 4). These poles weigh approximately 1200 kg each and vary in height from approximately 17.4 m to 21 m. The size of the footprint depends on the type of pole, i.e. whether it is a self supporting, guyed suspension or an angle strain pole structure. The size of the footprint ranges from 0.6 m x 0.6 m to 1.5 m x 1.5 m, with the larger footprint associated with the guyed suspension and angle strain pole used as bend/strain structures. The average span between two transmission towers is 200 m, but can vary between 250 m and 375 m depending on the ground profile (topography) and the terrain to be spanned. The self-supporting structure (suspension pole) is typically used along the straight sections of the power line, while the guyed intermediate or guyed suspension and angle strain structures are used where there is a bend in the power line alignment.

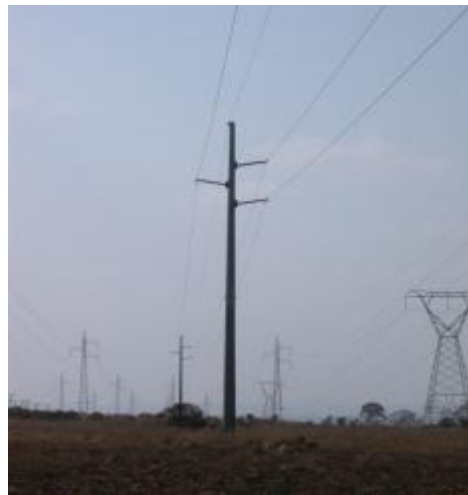


Figure 4: 132 kV steel monopole structure

1.2.2. Servitude Requirements and Clearances

The standard servitude width for a 132 kV power line is 31 m with 15.5 m on either each side from the centre of the line. In addition a 2 km (1 km on either side of the centre line of the power line) servitude corridor is proposed and assessed as there might be minor adjustments during the land negotiation process. The minimum vertical clearance to buildings, poles and structures not forming part of the power line must be 3.8 m, while the minimum vertical clearance between the conductors and the ground is 6.7 m.

The minimum distance of a 132 kV power line running parallel to proclaimed public roads is 95 m from the centre of the power line servitude to the centre of the road servitude. The minimum distance between any part of a tree or shrub and any bare phase conductor of a 132 kV power line must be 4 m, allowing for the possible sideways movement and swing of both the power line and the tree or shrub.

On receipt of an approval of the final corridor by the environmental authorities and after negotiations with landowners, the final definition of the centre line for the power line and co-ordinates of each bend in the line will be determined. Optimal transmission tower sizes and positions will be identified

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and verified using a ground survey (in terms of the Environmental Management Programme (EMPr) requirements).

A minimum 8 m (4 m either side of the centre line of the power line) wide strip is to be cleared of all trees and for stringing purposes only. If any tree or shrub in other areas will interfere with the operation and/or reliability of the power line it will be trimmed or completely cleared. The clearing of vegetation will take place, with the aid of a surveyor, along approved profiles and in accordance with the approved EMPr and minimum standards to be used for vegetation clearing for the construction of the proposed new power line as listed in Table 1 (Eskom, 2000).

Table 1: Minimum standards to be used for vegetation clearing for the construction of a new power line

Item	Standard	Follow up
Centre line of the proposed power line	Clear to a maximum (depending on transmission tower type and voltage) of an 8 m wide strip of all vegetation along the centre line. Vegetation to be cut within 100 mm of the ground. Treat stumps with herbicide.	Re-growth shall be cut within 100 mm of the ground and treated with herbicide, as necessary.
Inaccessible valleys (trace line)	Clear a 1 m strip for access by foot only, for the pulling of a pilot wire by hand.	Vegetation not to be disturbed after initial clearing – vegetation to be allowed to re-grow.
Access/service roads	Clear a maximum (depending on transmission tower type) 5 m wide strip for vehicle access within the maximum 8 m width, including de-stumping/cutting stumps to ground level, treating with a herbicide and re-compaction of soil.	Re-growth to be cut at ground level and treated with herbicide as necessary.
Proposed transmission tower position and proposed support/stay wire position	Clear all vegetation within proposed transmission tower position and within a maximum (depending on transmission tower type) radius of 5 m around the position, including de-stumping/cutting stumps to ground level, treating with a herbicide and re-compaction of soil. Allow controlled agricultural practices, where feasible.	Re-growth to be cut at ground level and treated with herbicide as necessary.
Indigenous vegetation within servitude area (outside of maximum 8 m strip)	Area outside of the maximum 8 m strip and within the servitude area, selective trimming or cutting down of those identified plants posing a threat to the integrity of the proposed power line.	Selective trimming.
Alien species within servitude area (outside of maximum 8 m strip)	Area outside of the maximum 8 m strip and within the servitude area, remove all alien vegetation within servitude area and treat with appropriate herbicide.	Cut and treat with appropriate herbicide.

1.2.3. Foundations

The type of terrain encountered, as well as the underlying geotechnical conditions 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). Strain structures require more extensive foundations for support than in-line suspension structures, which contribute to the cost of the construction of the line. The minimum working area required around a structure position is 20 m x 20 m.

Foundations will be mechanically excavated where access to the pole position is readily available. The same applies to the pouring of concrete required for the setting of the foundations. Prior to erecting the poles and filling of the foundations, the excavated foundations will be covered in order to safeguard unsuspecting animals and people from injury. All foundations are back-filled, stabilised through compaction, and capped with concrete at ground level.

1.2.4. Insulators

Composite insulators are used to connect the conductors to the transmission towers. Glass and porcelain have previously been used to connect the conductors for many years, and are the most common. They are, however, heavy and susceptible to breakage by vandals, as well as contamination by pollution. Composite insulators have a glass-fibre core with silicon sheds for insulation. Composite insulators are lightweight and resistant to both vandalism and pollution.

Composite (Long rod type) insulators with silicone based weather shed material will be used for strain assemblies. Composite horizontal line post insulators will be used for the intermediate structures and on the jumper supports.

1.2.5. Access

A vehicle access road is usually required to be established to allow access along the entire length of the servitude. Access is required during both the construction and operation/maintenance phases of the power line life cycle.

The access roads will be considered for the two alternative routes being evaluated for the proposed project. Areas along the preferred alignment without access points and roads will be negotiated with the necessary landowners, and will be established during the construction phase.

1.2.6. Timing

Construction for the project is planned to commence in July 2015 and will be undertaken over a period of approximately 18 months, with completion aimed for December 2016, provided construction proceeds as scheduled.

1.2.7. Ongoing Maintenance

During the life span of the power line i.e. approximately 25 years, ongoing maintenance is required to be performed from time to time. This maintenance work is undertaken by contractors employed by Eskom, and in compliance with the Environmental Management Programme (EMPr).

1.2.8. Construction Process for Power Line

Power lines are constructed in the following simplified sequence:

- Step 1:** Determination of technically feasible alternatives.
- Step 2:** EIA input into route selection and obtaining of relevant environmental permits.
- Step 3:** Negotiation of final route with affected landowners.
- Step 4:** Survey of the route.
- Step 5:** Selection of best-suited structures and foundations.
- Step 6:** Final design of power line and placement of transmission towers.

- Step 7:** Issuing of tenders and award of contract to construction companies.
- Step 8:** Vegetation clearance and construction of access roads (where required).
- Step 9:** Pegging of structures.
- Step 10:** Construction of foundations.
- Step 11:** Assembly and erection of structures.
- Step 12:** Stringing of conductors.
- Step 13:** Rehabilitation of disturbed area and protection of erosion sensitive areas.
- Step 14:** Testing and commissioning.
- Step 15:** Continued maintenance.

1.3. Technical Description – Mbumbu Substation Expansion

It is proposed that the existing Mbumbu traction substation be upgraded to a switching station. The existing site will be extended by 12.0 m on the southern side, 11.8 m on the western side and 14.0 m on the eastern side. Although the development footprint is increasing the output of the substation will not be increased.

In addition, a complete set of three Power Voltage Transformers (VT) and 4 x 132 kV Feeder Bays will be established at the substation. The existing 132 kV VTs will be repositioned to align with the proposed power line route. A standard control room will be built. The expansion of the Mbumbu site is depicted in Figure 5 and Figure 6 below.

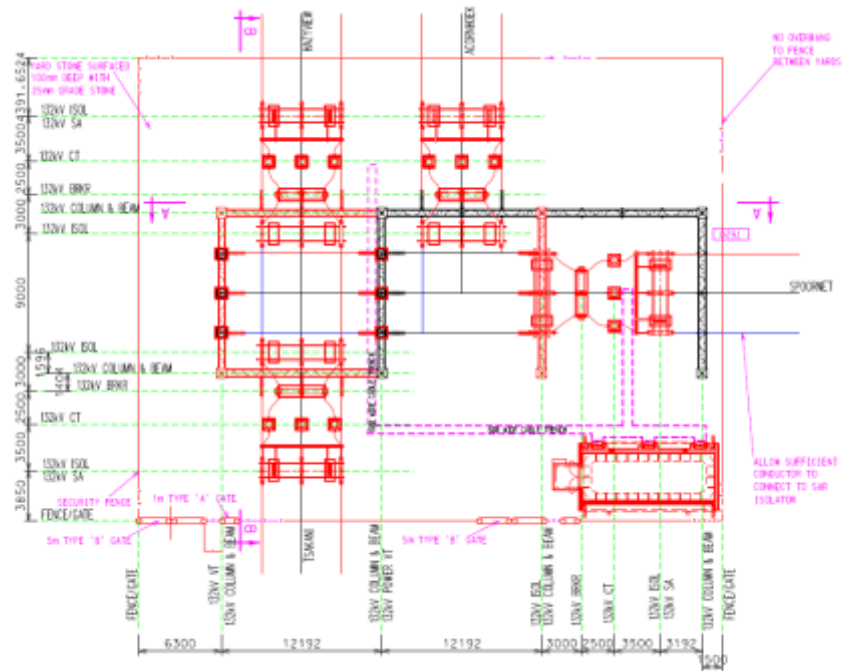


Figure 5: Proposed traction expansion in Mbumbu substation



Figure 6: Mbumbu substation footprint expansion

1.4. Technical Description – Proposed Tsakani Substation

A substation is a facility which converts electricity from higher to lower voltages. It is a collection point for incoming and outgoing power lines which provides switching facilities to convert high voltage electricity to a lower voltage. The proposed Tsakani Substation will have a high voltage 132 kV switching yard which will be able to hand the incoming 132 kV electricity from the existing Mbumbu Substation.

The proposed Tsakani Substation will contain a number of structures and equipment which includes (as depicted in Figure 7 below):

- 30 - 80 m paved access road off the existing gravel road
- 1 x 132 kV feeder bay;
- Sectionalized busbar;
- Standard control room;
- High Voltage transformer bay;
- Medium Voltage transformer bay;
- MV Box Bus bar with 8 bays without a bus section breaker;
- 4 x 22 kV Feeder bays;
- Camera surveillance;
- Remote oil holding dam;
- Lightning masts; and
- Electrified palisade fencing.

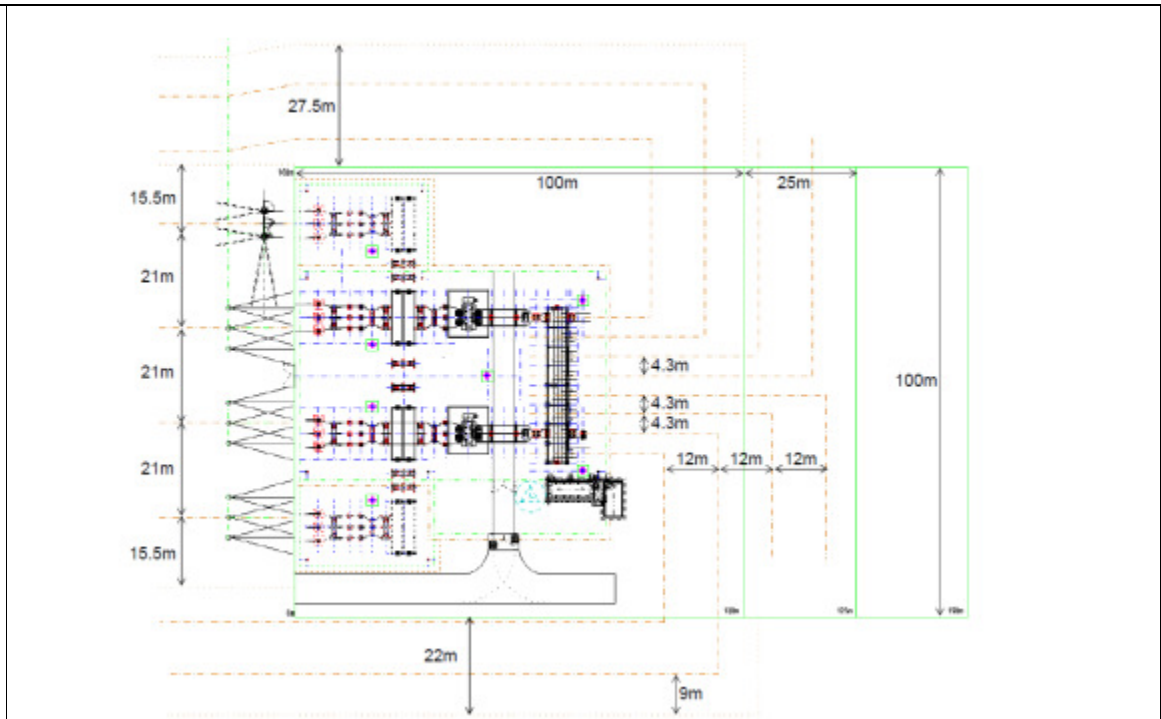


Figure 7: Proposed Tsakani substation site layout and line route

Earthing of the substation will be conducted in accordance with SCSASABF9 standard. In order to connect the new substation using satellite communication to the Eskom control transmission towers, an optical fibre cable will be used. Lighting would also typically be installed at a substation; light masts of 24 m in height would be installed. The purpose of this lighting is to enable floodlight-type lighting to the substation at night time should the need for night-time maintenance arise.

On site, security cameras and an electrified palisade fence (67 X 47 m of 2.4 m) will be erected to ensure that the substation is protected against power cable theft. The palisade fence will be located within the 150 m x 150 m substation servitude with two removable panels and two gates.

1.4.1. Construction Process

The proposed new Tsakani Substation and associated structures will be constructed in the following simplified sequence.

- Step 1:** Determination of technically feasible alternatives.
- Step 2:** Environmental input into substation positioning and obtaining of relevant environmental authorisation.
- Step 3:** Negotiation with affected landowners.
- Step 4:** Survey of the site.
- Step 5:** Design of substation.
- Step 6:** Issuing of tenders and award of contract.
- Step 7:** Vegetation clearance and construction of access roads (where required).
- Step 8:** Construction of terrace and foundations.
- Step 9:** Assembly and erection of equipment.
- Step 10:** Connection of conductors to equipment.
- Step 11:** Rehabilitation of any disturbed areas and protection of erosion sensitive areas.
- Step 12:** Testing and commissioning.
- Step 13:** Continued maintenance.

1.4.2. Access / Service Roads

Eskom will make use of existing access roads for construction, operation and maintenance. Additional roads will be constructed where there is no access. A 30 – 80 m paved access road is proposed from the existing gravel (informal) road to the Tsakani Substation.

1.4.3. Ongoing Maintenance

The standard life span of a substation and its associated components is approximately 25 years. During this period, on-going maintenance is performed, and components are replaced, which can significantly extend the life span beyond 25 years, if required.

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 Item 10: The construction of facilities or infrastructure for the transmission and distribution of electricity – i. Outside urban areas or industrial complexes with a capacity of more than 33 but less than 275 kilovolts.	A proposed new 18 km 132 kV power line will be constructed from the existing Mbumbu substation to the new Tsakani substation.
GN R.544 Item 22: The construction of a road, outside urban areas, i. With a reserve wider than 13.5 meters, or ii. Where no reserve exists where the road is wider than 8 meters.	Access to and from the site may be required where there is no road access during the construction and operational (maintenance) phases of the project. Access will be required to the proposed Tsakani substation from existing roads. A 30 – 80 m paved access road is proposed.
GN R.544 Item 23: The transformation of undeveloped, vacant or derelict land to –It will be upgraded. ii. residential, retail, commercial, recreational, industrial or institutional use, outside an urban area and where the total area to be transformed is bigger than 1ha but less than 20ha; – except where such transformation takes place – i. for linear activities; or ii. for purposes of agriculture or afforestation, in which case Activity 16 of Notice No. R. 545 applies.	The transformation of land for industrial purposes (electricity distribution) will be required. It is envisaged that the new Tsakani substation will have a 1.5 ha footprint. It is also envisaged that the current Mbumbu substation will be expanded however Activity 38 (the expansion of facilities or infrastructure for the transmission and distribution of electricity where the expanded capacity will exceed 275 kV and the development footprint will increase) has not been triggered as the capacity will not exceed 132 kV.
GN R.544 Item 24: The transformation of land bigger than 1000 square metres in size, to residential, retail, commercial, industrial or institutional use, where, at the time of the coming into effect of this schedule such land was zoned open space, conservation or had an equivalent zoning.	The transformation of land for industrial purposes (electricity distribution) will be required – the relevance of this activity will be verified once the zoning of affected land portions have been determined.
GN R.544 Item 26: Any process or activity	The activity may require the clearing of

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<p>identified in terms of Section 53(1) of the National Environmental Management: Biodiversity Act, (Act No. 10 of 2004).</p>	<p>indigenous vegetation as part of site preparation for construction.</p>
<p>GN R.544 Item 47: The widening of road by more than 6 meters, or the lengthening of a road by more than 1 kilometre –</p> <ol style="list-style-type: none"> i. where the existing reserve is wider than 13,5 meters; or ii. where no reserve exists, where the existing road is wider than 8 metres. 	<p>Access roads to the transmission towers (pylons) structures may be required during construction and for maintenance purposes during the operational phase. The proposed project will make use of existing access roads and tracks as far as possible.</p>
<p>GN R.546 Item 3: The construction of masts or transmission towers of any material or type used for telecommunication broadcasting or radio transmission purposes where the mast: a) is to be placed on a site not previously used for this purpose, and b) will exceed 15 metres in height, but excluding attachments to existing buildings and masts on rooftops.</p> <p>In the Mpumalanga Province:</p> <ol style="list-style-type: none"> ii. Outside urban areas: <ol style="list-style-type: none"> (aa) A protected area identified in terms of NEMPAA, excluding conservancies; (bb) National Protected Area Expansion Strategy Focus area; (cc) Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as adopted by the competent authority; (dd) Sites or areas identified in terms of an International Convention; (ee) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans; (ff) Core areas in biosphere reserves; (gg) Areas within 10 kilometres from national parks or world heritage sites or 5 kilometres from any other protected area identified in terms of NEMPAA or from the core areas of a biosphere reserve; (hh) Areas seawards of the development setback line or within 1 kilometre from the high-water mark of the sea if no such development setback line is determined. 	<p>A communication transmission tower may be erected for the proposed Tsakani substation.</p>
<p>GN R.546 Item 4: The construction of a road wider than 4 metres with a reserve less than 13.5 metres.</p> <p>In the Mpumalanga province:</p>	<p>Access to and from the site may be required where there is no road access during the construction and operational (maintenance) phases of the project.</p>

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<p>ii. Outside urban areas, in:</p> <p>(aa) A protected area identified in terms of NEMPAA, excluding conservancies;</p> <p>(bb) National Protected Area Expansion Strategy Focus areas;</p> <p>(cc) Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as adopted by the competent authority;</p> <p>(dd) Sites or areas identified in terms of an International Convention;</p> <p>(ee) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans;</p> <p>(ff) Core areas in biosphere reserves;</p> <p>(gg) Areas within 10 kilometres from national parks or world heritage sites or 5 kilometres from any other protected area identified in terms of NEMPAA or from the core areas of a biosphere reserve.</p>	
<p>GN R.546 Item 12: The clearance of an area of 300 square meters or more of vegetation where 75% or more of the vegetative cover constitutes indigenous vegetation.</p> <p>(a) Within any critically endangered or endangered ecosystem listed in terms of section 52 of the NEMBA or prior to the publication of such a list, within an area that has been identified as critically endangered in the National Spatial Biodiversity Assessment 2004;</p> <p>(b) Within critical biodiversity areas identified in bioregional plans;</p>	<p>Land will need to be cleared in order to construct the new Tsakani substation.</p>
<p>GN R.546 Item 13: The clearance of an area of 1 hectare or more of vegetation where 75% or more of the vegetative cover constitutes indigenous vegetation.</p> <p>(a) Critical biodiversity areas and ecological support areas as identified in systematic biodiversity plans adopted by the competent authority.</p> <p>(b) National Protected Area Expansion Strategy Focus areas.</p> <p>In the Mpumalanga province:</p> <p>ii. Outside urban areas, the following:</p> <p>(aa) A protected area identified in terms of NEMPAA, excluding conservancies;</p>	<p>Land will need to be cleared in order to construct the new Tsakani substation. The applicability of this activity will be determined once the ecological study is conducted to determine the status of the vegetation and if the threshold will be met.</p>

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<p>(bb) National Protected Area Expansion Strategy Focus areas;</p> <p>(cc) Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as adopted by the competent authority;</p> <p>(dd) Sites or areas identified in terms of an International Convention;</p> <p>(ee) Core areas in biosphere reserves;</p> <p>(ff) Areas within 10 kilometres from national parks or world heritage sites or 5 kilometres from any other protected area identified in terms of NEMPAA or from the core area of a biosphere reserve.</p>	
<p>GN R.546 Item 19: The widening of road by more than 4 meters, or the lengthening of a road by more than 1 kilometre.</p> <p>In the Mpumalanga province:</p> <p>ii. Outside urban areas, in:</p> <p>(aa) A protected area identified in terms of NEMPAA, excluding conservancies;</p> <p>(bb) National Protected Area Expansion Strategy Focus areas;</p> <p>(cc) Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as adopted by the competent authority;</p> <p>(dd) Sites or areas identified in terms of an International Convention;</p> <p>(ee) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans;</p> <p>(ff) Core areas in biosphere reserves;</p> <p>(gg) Areas within 10 kilometres from national parks or world heritage sites or 5 kilometres from any other protected area identified in terms of NEMPAA or from the core area of a biosphere reserve.</p>	<p>Access roads to the transmission towers (pylons) structures may be required during construction and for maintenance purposes during the operational phase. The proposed project will make use of existing access roads and tracks as far as possible.</p>

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;

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- (d) the technology to be used in the activity;
- (e) the operational aspects of the activity; and
- (f) the option of not implementing the activity.

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

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

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

a) Site alternatives

Alternative 1 (Preferred alternative)		
Description	Lat (DDMMSS)	Long (DDMMSS)
Tsakani Alternative Site 1	24° 39' 20.6"S	31° 19' 29.4"E
Alternative 2		
Description	Lat (DDMMSS)	Long (DDMMSS)
Tsakani Alternative Site 2	24° 39' 20.1"S	31° 20' 4.0"E

In the case of linear activities:

Alternative:

Alternative S1 (preferred) – Green Route

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

Latitude (S):

Longitude (E):

24° 41' 0.6"S	31° 11' 0.7"E
24° 41' 52.2"S	31° 14' 46.8"E
24° 39' 20.5"S	31° 19' 31.2"E

Alternative S2 (if any)

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

Alternative S3 (if any) – Purple Route

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

24° 41' 0.6"S	31° 11' 0.7"E
24° 39' 14.4"S	31° 14' 20.1"E
24° 39' 20.5"S	31° 19' 31.2"E

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Please note: Alternative S2 was deemed not feasible. Therefore it will not be assessed in this study. For ease of reference, the two alternatives to be assessed are Alternative S1 (Green route) and Alternative S3 (Purple route).

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 – refer to **Appendix J**.

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 (No Lay-out Alternatives) – Not applicable

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

c) Technology alternatives (No Technology Alternatives) – Not applicable

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

d) Other alternatives (e.g. scheduling, demand, input, scale and design alternatives) (No Other Alternatives) – Not applicable

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

e) No-go alternative

The No-go Alternative would be the status quo however there is great demand and need for electricity generation within the area. The availability of reliable electricity will stimulate the establishment of economic activities in the area. Currently, the majority of the land is vacant or composed of small settlements with no meaningful economic activity. The proposed power lines and substation will strengthen the distribution of electricity in the general area. Therefore, the No-go Alternative is not a beneficial or viable option for the communities of Thulamahashe, Edinburgh, Ludlow, and Dingleydale.

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: Tsakani Substation

Alternative A1¹ (preferred activity alternative)

Alternative A2 (if any)

Alternative A3 (if any)

Size of the activity:

	150 x 150 m ²
	150 x 150 m ²
	m ²

or, for linear activities:

Alternative: Power Line

Alternative A1 (preferred activity alternative)

Green Route

Alternative A2 (if any)

Alternative A3 – Purple Route

Length of the activity:

	18 020 m
	m
	16 200 m

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

Alternative:

Alternative A1 (preferred activity alternative)

Green Route

Alternative A2 (if any)

Alternative A3 – Purple Route

Size of the site/servitude:

	528 550 m ²
	m ²
	479 880 m ²

4. SITE ACCESS

Does ready access to the site exist?

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

YES	NO
	30 – 80 m

Describe the type of access road planned:

Access is required to the new Tsakani Substation. It is proposed that a 30 – 80 m paved road be constructed off the existing gravel road. The width of the road is approximately 6 – 10 m. A vehicle access road is also required to be established along the entire length of the servitude. Access is will be for both during both the construction and operation/maintenance phases of the power line life cycle. The access roads will be considered for the two alternative power line routes being evaluated for the proposed project. Should a new access road be required to be constructed for the final route, it will need to be negotiated with the individual landowner/s concerned. As far as possible existing access roads will be utilised.

¹ "Alternative A." refer to activity, process, technology or other alternatives.

BASIC ASSESSMENT REPORT

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

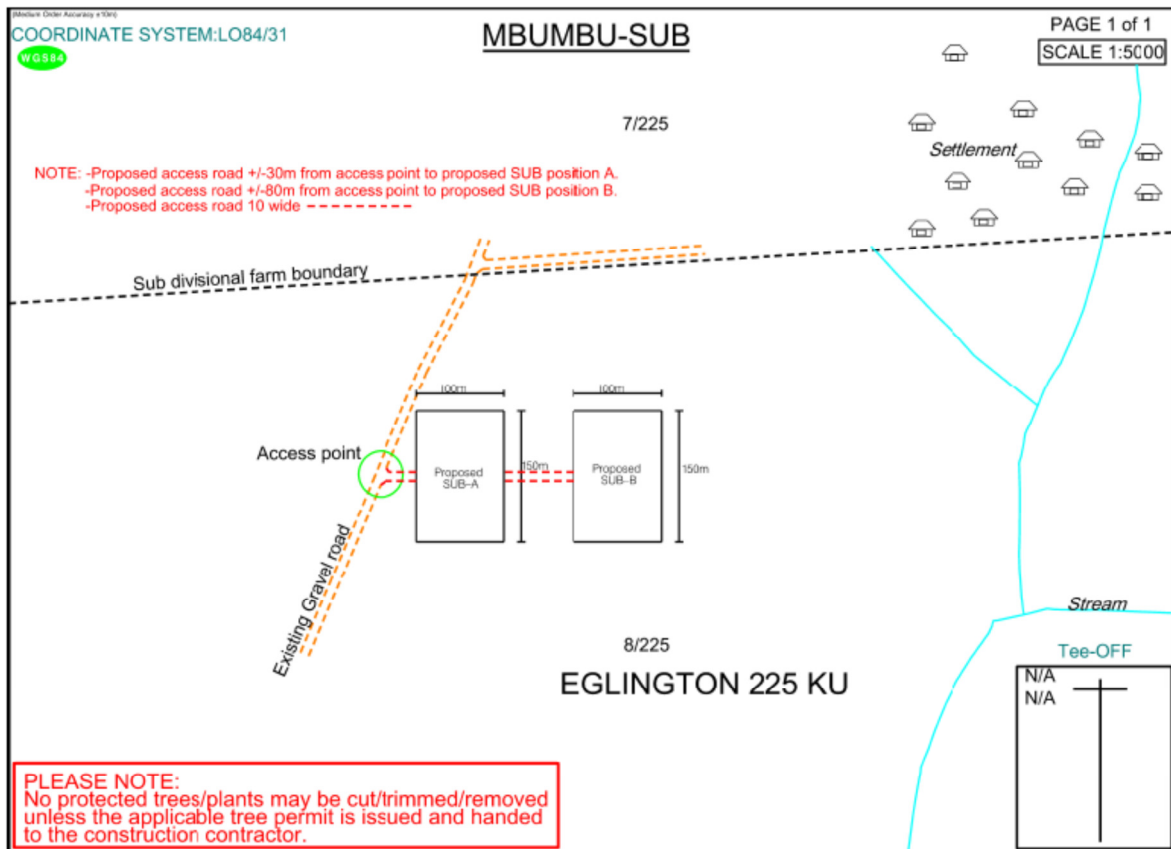


Figure 8: Proposed site access

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).

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.

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**.

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.

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.

10. ACTIVITY MOTIVATION

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

1. Is the activity permitted in terms of the property's existing land use rights?	YES	NO	Please explain
Rural and agricultural land use rights are currently applicable to the study area. The land use rights for the proposed site for the Tsakani Substation may need to be altered to support the electrical infrastructure required.			
2. Will the activity be in line with the following?			
(a) Provincial Spatial Development Framework (PSDF)	YES	NO	Please explain
It forms part of the Local Municipality SDF which is linked to the PSDF. Refer to Section 2c below.			
(b) Urban edge / Edge of Built environment for the area	YES	NO	Please explain
N/A as the project is not in the urban edge.			
(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
According to the Bushbuckridge Local Municipality (BLM) Spatial Development Framework (2010), the Municipality will continue to expand its formal electricity networks in order to eventually reach and serve all rural and urban communities within the BLM municipal area. In addition to this, the Spatial Development Framework (2010) states that the Municipality should be striving towards providing sufficient infrastructure capacity at the nodal points in order to ensure that it can facilitate and enhance the processes of local economic development and service delivery at these nodes. The establishment of the proposed Tsakani Substation and associated power line from Mbumbu Substation, will provide the necessary expansion of the electrical networks within the BLM and provide essential power to rural communities within the Municipality.			
(d) Approved Structure Plan of the Municipality	YES	NO	Please explain
Although the Structure Plan of the Municipality is not available, it is assumed that the proposed project is needed in order to provide sufficient capacity to new clients and improve the reliability of energy supply.			
€ 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
An Environmental Management Framework has not been developed for the Ehlanzeni District Municipality.			
(f) Any other Plans (e.g. Guide Plan)	YES	NO	Please explain
Not applicable.			

BASIC ASSESSMENT REPORT

<p>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)?</p>	YES	NO	Please explain
<p>According to the Ehlanzeni District Integrated Development Plan 2012/13 to 2015/16, the BLM is plagued by insufficient electrification and power failures. There is a need to improve the current infrastructure to an acceptable level. A strategy is in place to facilitate the upgrading of electricity stations to minimize power failures. The proposed project is therefore in line with the IDP.</p>			
<p>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.)</p>	YES	NO	Please explain
<p>There are limited electrical networks within the BLM and as such overloading has occurred on the Acornhoek power line. As a result, the proposed power line from Mbumbu Substation to the proposed Tsakani Substation will strengthen capacity and power supply within the area.</p>			
<p>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.)</p>	YES	NO	Please explain
<p>The necessary services and adequate capacity are currently available. No additional services are needed. Therefore no confirmation by the relevant Municipality will be necessary. The aim of the proposed Tsakani Substation and associated power line is to split the current overloaded feeders in the area as well as to provide sufficient capacity for new clients and improve the reliability of energy supply.</p>			
<p>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.)</p>	YES	NO	Please explain
<p>The generation of electricity and the supply thereof is intrinsically planned for in the BLM SDF and IDP therefore no comment for the Municipality is necessary.</p>			
<p>7. Is this project part of a national programme to address an issue of national concern or importance?</p>	YES	NO	Please explain
<p>The proposed project falls within Strategic Infrastructure Projects (SIPs) 10: Electricity Transmission and Distribution for all where it is proposed that the transmission and distribution network is expanded to: address historical imbalances, provide access to electricity for all and support economic development. Electrification of rural areas is of national importance as it stimulates economic growth and enables local communities to meet their every day needs.</p>			

BASIC ASSESSMENT REPORT

<p>8. Do location factors favour this land use (associated with the activity applied for) at this place? (This relates to the contextualisation of the proposed land use on this site within its broader context.)</p>	<input checked="" type="radio"/> YES	<input type="radio"/> NO	Please explain
<p>The location factors are not ideal for the proposed power line and substation however there is a great need for electrification within the area. The entire proposed project is part of what is referred to by Eskom Distribution as the Green Valley Network which is located to the south east of Limpopo and the north east of Mpumalanga. This network is currently experiencing high electrification growth, natural growth of the existing load and network constraints in terms of overload under normal and emergency conditions. The proposed construction of the Tsakani substation, Mbumbu Substation upgrade and construction of the 132 kV power line was initiated in order to:</p> <ul style="list-style-type: none"> • Deload the Acornhoek substation. • Deload the Mbumbu Substation. • Cater for load growth in the Acornhoek area which covers Tinswalo, Champagne, Marieskop and Timbavati. • Provide network flexibility. • Improve reliability of the network. 			
<p>9. Is the development the best practicable environmental option for this land/site?</p>	<input type="radio"/> YES	<input checked="" type="radio"/> NO	Please explain
<p>The new substation will assist in de-loading the currently overloaded infrastructure in the area and reduces the customer base per line thus, improving the system average interruption duration. The new power line will avoid any environmental and social sensitive areas such as core biodiversity areas, wetlands, and human settlements.</p>			
<p>10. Will the benefits of the proposed land use/development outweigh the negative impacts of it?</p>	<input type="radio"/> YES	<input checked="" type="radio"/> NO	Please explain
<p>The availability of reliable electricity will stimulate the establishment of economic activities in the area. Currently, the majority of the land is vacant or composed of small settlements with no meaningful economic activity. Therefore, the proposed power lines and substation as well as upgrade of the existing Mbumbu Substation will strengthen the distribution of electricity in the general area.</p>			
<p>11. Will the proposed land use/development set a precedent for similar activities in the area (local municipality)?</p>	<input type="radio"/> YES	<input checked="" type="radio"/> NO	Please explain
<p>The proposed land use will not set a precedent for similar activities.</p>			
<p>12. Will any person's rights be negatively affected by the proposed activity/ies?</p>	<input checked="" type="radio"/> YES	<input type="radio"/> NO	Please explain
<p>The proposed power line has been aligned as far as possible to avoid traversing through any property which may trigger negatively affects on people's rights.</p>			
<p>13. Will the proposed activity/ies compromise the "urban edge" as defined by the local municipality?</p>	<input type="radio"/> YES	<input checked="" type="radio"/> NO	Please explain
<p>The proposed project falls outside the urban edge and will not compromise the urban edge.</p>			
<p>14. Will the proposed activity/ies contribute to any of the 17 Strategic Integrated Projects (SIPS)?</p>	<input type="radio"/> YES	<input checked="" type="radio"/> NO	Please explain
<p>The proposed power line and substation will contribute to SIP10 (refer to Appendix J for Letter of Confirmation) which will expand the transmission and distribution network to address historical imbalances, provide access to electricity for all and support economic development.</p>			

BASIC ASSESSMENT REPORT

15. What will the benefits be to society in general and to the local communities?	Please explain
The electrification of the BLM will lead to economic growth and development. It will also provide necessary electricity to rural communities who previously had no or limited access to electricity. This will enable community members to meet their needs for every day survival.	
16. Any other need and desirability considerations related to the proposed activity?	Please explain
The local communities will benefit from the accessible source of power and the growth of economic activities will be stimulated. In addition, local people could potentially be employed during construction to undertake tasks such as clearing bushes and digging foundations.	
17. How does the project fit into the National Development Plan for 2030?	Please explain
The National Development Plan for 2030 seeks to promote economic growth and development through the provision of quality energy services that are competitively priced, reliable and efficient. The National Development Plan also seeks to promote social equity through the expansion of access to energy services. These objectives for the energy sector of South Africa are being met by Eskom through the development of the proposed power line and substation.	
18. Please describe how the general objectives of Integrated Environmental Management as set out in section 23 of NEMA have been taken into account.	
<p>The impacts associated with the proposed power line and substation will be (Section D) identified, predicted and evaluated to minimise negative impacts, maximise benefits and promote compliance with the principles of environmental management set out in Section 2 of NEMA.</p> <p>Mitigation and management measures to minimize negative impacts and maximize benefits from the proposed power line and substation have been included in the Environmental Management Programme (EMPr) attached as Appendix G to this Report.</p>	
19. Please describe how the principles of environmental management as set out in section 2 of NEMA have been taken into account.	
<p>The proposed power line and substation will be sustainable in terms of the following:</p> <ul style="list-style-type: none"> • Social: Local communities will benefit from the project in terms of receiving adequate electrical supply that server to meet basic human needs. The local community and society in general will also benefit from the project in terms of direct and indirect job creation; • Economic: Provision of adequate electrical supply is a major contributor to the economic development within the BLM. Society in general will benefit from the project in terms of indirect job creation as it will contribute to improving service delivery; and • Environmentally: the proposed power line and substation will avoid and bypass any environmentally and socially sensitive areas such as core biodiversity areas, wetlands and human settlements and where this is not possible, mitigation measures have been proposed to minimise the impact. <p>Possible negative and positive impacts were identified and mitigation measures to minimize/optimize these impacts have been included in the EMPr attached as Appendix G to this Report.</p>	

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:

BASIC ASSESSMENT REPORT

Title of legislation, policy or guideline	Applicability to the project	Administering authority	Date
The Constitution (Act No. 108 of 1996)	Ensuring basic human needs are met through the electrification of rural areas	National and Provincial	18 December 1996
National Environmental Management Act No. 107 of 1998 (as amended) – EIA Regulations 2010 (as amended)	The proposed project triggers Activities from Listing Notice 1 and 3.	National and Provincial	18 June 2010
National Environmental Management: Air Quality Act No. 39 of 2004	Air quality may be impacted during the construction phase of the power line and substation	National and Provincial	24 February 2005
Occupational Health and Safety Act No. 85 of 1993	Occupational Health and Safety may be at risk during the construction of the proposed power line and substation	National and Provincial	23 June 1993
The Conservation of Agriculture Resource Act No. 43 of 1983	Agricultural land may be impacted during the construction of the proposed power line and substation	National and Provincial	21 April 1983
National Heritage Resources Act No. 25 of 1999	Heritage resources may be impacted during the life cycle of the project	National and Provincial	14 April 1999
National Environmental Management: Waste Act No. 59 of 2008 and GN 921	Waste may be generated during the construction of the power line and substation	National and Provincial	10 March 2009 29 November 2013
National Environmental Management: Biodiversity Act No. 10 of 2004 and Regulations. <ul style="list-style-type: none"> • Threatened or protected species (GN 388) • Lists of species that are threatened or protected (GN 389) • Alien and invasive species regulations (GNR 506) • Publication of exempted alien species (GNR 509) • Publication of National list of invasive species (GNR 507) • Publication of prohibited 	Biodiversity may be impacted throughout the life cycle of the project	National and Provincial	7 June 2004 19 July 2013

BASIC ASSESSMENT REPORT

Title of legislation, policy or guideline	Applicability to the project	Administering authority	Date
alien species (GNR 508)			
National Water Act No. 36 of 1998	Water resources might be traversed during the construction of the power line	National and Provincial	26 August 1998
National Forest Act No. 84 of 1998	Forested areas may be removed during the construction of the power line and substation	National and Provincial	30 October 1998
Mpumalanga Biodiversity Sector Plan	Conservation areas and CBAs must be avoided	Provincial	2013
Guidelines for Dealing with Bird Problems of Transmission Lines and Transmission towers	Bird problems during operation need to be solved in an environmental friendly way	National and Provincial	1983
Mpumalanga Roads Act (No 1 of 2008)	Roads planning	Provincial	2008
Bushbuckridge Local Municipality IDP	It provides basic key service delivery challenges in areas that have been prioritised for 2012 – 2016 financial years.	Local Municipality	2012 – 2016
Bushbuckridge Local Municipality SDF	Set out objectives that reflect the desired spatial form of the BLM, containing strategies and policies regarding the manner in which the objectives (especially with regards to desirable land use patterns, spatial reconstruction of the Municipality and the location and nature of development within the BLM) will be achieved.	Local Municipality	2010
Ehlanzeni District IDP	Process through which municipalities prepare strategic development plans for a five year period. An IDP is a principal for Local Government used to guide the developmental agenda and Municipal budgets, land use development, and management, promotion of local economic development, and institutional transformation in a consultative and systematic manner to ensure that the District meets the needs of its	District Municipality	2012/13 – 2015/16

BASIC ASSESSMENT REPORT

Title of legislation, policy or guideline	Applicability to the project	Administering authority	Date
	resident's.		
Eskom Guidelines			
<ul style="list-style-type: none"> • Standards for Bush Clearing • Oil Spill Clean-Up and Rehabilitation Standards 			
Other Local Municipality Bylaws			

12. WASTE, EFFLUENT, EMISSION AND NOISE MANAGEMENT

20) Solid waste management

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

YES **NO**

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

Unknown at this stage

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

Waste will be extracted and disposed off at the nearest registered landfill site in the Bushbuckridge municipal area.

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

Waste will be disposed off at the nearest registered landfill site in the Bushbuckridge municipal area.

Will the activity produce solid waste during its operational phase?

YES **NO**

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

M³

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

N/A

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

N/A

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

N/A

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

Can any part of the solid waste be classified as hazardous in terms of the NEM:WA?

YES **NO**

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

Is the activity that is being applied for a solid waste handling or treatment facility?

YES **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.

BASIC ASSESSMENT REPORT

b) Liquid effluent

Will the activity produce effluent, other than normal sewage, that will be disposed of in a municipal sewage system?

YES	NO
-----	----

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

M ³

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

YES	NO
-----	----

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

Will the activity produce effluent that will be treated and/or disposed of at another facility?

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 than exhaust emissions and dust associated with construction phase activities?

YES	NO
-----	----

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

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:

<p>The major potential source emissions into the atmosphere is fugitive dust emissions anticipated during the construction, operation and maintenance phases. Vehicle entrained dust from access/service roads may be prevalent, although these are usually not significant.</p>
--

<p>Eskom shall ensure the implementation of effective and regular control techniques for fugitive dust sources. As with the construction phase, it should be taken into consideration that watering certain areas in order to suppress fugitive dust may result in erosion. It may be appropriate not to implement dust suppression mitigation in such areas.</p>

<p>Small quantities of noxious and/or offensive gaseous air pollutants and smoke could be generated during operation as a result of combustion products from vehicle engines. However these emissions are generally negligible. In order to avoid the emission of gaseous air pollutants, Eskom shall ensure that all vehicles are kept in a serviceable condition to avoid excessive exhaust fumes.</p>
--

<p>The above impacts are negligible and therefore not considered significant.</p>

d) Waste permit

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

YES	NO
-----	----

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

e) Generation of noise

Will the activity generate noise?

YES	NO
-----	----

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

YES	NO
-----	----

National Environmental Management: Air Quality Act (Act No. 39 of 2004) – Section 34: Control of Noise

Describe the noise in terms of type and level:

Noise levels will be restricted to day time hours, and limited to the construction period. In order to limit noise generation during maintenance activities, Eskom shall provide standard silencer units for all equipment and vehicles. Eskom shall also ensure that all vehicles and equipment are in good working order.

13. WATER USE

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

Municipal	Water board	Groundwater	River, stream, dam or lake	Other	The activity will not use water
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If water is to be extracted from groundwater, river, stream, dam, lake or any other natural feature, please indicate the volume that will be extracted per month:

litres	
YES	NO

 Does the activity require a water use authorisation (general authorisation or water use license) from the Department of Water Affairs?
 If YES, please provide proof that the application has been submitted to the Department of Water Affairs.

14. ENERGY EFFICIENCY

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

None.

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

None.

SECTION B: SITE/AREA/PROPERTY DESCRIPTION

Important notes:

- 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): A

132 kV power line: Alternative 1 – Green Route

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

- 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 description/physical address:

Province	Mpumalanga Province
District Municipality	Ehlanzeni District Municipality
Local Municipality	Bushbuckridge Local Municipality
Ward Number(s)	N/A
Farm name and number	Eglington 225KU, Ludlow 227KU, and Edinburgh 228KU
Portion number	Eglington 225KU: 5, 8 Ludlow 227KU: 0 Edinburgh 228KU: 0
SG Code	T0KU00000000022500005 T0KU00000000022500008 T0KU00000000022700000 T0KU00000000022800000

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

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

Rural

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? YES NO

BASIC ASSESSMENT REPORT

1. GRADIENT OF THE SITE

Indicate the general gradient of the site.

Alternative S1: Green Route

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

Alternative S2 (if any):

Flat	1:50 – 1:20	1:20 – 1:15	1:15 – 1:10	1:10 – 1:7,5	1:7,5 – 1:5	Steeper than 1:5
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Alternative S3 (if any):

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

2. LOCATION IN LANDSCAPE

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

2.1 Ridgeline	<input type="checkbox"/>	2.4 Closed valley	<input type="checkbox"/>	2.7 Undulating plain / low hills	<input type="checkbox"/>
2.2 Plateau	<input type="checkbox"/>	2.5 Open valley	<input type="checkbox"/>	2.8 Dune	<input type="checkbox"/>
2.3 Side slope of hill/mountain	<input type="checkbox"/>	2.6 Plain	<input checked="" type="checkbox"/>	2.9 Seafront	<input type="checkbox"/>
2.10 At sea	<input type="checkbox"/>				

3. GROUNDWATER, SOIL AND GEOLOGICAL STABILITY OF THE SITE

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

	Alternative S1: Green Route		Alternative S2:		Alternative S3 (if any):	
	YES	NO	YES	NO	YES	NO
Shallow water table (less than 1.5m deep)	YES	NO	YES	NO	YES	NO
Dolomite, sinkhole or doline areas	YES	NO	YES	NO	YES	NO
Seasonally wet soils (often close to water bodies)	YES	NO	YES	NO	YES	NO
Unstable rocky slopes or steep slopes with loose soil	YES	NO	YES	NO	YES	NO
Dispersive soils (soils that dissolve in water)	YES	NO	YES	NO	YES	NO
Soils with high clay content (clay fraction more than 40%)	YES	NO	YES	NO	YES	NO
Any other unstable soil or geological feature	YES	NO	YES	NO	YES	NO
An area sensitive to erosion	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.

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).

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

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

5. SURFACE WATER

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

Perennial River	YES	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.

Macro Drainage Characteristics

The east-west power line alternative routes broadly run perpendicular to the direction of most drainage in the study area which is south-ward draining towards the Sand River that drains in a south-easterly direction from the escarpment to the west. Both power line alternatives bisect two quaternary catchments, with the western part of the study area (roughly west of the settlement of Edinburgh) falling into the catchment X32C, and the eastern part of the study area falling into the catchment X32G. The X32C catchment is comprised of a number of tributaries of the Sand River, with the primary tributary being the Nwandlamuhari River. The Mphyanyana and Sephiriri Rivers which are crossed by the alignments fall within this catchment. The X32G catchment comprises of one of the upper reaches of the Sand River along with a number of tributaries including the Khokhovela River and the Molapakgomo River which drain southwards and which are crossed by the proposed alignment alternatives.

Surface Water Typology

Of the larger riverine systems in the study area (as mentioned above), only the Sand River is perennial, and the remainder of the rivers and smaller watercourses are seasonal in nature, only flowing during the wet season or after periods of rainfall.

The vast majority of the surface water features that are crossed by the proposed power line alternative routes are small episodic drainage lines. While certain of these riverine systems are characterised by the presence of hydric soils, not all rivers / drainage lines present within the study area can be considered 'true wetlands' in the sense that they contain hydric soils.

Wetlands and Riparian Vegetation

Whilst the majority of surface water features in the area are characterised by channelled flow, a proportion of wetlands in the area are either seepage or valley bottom wetlands in which diffuse, or un-channelled flow occurs. Certain of the downstream reaches of the larger river systems (i.e. the Mphanyana River downstream of the Edinburgh dam and the Molapagomo River) in the study area could be described as being more typical valley bottom wetlands, rather than riverine drainage features.

The last type of wetland encountered in the study area is the seepline, or hydrologically unconnected hillslope seepage-type wetland. These typically were found to occur on the midslopes being lateral features that roughly aligned along the slope contours rather than down it. They are generally devoid of woody vegetation with the seeplines encountered in the study being characterised by a dense layer of grasses and sedges.

The Green route contains two major river / riparian crossings that are characterised by a reed-dominated state, thus the impact of the power line on the riparian habitat integrity would be less intense. The Green route (Alternative 1) is generally located closer to settlements and areas with a higher human footprint over a greater portion of the alignment than the Purple route (Alternative 2). The Green route thus results in a greater number of crossings that are in an impacted state than the Purple route that largely runs through areas of woodland in a partially or largely natural state, with a resultant greater number of crossings with a higher ecological category.

However it should be noted that in terms In terms of the sensitivity analysis undertaken as part of the wider Basic Assessment Process a 32 m wide buffer has been delineated beyond the outer boundaries of all wetland / riparian areas along the respective alternative alignments. Where towers have to be placed within these 32 m buffer zones, this infrastructure should not exceed 50 m² in size otherwise Activity 11 (LN 1) will be triggered. The depiction of this 32 m buffer zone is to ensure for easy demarcation / pegging of this area during construction.

6. LAND USE CHARACTER OF SURROUNDING AREA

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

Natural area	Dam or reservoir	Polo fields
Low density residential	Hospital/medical centre	Filling station ^H
Medium density residential	School	Landfill or waste treatment site
High density residential	Tertiary education facility	Plantation
Informal residential ^A	Church	Agriculture
Retail commercial & warehousing	Old age home	River, stream or wetland

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Light industrial	Sewage treatment plant ^A	Nature conservation area
Medium industrial ^{AN}	Train station or shunting yard ^N	Mountain, koppie or ridge
Heavy industrial ^{AN}	Railway line^N	Museum
Power station	Major road (4 lanes or more) ^N	Historical building
Office/consulting room	Airport ^N	Protected Area
Military or police base/station/compound	Harbour	Graveyard
Spoil heap or slimes dam ^A	Sport facilities	Archaeological site
Quarry, sand or borrow pit	Golf course	Other land uses (describe)

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

The proposed power line will transverse the existing railway line near Mbumbu Substation. There are no foreseen impacts as the height of the power line towers will be sufficient to clear the railway line.

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:

Not Applicable.

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:

Not Applicable.

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.

7. CULTURAL/HISTORICAL FEATURES

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

YES	NO
Uncertain	

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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:

No important cultural heritage resources or graves were found along this route.

Will any building or structure older than 60 years be affected in any way?

YES	NO
-----	----

Is it necessary to apply for a permit in terms of the National Heritage Resources Act, 1999 (Act 25 of 1999)?

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

20) Local Municipality

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

The project is situated in the Bushbuckridge Local Municipality (BLM). The BLM is a presidential nodal point located in the north-eastern part of Mpumalanga Province and south-eastern part of Limpopo Province. The municipal area provides a link to Lydenburg and other centres in the Lowveld, particularly Hoedspruit, Pilgrim's Rest and Graskop. Bushbuckridge Local Municipality can therefore be called the gateway to the major tourist attraction points in Mpumalanga and the eastern part of the Limpopo Province. Major towns include Bushbuckridge and Sabie Park. The main economic sectors are agriculture and tourism.

Level of unemployment:

The unemployment rate in the local municipality has gone down since 2001, from 62.7% to 52.6% in 2011. This is, however, still significantly higher (double) than the current National unemployment rate of 26.6%. It is also the highest unemployment rate of all the local municipalities within Mpumalanga Province.

Economic profile of local municipality:

In the BLM the majority of people (312 224) are within the functional age group (15-64 years), which is seen as the economically active group. The least number of people (28 672) are situated in the age group 65+ years. This means that the birth rate is much higher than the mortality rate in the municipality.

Dependency ratios indicate to what extent the working age group (15-64 years) has to support those aged 0-14 years and 65+ years. Bushbuckridge's dependency ratio has decreased since 1996 till 2011 from 90 to 73 respectively. This is consistent with the fact that the population aged between 15 and 64 years, have grown during this period, from 284 166 (1996) to 286 744 (2001) and 312 224 (2011).

The number of households in Bushbuckridge is 134 197, which is the second highest in the district, after Nelspruit (Mbombela), which has 161 773 households. 128 670 of people living in Bushbuckridge reside in formal dwellings, followed by 3 634 in traditional dwellings and 1 597 in

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informal dwellings. The majority of residents of Bushbuckridge own their homes (95 019 fully paid off and 2 812 not paid off). 4 909 rent accommodation and 29 185 occupy their residences rent-free.

53.3% of households in Bushbuckridge are headed by females. This is higher than all the other local municipalities in the province. 2% (2 629) of households in Bushbuckridge are headed by children. This is also significantly higher than in the rest of the province.

The number of households in BLM with access to municipal services such as electricity, potable water, refuse remove and toilet facilities has increased from 1996 till 2011, indicating that progress is being made by the municipality in increasing the supply of services to residents. For example the number of households using electricity for lighting, cooking and heating increased from 38 257, 15 919, and 14 001 respectively in 1996 to 126 047, 77535, and 69 245 respectively in 2011.

Level of education:

The majority of residents (261 029) in Bushbuckridge Local Municipality have some sort of education with secondary education (87 603) being the highest, followed by Grade 12 (69 824), then no schooling (60 737), then some primary education (32 629), then higher education (20 210) and finally completed primary school (10 811).

b) Socio-economic value of the activity

What is the expected capital value of the activity on completion?
 What is the expected yearly income that will be generated by or as a result of the activity?
 Will the activity contribute to service infrastructure?
 Is the activity a public amenity?
 How many new employment opportunities will be created in the development and construction phase of the activity/ies?

What is the expected value of the employment opportunities during the development and construction phase?
 What percentage of this will accrue to previously disadvantaged individuals?

How many permanent new employment opportunities will be created during the operational phase of the activity?
 What is the expected current value of the employment opportunities during the first 10 years?
 What percentage of this will accrue to previously disadvantaged individuals?

±R79 million
Unknown at this stage
YES NO
YES NO
Construction will be undertaken by Eskom Major Engineering Works, a group consisting of Eskom permanent employees
Unknown at this stage
Unknown at this stage
Unknown at this stage
Unknown at this stage
Unknown at this stage

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.

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

Systematic Biodiversity Planning Category				If CBA or ESA, indicate the reason(s) for its selection in biodiversity plan
Critical Biodiversity Area (CBA)	Ecological Support Area (ESA)	Other Natural Area (ONA)	No Natural Area Remaining (NNR)	The natural areas adjacent to the proposed power line (Green Route) have been significantly degraded due to illegal sand mining activities, and increased wood harvesting activities.

b) Indicate and describe the habitat condition on site

Habitat Condition	Percentage of habitat condition class (adding up to 100%)	Description and additional Comments and Observations (including additional insight into condition, e.g. poor land management practises, presence of quarries, grazing, harvesting regimes etc).
Natural	0%	The Granite Lowveld vegetation around the proposed alignments displays various levels of transformation and degradation.
Near Natural (includes areas with low to moderate level of alien invasive plants)	10%	Natural Granite Lowveld remains in the private and government reserves to the north and east of the proposed power line (Green Route).
Degraded (includes areas heavily invaded by alien plants)	40%	Extensive illegal sand mining activities, wood harvesting, overgrazing by livestock (especially goats), bush-encroachment and alien invasive vegetation.
Transformed (includes cultivation, dams, urban, plantation, roads, etc)	50%	Small-scale vegetable lands occur around the existing rural villages. Artificially embanked dam occurs on a perennial river. Informal dumping sites occur adjacent to the power line as well as existing access roads.

c) Complete the table to indicate:

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

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

Please note: according to the Mpumalanga Biodiversity Sector Plan (2013) the power line bisects large 'other natural areas' (see Figure 9 below). The delineation of the vegetation units is inaccurate as large areas have been extensively degraded due to on-going illegal sand mining activities and wood harvesting activities. Large areas have also been cleared for small-scale agricultural lands.

- 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 vegetation type is Granite Lowveld (SVI 3) (Mucina & Rutherford 2006) which was previously classified as Arid Lowveld (40%), Lowveld (38%) (Acocks 1998) or Mixed Lowveld Bushveld (LR 19) (Low & Rebelo 1996).

As the power line is situated in a semi-rural / agricultural environment, the vegetation around the proposed power line (Green Route) has been severely altered and transformed from its natural state. The majority of the proposed power line (Green Route). Is situated within degraded or transformed vegetation as well as existing power line servitudes, access roads and informal tracks and livestock pathways with limited habitat diversity this significantly reduces the level of disturbance and habitat destruction.

General observations applicable across the vegetation of the entire site are as follows:

- The open woodland areas were defined using the occurrence of *Combretum herorense*, *Sclerocarya birrea subsp. Caffra*, *Acacia karroo*, *Acacia caffra*, *Combretum apiculatum*, *Combretum imberbe*, *Ziziphus mucronata*, *Gymnosporia heterophylla* and *Dombeya rotundifolia*.
- Several protected tree species were observed around the alignments especially Marula (*Sclerocarya birrea subsp. Caffra*) (>50), Apple-Leaf (*Philenoptera violacea*) and Wild Teak (*Pterocarpus angolensis*).
- Weed and alien invader floral species were observed on site where both medium-low in diversity and abundance.
- Basal cover was low throughout the preferred alignment which would indicate that the areas is extensively utilised for livestock grazing activities.
- Forb species diversity was moderate to low throughout the property due to utilisation of the area for cattle and goat grazing activities.
- Developed portions adjacent to the existing villages and old and current agricultural lands showed the most sign of transformation from the natural state with more weed and invaders evident.

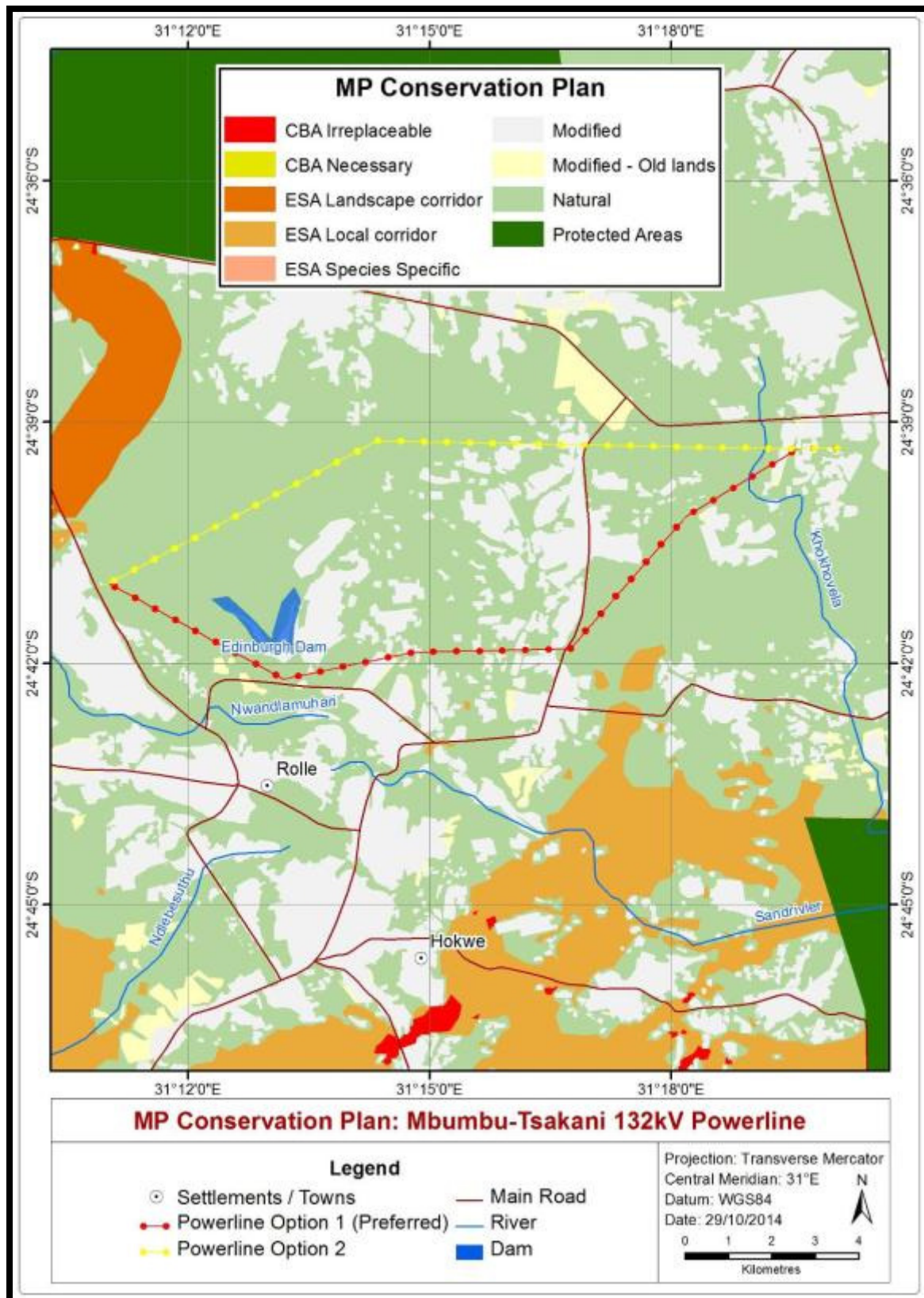


Figure 9: Mpumalanga Biodiversity Sector Plan for the proposed Mbumbu-Tsakani power line

SECTION B: SITE/AREA/PROPERTY DESCRIPTION

Important notes:

4. 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): B

132 kV power line: Alternative 3 – Purple Route

5. Paragraphs 1 – 6 below must be completed for each alternative.

6. 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 description/physical address:

Province	Mpumalanga Province
District Municipality	Ehlanzeni District Municipality
Local Municipality	Bushbuckridge Local Municipality
Ward Number(s)	N/A
Farm name and number	Burlington 217KU, Islington 219KU, Ludlow 227KU, Edinburgh 228KU, and Eglington 225KU
Portion number	Burlington 217KU: 0, 1, 2 Islington 219KU: 0 Eglington 225KU: 5, 6, 8 Ludlow 227KU: 0,3 Edinburgh 228KU: 0; 2
SG Code	T0KU0000000002170000 T0KU0000000002170001 T0KU0000000002170002 T0KU0000000002190000 T0KU0000000002250005 T0KU0000000002250006 T0KU0000000002250008 T0KU0000000002270000 T0KU0000000002270003 T0KU0000000002280000 T0KU0000000002280002

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.

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

Rural

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?

YES **NO**

10. GRADIENT OF THE SITE

Indicate the general gradient of the site.

Alternative S1:

Flat	1:50 – 1:20	1:20 – 1:15	1:15 – 1:10	1:10 – 1:7,5	1:7,5 – 1:5	Steeper than 1:5
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Alternative S2: Purple Route

Flat	1:50 – 1:20	1:20 – 1:15	1:15 – 1:10	1:10 – 1:7,5	1:7,5 – 1:5	Steeper than 1:5
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Alternative S3 (if any):

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

11. LOCATION IN LANDSCAPE

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

- | | | | | | |
|---------------------------------|--------------------------|-------------------|-------------------------------------|----------------------------------|--------------------------|
| 2.1 Ridgeline | <input type="checkbox"/> | 2.4 Closed valley | <input type="checkbox"/> | 2.7 Undulating plain / low hills | <input type="checkbox"/> |
| 2.2 Plateau | <input type="checkbox"/> | 2.5 Open valley | <input type="checkbox"/> | 2.8 Dune | <input type="checkbox"/> |
| 2.3 Side slope of hill/mountain | <input type="checkbox"/> | 2.6 Plain | <input checked="" type="checkbox"/> | 2.9 Seafront | <input type="checkbox"/> |
| 2.10 At sea | <input type="checkbox"/> | | | | |

12. GROUNDWATER, SOIL AND GEOLOGICAL STABILITY OF THE SITE

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

	Alternative S1:		Alternative S2(if any):		Alternative S3 Purple Route:	
	YES	NO	YES	NO	YES	NO
Shallow water table (less than 1.5m deep)	YES	NO	YES	NO	YES	NO
Dolomite, sinkhole or doline areas	YES	NO	YES	NO	YES	NO
Seasonally wet soils (often close to water bodies)	YES	NO	YES	NO	YES	NO
Unstable rocky slopes or steep slopes with loose soil	YES	NO	YES	NO	YES	NO
Dispersive soils (soils that dissolve in water)	YES	NO	YES	NO	YES	NO

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Soils with high clay content (clay fraction more than 40%)
 Any other unstable soil or geological feature
 An area sensitive to erosion

YES	NO
YES	NO
YES	NO

YES	NO
YES	NO
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.

13. 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).

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

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.

14. SURFACE WATER

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

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.

Macro Drainage Characteristics

The east-west power line alternative routes broadly run perpendicular to the direction of most drainage in the study area which is south-ward draining towards the Sand River that drains in a south-easterly direction from the escarpment to the west. Both power line alternatives bisect two quaternary catchments, with the western part of the study area (roughly west of the settlement of Edinburgh) falling into the catchment X32C, and the eastern part of the study area falling into the catchment X32G. The X32C catchment is comprised of a number of tributaries of the Sand River, with the primary tributary being the Nwandlamuhari River. The Mphyanyana and Sephiriri Rivers which are crossed by the alignments fall within this catchment. The X32G catchment comprises of one of the upper reaches of the Sand River along with a number of tributaries including the Khokhovela River and the Molapakgomo River which drain southwards and which are crossed by the proposed alignment alternatives.

Surface Water Typology

Of the larger riverine systems in the study area (as mentioned above), only the Sand River is perennial, and the remainder of the rivers and smaller watercourses are seasonal in nature, only flowing during the wet season or after periods of rainfall.

The vast majority of the surface water features that are crossed by the proposed power line alternative routes are small episodic drainage lines. While certain of these riverine systems are characterised by the presence of hydric soils, not all rivers / drainage lines present within the study area can be considered 'true wetlands' in the sense that they contain hydric soils.

Wetlands and Riparian Vegetation

Whilst the majority of surface water features in the area are characterised by channelled flow, a proportion of wetlands in the area are either seepage or valley bottom wetlands in which diffuse, or un-channelled flow occurs. Certain of the downstream reaches of the larger river systems (i.e. the Mphyananya River downstream of the Edinburgh dam and the Molapakgomo River) in the study area could be described as being more typical valley bottom wetlands, rather than riverine drainage features.

The last type of wetland encountered in the study area is the seepline, or hydrologically unconnected hillslope seepage-type wetland. These typically were found to occur on the midslopes being lateral features that roughly aligned along the slope contours rather than down it. They are generally devoid of woody vegetation with the seeplines encountered in the study being characterised by a dense layer of grasses and sedges.

This route is the only alternative on which a crossing of length of greater / equal to 250 m (the typical maximum span) is located – the Mphyananya River riparian zone. This crossing also contains a flanking wetland area adjacent to the eastern outer edge of the riparian corridor along the alignment, thus effectively widening the length and making it more likely that wetland or riparian areas at this location would need to be physically disturbed by a crossing.

This alternative route contains more crossings with a higher riparian EcoStatus Class (EC) score, thus the relative impacts of the power line and servitude clearing would be of greater significance than the Green route. The Purple route largely runs through areas of woodland in a partially or largely natural state, with a resultant greater number of crossings with a higher ecological category.

In terms of the sensitivity analysis undertaken as part of the wider Basic Assessment Process a 32 m wide buffer has been delineated beyond the outer boundaries of all wetland / riparian areas along the respective alternative alignments. Where towers have to be placed within these 32 m buffer zones, this infrastructure should not exceed 50 m² in size otherwise Activity 11 (LN 1) will be triggered. The depiction of this 32 m buffer zone is to ensure for easy demarcation / pegging of this area during construction.

15. LAND USE CHARACTER OF SURROUNDING AREA

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

Natural area	Dam or reservoir	Polo fields
Low density residential	Hospital/medical centre	Filling station ^H
Medium density residential	School	Landfill or waste treatment site
High density residential	Tertiary education facility	Plantation
Informal residential ^A	Church	Agriculture
Retail commercial & warehousing	Old age home	River, stream or wetland
Light industrial	Sewage treatment plant ^A	Nature conservation area
Medium industrial ^{AN}	Train station or shunting yard ^N	Mountain, koppie or ridge
Heavy industrial ^{AN}	Railway line^N	Museum
Power station	Major road (4 lanes or more) ^N	Historical building
Office/consulting room	Airport ^N	Protected Area
Military or police	Harbour	Graveyard

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

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

The proposed power line will transverse the existing railway line near Mbumbu Substation. There are no foreseen impacts as the height of the power line towers will be sufficient to clear the railway line.

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:

Not Applicable.

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:

Not Applicable.

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.

16. CULTURAL/HISTORICAL FEATURES

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

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:

No important cultural heritage resources or graves were found along this route.

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

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

17. SOCIO-ECONOMIC CHARACTER

20) Local Municipality

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

The project is situated in the Bushbuckridge Local Municipality (BLM). The BLM is a presidential nodal point located in the north-eastern part of Mpumalanga Province and south-eastern part of Limpopo Province. The municipal area provides a link to Lydenburg and other centres in the Lowveld, particularly Hoedspruit, Pilgrim's Rest and Graskop. The BLM can therefore be called the gateway to the major tourist attraction points in Mpumalanga and the eastern part of the Limpopo Province. Major towns include Bushbuckridge and Sabie Park. The main economic sectors are agriculture and tourism.

Level of unemployment:

The unemployment rate in the local municipality has gone down since 2001, from 62.7% to 52.6% in 2011. This is, however, still significantly higher (double) than the current National unemployment rate of 26.6%. It is also the highest unemployment rate of all the local municipalities within Mpumalanga Province.

Economic profile of local municipality:

In the BLM the majority of people (312 224) are within the functional age group (15-64 years), which is seen as the economically active group. The least number of people (28 672) are situated in the age group 65+ years. This means that the birth rate is much higher than the mortality rate in the municipality.

Dependency ratios indicate to what extent the working age group (15-64 years) has to support those aged 0-14 years and 65+ years. Bushbuckridge's dependency ratio has decreased since 1996 till 2011 from 90 to 73 respectively. This is consistent with the fact that the population aged between 15 and 64 years, have grown during this period, from 284 166 (1996) to 286 744 (2001) and 312 224 (2011).

The number of households in Bushbuckridge is 134 197, which is the second highest in the district, after Nelspruit (Mbombela), which has 161 773 households. 128 670 of people living in Bushbuckridge reside in formal dwellings, followed by 3 634 in traditional dwellings and 1 597 in informal dwellings. The majority of residents of Bushbuckridge own their homes (95 019 fully paid off and 2 812 not paid off). 4 909 rent accommodation and 29 185 occupy their residences rent-free.

53.3% of households in Bushbuckridge are headed by females. This is higher than all the other local municipalities in the province. 2% (2 629) of households in Bushbuckridge are headed by children. This is also significantly higher than in the rest of the province.

The number of households in the BLM with access to municipal services such as electricity, potable water, refuse remove and toilet facilities has increased from 1996 till 2011, indicating that progress in

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being made by the municipality in increasing the supply of services to residents. For example the number of households using electricity for lighting, cooking and heating increased from 38 257, 15 919, and 14 001 respectively in 1996 to 126 047, 77535, and 69 245 respectively in 2011.

Level of education:

The majority of residents (261 029) in the BLM have some sort of education with secondary education (87 603) being the highest, followed by Grade 12 (69 824), then no schooling (60 737), then some primary education (32 629), then higher education (20 210) and finally completed primary school (10 811).

b) Socio-economic value of the activity

What is the expected capital value of the activity on completion?	±R79 million		
What is the expected yearly income that will be generated by or as a result of the activity?	Unknown at this stage		
Will the activity contribute to service infrastructure?	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; text-align: center;">YES</td> <td style="width: 50%; text-align: center;">NO</td> </tr> </table>	YES	NO
YES	NO		
Is the activity a public amenity?	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; text-align: center;">YES</td> <td style="width: 50%; text-align: center;">NO</td> </tr> </table>	YES	NO
YES	NO		
How many new employment opportunities will be created in the development and construction phase of the activity/ies?	Construction will be undertaken by Eskom Major Engineering Works, a group consisting of Eskom permanent employees		
What is the expected value of the employment opportunities during the development and construction phase?	Unknown at this stage		
What percentage of this will accrue to previously disadvantaged individuals?	Unknown at this stage		
How many permanent new employment opportunities will be created during the operational phase of the activity?	Unknown at this stage		
What is the expected current value of the employment opportunities during the first 10 years?	Unknown at this stage		
What percentage of this will accrue to previously disadvantaged individuals?	Unknown at this stage		

18. 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.

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

Systematic Biodiversity Planning Category				If CBA or ESA, indicate the reason(s) for its selection in biodiversity plan
Critical Biodiversity Area (CBA)	Ecological Support Area (ESA)	Other Natural Area (ONA)	No Natural Area Remaining (NNR)	The natural areas adjacent to the proposed power line (Purple Route) has a more natural species composition and has less anthropogenic disturbances due to limited accessibility compared to the transformed and degraded vegetation towards the south and east.

b) Indicate and describe the habitat condition on site

Habitat Condition	Percentage of habitat condition class (adding up to 100%)	Description and additional Comments and Observations (including additional insight into condition, e.g. poor land management practises, presence of quarries, grazing, harvesting regimes etc).
Natural	0%	The Granite Lowveld vegetation around the proposed alignments displays various levels of transformation and degradation. Natural Granite Lowveld remains in the private and government reserves to the north and east of the proposed power line.
Near Natural (includes areas with low to moderate level of alien invasive plants)	30%	Situated within the proposed power line (Purple Route) there is a remnant patch of Granite Lowveld vegetation which displays a more natural species composition. The area has low alien vegetation and wood harvesting activities.
Degraded (includes areas heavily invaded by alien plants)	40%	Extensive illegal sand mining activities, wood harvesting, overgrazing by livestock (especially goats), bush-encroachment and alien invasive vegetation.
Transformed (includes cultivation, dams, urban, plantation, roads, etc)	30%	Small-scale vegetable lands occur around the existing rural villages. Informal dumping sites occur adjacent to the power line as well as existing access roads.

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c) **Complete the table to indicate:**

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

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

Please note: according to the Mpumalanga Biodiversity Sector Plan (2013) the power line bisects 'other natural areas' (see Figure 9 above). The delineation of the vegetation units is inaccurate as large areas have been extensively degraded due to on-going illegal sand mining activities and wood harvesting activities. Large areas have also been cleared for small-scale agricultural lands.

- 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 vegetation type is Granite Lowveld (SVI 3) (Mucina & Rutherford 2006) which was previously classified as Arid Lowveld (40%), Lowveld (38%) (Acocks 1998) or Mixed Lowveld Bushveld (LR 19) (Low & Rebelo 1996).

As the power line is situated in a semi-rural / agricultural environment, the vegetation around the proposed power line has been severely altered and transformed from its natural state. Certain sections of the proposed power line (Purple Route) do however contain elements of natural Granite Lowveld vegetation.

General observations applicable across the vegetation of the entire site are as follows:

- The open woodland areas were defined using the occurrence of *Combretum herorense*, *Sclerocarya birrea subsp. Caffra*, *Acacia karroo*, *Acacia caffra*, *Combretum apiculatum*, *Combretum imberbe*, *Ziziphus mucronata*, *Gymnosporia heterophylla* and *Dombeya rotundifolia*.
- Several protected tree species were observed around the alignments especially Marula (*Sclerocarya birrea subsp. Caffra*) (>50), Apple-Leaf (*Philenoptera violacea*) and Wild Teak (*Pterocarpus angolensis*).
- Several protected and red listed 'Declining'² Cape Poison Bulbs (*Boophane disticha*) were observed adjacent to the proposed power line.
- Weed and alien invader floral species were observed on site where both medium-low in diversity and abundance.
- Basal cover was low throughout the preferred alignment which would indicate that the areas is extensively utilised for livestock grazing activities.
- Forb species diversity was moderate to low throughout the property due to utilisation of the area for cattle and goat grazing activities.
- Developed portions adjacent to the existing villages and old and current agricultural lands showed the most sign of transformation from the natural state with more weed and invaders evident.

² A taxon is 'Declining' when it does not meet any of the five IUCN criteria and does not qualify for the categories Critically Endangered, Endangered, Vulnerable or Near Threatened, but there are threatening processes causing a continuing decline in the population.

SECTION B: SITE/AREA/PROPERTY DESCRIPTION

Important notes:

7. 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): C

Alternative 1: Proposed Tsakani Substation

8. Paragraphs 1 – 6 below must be completed for each alternative.

9. 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 description/physical address:

Province	Mpumalanga Province
District Municipality	Ehlanzeni District Municipality
Local Municipality	Bushbuckridge Local Municipality
Ward Number(s)	N/A
Farm name and number	Eglington 225KU
Portion number	Eglington 225KU: 8
SG Code	T0KU0000000002250008

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

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

Rural

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? YES NO

19. GRADIENT OF THE SITE

Indicate the general gradient of the site.

Alternative S1: Tsakani Substation

Flat	1:50 – 1:20	1:20 – 1:15	1:15 – 1:10	1:10 – 1:7,5	1:7,5 – 1:5	Steeper than 1:5
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Alternative S2:

Flat	1:50 – 1:20	1:20 – 1:15	1:15 – 1:10	1:10 – 1:7,5	1:7,5 – 1:5	Steeper than 1:5
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Alternative S3 (if any):

Flat	1:50 – 1:20	1:20 – 1:15	1:15 – 1:10	1:10 – 1:7,5	1:7,5 – 1:5	Steeper than 1:5
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20. LOCATION IN LANDSCAPE

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

2.1 Ridgeline	<input type="checkbox"/>	2.4 Closed valley	<input type="checkbox"/>	2.7 Undulating plain / low hills	<input type="checkbox"/>
2.2 Plateau	<input type="checkbox"/>	2.5 Open valley	<input type="checkbox"/>	2.8 Dune	<input type="checkbox"/>
2.3 Side slope of hill/mountain	<input type="checkbox"/>	2.6 Plain	<input checked="" type="checkbox"/>	2.9 Seafront	<input type="checkbox"/>
2.10 At sea	<input type="checkbox"/>				

21. GROUNDWATER, SOIL AND GEOLOGICAL STABILITY OF THE SITE

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

	Alternative S1:		Alternative S2:		Alternative S3 (if any):	
	YES	NO	YES	NO	YES	NO
Shallow water table (less than 1.5m deep)	YES	NO	YES	NO	YES	NO
Dolomite, sinkhole or doline areas	YES	NO	YES	NO	YES	NO
Seasonally wet soils (often close to water bodies)	YES	NO	YES	NO	YES	NO
Unstable rocky slopes or steep slopes with loose soil	YES	NO	YES	NO	YES	NO
Dispersive soils (soils that dissolve in water)	YES	NO	YES	NO	YES	NO
Soils with high clay content (clay fraction more than 40%)	YES	NO	YES	NO	YES	NO
Any other unstable soil or geological feature	YES	NO	YES	NO	YES	NO
An area sensitive to erosion	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.

22. 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).

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

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.

23. SURFACE WATER

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

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.

Two substation alternatives have been provided for comparative assessment. Neither of the two alternatives would physically affect any surface water features. There is thus no strong preference between the two substation alternative sites. However as the Alternative 2 Site would be located east of Alternative 1, a longer stretch of the alignment that would cross an ephemeral headward watercourse in incised terrain would need to be constructed. This would result in one more surface water crossing than if Alternative 1 was developed (although the incised nature of the valley head and marginal occurrence of a riparian zone along this watercourse would mean that this surface water feature would be able to be spanned without exerting a major impact on the surface water feature). Alternative 1 is marginally preferred due to the extra crossing associated with Alternative 2, but no major surface water-related issues are associated with either alternative.

24. LAND USE CHARACTER OF SURROUNDING AREA

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

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

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

Not Applicable.

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:

Not Applicable.

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:

Not Applicable.

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.

25. CULTURAL/HISTORICAL FEATURES

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

YES	NO
Uncertain	

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:

No important cultural heritage resources or graves were found on either Site Alternative 1 or Site Alternative 2 for the proposed Tsakani Substation

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.

26. SOCIO-ECONOMIC CHARACTER

20) Local Municipality

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

The project is situated in the Bushbuckridge Local Municipality (BLM). The BLM is a presidential nodal point located in the north-eastern part of Mpumalanga Province and south-eastern part of Limpopo Province. The municipal area provides a link to Lydenburg and other centres in the Lowveld, particularly Hoedspruit, Pilgrim’s Rest and Graskop. The BLM can therefore be called the gateway to the major tourist attraction points in Mpumalanga and the eastern part of the Limpopo Province. Major towns include Bushbuckridge and Sabie Park. The main economic sectors are agriculture and tourism.

Level of unemployment:

The unemployment rate in the local municipality has gone down since 2001, from 62.7% to 52.6% in 2011. This is, however, still significantly higher (double) than the current National unemployment rate of 26.6%. It is also the highest unemployment rate of all the local municipalities within Mpumalanga Province.

Economic profile of local municipality:

In the BLM, the majority of people (312 224) are within the functional age group (15-64 years), which is seen as the economically active group. The least number of people (28 672) are situated in the age group 65+ years. This means that the birth rate is much higher than the mortality rate in the municipality.

Dependency ratios indicate to what extent the working age group (15-64 years) has to support those

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aged 0-14 years and 65+ years. Bushbuckridge's dependency ratio has decreased since 1996 till 2011 from 90 to 73 respectively. This is consistent with the fact that the population aged between 15 and 64 years, have grown during this period, from 284 166 (1996) to 286 744 (2001) and 312 224 (2011).

The number of households in Bushbuckridge is 134 197, which is the second highest in the district, after Nelspruit (Mbombela), which has 161 773 households. 128 670 of people living in Bushbuckridge reside in formal dwellings, followed by 3 634 in traditional dwellings and 1 597 in informal dwellings. The majority of residents of Bushbuckridge own their homes (95 019 fully paid off and 2 812 not paid off). 4 909 rent accommodation and 29 185 occupy their residences rent-free.

53.3% of households in Bushbuckridge are headed by females. This is higher than all the other local municipalities in the province. 2% (2 629) of households in Bushbuckridge are headed by children. This is also significantly higher than in the rest of the province.

The number of households in the BLM with access to municipal services such as electricity, potable water, refuse remove and toilet facilities has increased from 1996 till 2011, indicating that progress in being made by the municipality in increasing the supply of services to residents. For example the number of households using electricity for lighting, cooking and heating increased from 38 257, 15 919, and 14 001 respectively in 1996 to 126 047, 77 535, and 69 245 respectively in 2011.

Level of education:

The majority of residents (261 029) in the BLM have some sort of education with secondary education (87 603) being the highest, followed by Grade 12 (69 824), then no schooling (60 737), then some primary education (32 629), then higher education (20 210) and finally completed primary school (10 811).

b) Socio-economic value of the activity

What is the expected capital value of the activity on completion?	±R79 million	
What is the expected yearly income that will be generated by or as a result of the activity?	Unknown at this stage	
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?	Construction will be undertaken by Eskom Major Engineering Works, a group consisting of Eskom permanent employees	
What is the expected value of the employment opportunities during the development and construction phase?	Unknown at this stage	
What percentage of this will accrue to previously disadvantaged individuals?	Unknown at this stage	
How many permanent new employment opportunities will be created during the operational phase of the activity?	Unknown at this stage	

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What is the expected current value of the employment opportunities during the first 10 years?
 What percentage of this will accrue to previously disadvantaged individuals?

Unknown at this stage
Unknown at this stage

27. 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.

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

Systematic Biodiversity Planning Category			If CBA or ESA, indicate the reason(s) for its selection in biodiversity plan
Critical Biodiversity Area (CBA)	Ecological Support Area (ESA)	Other Natural Area (ONA)	No Natural Area Remaining (NNR)
Large areas adjacent to the proposed Tsakani Substation site are old or fallow agricultural lands with livestock enclosures. Extensive wood harvesting as well as vegetation clearance for agricultural activities has altered the natural area around the substation site. The frequent burning of the grassland vegetation and overgrazing by livestock including cattle and goats has also altered the natural tree, shrub, forb and grass species composition.			

b) Indicate and describe the habitat condition on site

Habitat Condition	Percentage of habitat condition class (adding up to 100%)	Description and additional Comments and Observations (including additional insight into condition, e.g. poor land management practises, presence of quarries, grazing, harvesting regimes etc).
Natural	0%	The Granite Lowveld vegetation around the proposed substation displays various levels of transformation and degradation.
Near Natural (includes areas with	0%	A single large Common Wild Fig, <i>Ficus burkei</i> occurs on the site.

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low to moderate level of alien invasive plants)		
Degraded (includes areas heavily invaded by alien plants)	0%	Extensive wood harvesting, overgrazing by livestock (especially cows and goats), vegetation clearance and burning of vegetation.
Transformed (includes cultivation, dams, urban, plantation, roads, etc)	100%	Large areas adjacent to the proposed substation site are old or fallow agricultural lands with livestock enclosures.

c) Complete the table to indicate:

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

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

Please note: according to the Mpumalanga Biodiversity Sector Plan (2013) the substation is situated in a natural area (see Figure 9 above). The delineation of the vegetation units is inaccurate as large areas have been extensively degraded due to wood harvesting activities. Large areas have also been cleared for small-scale agricultural lands.

- 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 vegetation type is Granite Lowveld (SVI 3) (Mucina & Rutherford 2006) which was previously classified as Arid Lowveld (40%), Lowveld (38%) (Acocks 1998) or Mixed Lowveld Bushveld (LR 19) (Low & Rebelo 1996).

Large areas adjacent to the proposed substation site are old or fallow agricultural lands as well as livestock enclosures. Extensive wood harvesting as well as vegetation clearance for agricultural activities occurs around the substation site. The frequent burning of the grassland vegetation as well as overgrazing by livestock including cattle and goats has altered the natural tree, shrub, forb and grass species composition.

Remaining grass and forb species are dominated by species indicative of a disturbed or degraded habitat. Evidence of wood harvesting activities were noted along the non-perennial drainage line to the south as well as riparian zone of the Khokhovela River to the east of the proposed substation site. The vegetation on the proposed substation site is dominated by small shrubby Acacias as well as secondary succession grasses on an old agricultural land. A single large Common Wild Fig, *Ficus burkei* occurs on the site. The vegetation becomes more natural towards the Khokhovela River. Remnant patches of large riparian tree species occur along the macro-channel banks of the river. No rare or threatened plant species were observed around the proposed substation site or are likely to occur within the transformed agricultural lands on and surrounding the site.

SECTION B: SITE/AREA/PROPERTY DESCRIPTION

Important notes:

10. 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): D

Alternative 2: Proposed Tsakani Substation

11. Paragraphs 1 – 6 below must be completed for each alternative.

12. 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 description/physical address:

Province	Mpumalanga Province
District Municipality	Ehlanzeni District Municipality
Local Municipality	Bushbuckridge Local Municipality
Ward Number(s)	N/A
Farm name and number	Eglington 225KU
Portion number	Eglington 225KU: 8
SG Code	T0KU0000000002250008

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

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

Rural

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? YES NO

28. GRADIENT OF THE SITE

Indicate the general gradient of the site.

Alternative S1:

Flat	1:50 – 1:20	1:20 – 1:15	1:15 – 1:10	1:10 – 1:7,5	1:7,5 – 1:5	Steeper than 1:5
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Alternative S2: Tsakani Substation

Flat	1:50 – 1:20	1:20 – 1:15	1:15 – 1:10	1:10 – 1:7,5	1:7,5 – 1:5	Steeper than 1:5
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Alternative S3 (if any):

Flat	1:50 – 1:20	1:20 – 1:15	1:15 – 1:10	1:10 – 1:7,5	1:7,5 – 1:5	Steeper than 1:5
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29. LOCATION IN LANDSCAPE

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

2.1 Ridgeline	<input type="checkbox"/>	2.4 Closed valley	<input type="checkbox"/>	2.7 Undulating plain / low hills	<input type="checkbox"/>
2.2 Plateau	<input type="checkbox"/>	2.5 Open valley	<input type="checkbox"/>	2.8 Dune	<input type="checkbox"/>
2.3 Side slope of hill/mountain	<input type="checkbox"/>	2.6 Plain	<input checked="" type="checkbox"/>	2.9 Seafront	<input type="checkbox"/>
2.10 At sea	<input type="checkbox"/>				

30. GROUNDWATER, SOIL AND GEOLOGICAL STABILITY OF THE SITE

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

	Alternative S1:		Alternative S2:		Alternative S3 (if any):	
Shallow water table (less than 1.5m deep)	YES	NO	YES	NO	YES	NO
Dolomite, sinkhole or doline areas	YES	NO	YES	NO	YES	NO
Seasonally wet soils (often close to water bodies)	YES	NO	YES	NO	YES	NO
Unstable rocky slopes or steep slopes with loose soil	YES	NO	YES	NO	YES	NO
Dispersive soils (soils that dissolve in water)	YES	NO	YES	NO	YES	NO
Soils with high clay content (clay fraction more than 40%)	YES	NO	YES	NO	YES	NO
Any other unstable soil or geological feature	YES	NO	YES	NO	YES	NO
An area sensitive to erosion	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.

BASIC ASSESSMENT REPORT

31. 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).

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

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.

32. SURFACE WATER

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

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.

Two substation alternatives have been provided for comparative assessment. Neither of the two alternatives would physically affect any surface water features. There is thus no strong preference between the two substation alternative sites. However as the Alternative 2 Site would be located east of Alternative 1, a longer stretch of the alignment that would cross an ephemeral headward watercourse in incised terrain would need to be constructed. This would result in one more surface water crossing than if Alternative 1 was developed (although the incised nature of the valley head and marginal occurrence of a riparian zone along this watercourse would mean that this surface water feature would be able to be spanned without exerting a major impact on the surface water feature). Alternative 1 is marginally preferred due to the extra crossing associated with Alternative 2, but no major surface water-related issues are associated with either alternative.

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33. LAND USE CHARACTER OF SURROUNDING AREA

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

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

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

Not Applicable.

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:

Not Applicable.

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:

Not Applicable.

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.

34. CULTURAL/HISTORICAL FEATURES

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

YES	NO
Uncertain	

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:

No important cultural heritage resources or graves were found on either Site Alternative 1 or Site Alternative 2 for the proposed Tsakani Substation

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.

35. SOCIO-ECONOMIC CHARACTER

20) Local Municipality

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

The project is situated in the Bushbuckridge Local Municipality (BLM). The BLM is a presidential nodal point located in the north-eastern part of Mpumalanga Province and south-eastern part of Limpopo Province. The municipal area provides a link to Lydenburg and other centres in the Lowveld, particularly Hoedspruit, Pilgrim’s Rest and Graskop. The BLM can therefore be called the gateway to the major tourist attraction points in Mpumalanga and the eastern part of the Limpopo Province. Major towns include Bushbuckridge and Sabie Park. The main economic sectors are agriculture and tourism.

Level of unemployment:

The unemployment rate in the local municipality has gone down since 2001, from 62.7% to 52.6% in 2011. This is, however, still significantly higher (double) than the current National unemployment rate of 26.6%. It is also the highest unemployment rate of all the local municipalities within Mpumalanga Province.

Economic profile of local municipality:

In the BLM the majority of people (312 224) are within the functional age group (15-64 years), which is seen as the economically active group. The least number of people (28 672) are situated in the age group 65+ years. This means that the birth rate is much higher than the mortality rate in the municipality.

Dependency ratios indicate to what extent the working age group (15-64 years) has to support those

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aged 0-14 years and 65+ years. Bushbuckridge's dependency ratio has decreased since 1996 till 2011 from 90 to 73 respectively. This is consistent with the fact that the population aged between 15 and 64 years, have grown during this period, from 284 166 (1996) to 286 744 (2001) and 312 224 (2011).

The number of households in Bushbuckridge is 134 197, which is the second highest in the district, after Nelspruit (Mbombela), which has 161 773 households. 128 670 of people living in Bushbuckridge reside in formal dwellings, followed by 3 634 in traditional dwellings and 1 597 in informal dwellings. The majority of residents of Bushbuckridge own their homes (95 019 fully paid off and 2 812 not paid off). 4 909 rent accommodation and 29 185 occupy their residences rent-free.

53.3% of households in Bushbuckridge are headed by females. This is higher than all the other local municipalities in the province. 2% (2 629) of households in Bushbuckridge are headed by children. This is also significantly higher than in the rest of the province.

The number of households in the BLM with access to municipal services such as electricity, potable water, refuse remove and toilet facilities has increased from 1996 till 2011, indicating that progress in being made by the municipality in increasing the supply of services to residents. For example the number of households using electricity for lighting, cooking and heating increased from 38 257, 15 919, and 14 001 respectively in 1996 to 126 047, 77535, and 69 245 respectively in 2011.

Level of education:

The majority of residents (261 029) in the BLM have some sort of education with secondary education (87 603) being the highest, followed by Grade 12 (69 824), then no schooling (60 737), then some primary education (32 629), then higher education (20 210) and finally completed primary school (10 811).

b) Socio-economic value of the activity

What is the expected capital value of the activity on completion?
 What is the expected yearly income that will be generated by or as a result of the activity?
 Will the activity contribute to service infrastructure?
 Is the activity a public amenity?
 How many new employment opportunities will be created in the development and construction phase of the activity/ies?

What is the expected value of the employment opportunities during the development and construction phase?
 What percentage of this will accrue to previously disadvantaged individuals?

How many permanent new employment opportunities will be created during the operational phase of the activity?

±R79 million	
Unknown at this stage	
YES	NO
YES	NO
Construction will be undertaken by Eskom Major Engineering Works, a group consisting of Eskom permanent employees	
Unknown at this stage	
Unknown at this stage	
Unknown at this stage	

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What is the expected current value of the employment opportunities during the first 10 years?
 What percentage of this will accrue to previously disadvantaged individuals?

Unknown at this stage
Unknown at this stage

36. 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.

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

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

Large areas adjacent to the proposed Tsakani Substation site are old or fallow agricultural lands with livestock enclosures. Extensive wood harvesting as well as vegetation clearance for agricultural activities has altered the natural area around the substation site. The frequent burning of the grassland vegetation and overgrazing by livestock including cattle and goats has also altered the natural tree, shrub, forb and grass species composition.

b) Indicate and describe the habitat condition on site

Habitat Condition	Percentage of habitat condition class (adding up to 100%)	Description and additional Comments and Observations (including additional insight into condition, e.g. poor land management practises, presence of quarries, grazing, harvesting regimes etc).
Natural	0%	The Granite Lowveld vegetation around the proposed substation displays various levels of transformation and degradation.
Near Natural (includes areas with	0%	A single large Common Wild Fig, <i>Ficus burkei</i> occurs on the site.

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low to moderate level of alien invasive plants)		
Degraded (includes areas heavily invaded by alien plants)	0%	Extensive wood harvesting, overgrazing by livestock (especially cows and goats), vegetation clearance and burning of vegetation.
Transformed (includes cultivation, dams, urban, plantation, roads, etc)	100%	Large areas adjacent to the proposed substation site are old or fallow agricultural lands with livestock enclosures.

c) Complete the table to indicate:

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

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

Please note: according to the Mpumalanga Biodiversity Sector Plan (2013) the substation is situated in a natural area (see Figure 9 above). The delineation of the vegetation units is inaccurate as large areas have been extensively degraded due to wood harvesting activities. Large areas have also been cleared for small-scale agricultural lands.

- 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 vegetation type is Granite Lowveld (SVI 3) (Mucina & Rutherford 2006) which was previously classified as Arid Lowveld (40%), Lowveld (38%) (Acocks 1998) or Mixed Lowveld Bushveld (LR 19) (Low & Rebelo 1996).

Large areas adjacent to the proposed substation site are old or fallow agricultural lands as well as livestock enclosures. Extensive wood harvesting as well as vegetation clearance for agricultural activities occurs around the substation site. The frequent burning of the grassland vegetation as well as overgrazing by livestock including cattle and goats has altered the natural tree, shrub, forb and grass species composition.

Remaining grass and forb species are dominated by species indicative of a disturbed or degraded habitat. Evidence of wood harvesting activities were noted along the non-perennial drainage line to the south as well as riparian zone of the Khokhovela River to the east of the proposed substation site. The vegetation on the proposed substation site is dominated by small shrubby Acacias as well as secondary succession grasses on an old agricultural land. A single large Common Wild Fig, *Ficus burkei* occurs on the site. The vegetation becomes more natural towards the Khokhovela River. Remnant patches of large riparian tree species occur along the macro-channel banks of the river. No rare or threatened plant species were observed around the proposed substation site or are likely to occur within the transformed agricultural lands on and surrounding the site.

SECTION C: PUBLIC PARTICIPATION

1. ADVERTISEMENT AND NOTICE

Publication name	Bushbuckridge News	
Date published	5 December 2014	
Site notice position	Latitude	Longitude
	24°41'2.60"	31°10'54.98"
	24°42'6.3"	31°13'33.71"
	24°39'14.33"	31°14'19.86"
	24°42'52.09"	31°16'17.40"
	24°40'37.63"	31°16'57.40"
	24°38'57.01"	31°19'33.02"
Date placed	20 – 23 October 2014	

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

2. DETERMINATION OF APPROPRIATE MEASURES

Provide details of the measures taken to include all potential I&APs as required by Regulation 54(2)€ 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)
Caroline Ah Sheni Verdoorn	Birdlife South Africa	advocacy@birdlife.org.za
Francois Cronje	EWT	francoisc@ewt.org.za
Nokukhanya Khumalo	SAHRA	nkhumalo@sahra.org.za
Dr. Sharon Pollard	Association for Water and Rural Development (AWARD)	sharon@award.org.za
Mr. Mish Khoza	Department of Agriculture, Rural Development and Land Administration	mmkhoza@ruraldevelopment.gov.za
Mr Andries Mnisi	Acting Municipal Manager- Bushbuckridge Local Municipality	mnisiandries@bushbuckridge.gov.za
Mr. Kobus Human	Portfolio Manager-Transnet Property	Kobus.Human@transnet.net
Mr. I. Sibuyi - Chairman	Amashangana Tribal Authority	082 593 0266
Mr Mathabela	Amashangana Tribal Authority	072-239-7500
Mr. I. J. Mnisi - Chairman	Mnisi Tribal Authority	mlambo.sipho@yahoo.co.uk

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Title, Name and Surname	Affiliation/ key stakeholder status	Contact details (tel number or e-mail address)
Mr Mashabane	Mnisi Tribal Authority	mlambo.sipho@yahoo.co.uk
Mr. Gavin Kukard	Eskom Negotiator	gkukard@mweb.co.za
Mr. Don Kukard	Eskom Negotiator	dkukard.kmp@mweb.co.za
Frik Brokhorst	Mpumalanga Tourism and Parks Agency	fbronkhorst@telkomsa.net
Frans Krige	Mpumalanga Tourism and Parks Agency	franskrige@telkomsa.net
Marie-Tinka Uys	Kruger to Canyon Biosphere Reserve	res@ottersden.co.za / info@kruger2canyons.org

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

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

3. ISSUES RAISED BY INTERESTED AND AFFECTED PARTIES

Summary of main issues raised by I&APs	Summary of response from EAP
To be included in the Final BAR.	

4. COMMENTS AND RESPONSE REPORT

The practitioner must record all comments received from I&APs and respond to each comment before the Draft BAR is submitted. The comments and responses must be captured in a comments and response report as prescribed in the EIA regulations and be attached to the Final BAR as Appendix E3. **Please note: The Comments and Responses Report will be attached to Final BAR. This report is still a draft.**

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
MDEDET- Environmental Officer	Ms. Robyn Luyt	013-766 4826	013-766 4614	rluyt@mpg.gov.za	Private Bag X11215, Nelspruit, 1200

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Authority/Organ of State	Contact person (Title, Name and Surname)	Tel No	Fax No	e-mail	Postal address
Ehlanzeni District Municipality: Health Services and Environmental Management - Department Head	Mr. Thapelo Shabangu	013 759 8554	013 759 8539	tshabangu@ehlanzeni.gov.za	PO Box 3333 Nelspruit 1200
Mpumalanga Department of Health	Anna-Marie van Brakel	013 752 2660		annamariae@mpuhealth.gov.za	Private Bag X11278 Nelspruit 1200
MMC-Environment	B.T Mokoena	013 799 18 51	013 799 1865	mokoena@bushbuckridge.gov.za	Private Bag X9308 Bushbuckridge 1280
Mpumalanga Department of Agriculture, Rural Development and Land Administration-Ehlanzeni South	Dr M. Kgaphola	013 759 4009/4018/4000	013-759 4165	Mkgaphola@mpg.gov.za	
Mpumalanga Department of Agriculture, Rural Development and Land Administration-Ehlanzeni North	Ms. P.N.Z. Mpangane		086 732 4495	mpanganep@mpg.gov.za	PO Box 101 Thulamahashe 1365
Mpumalanga Department of Agriculture, Rural Development and Land Administration-Ehlanzeni North and South	Silence Mathebula			silencemathebula@yahoo.com	
Department of Water Affairs	Mr. Howard Shabangu	013 759 7300		shabangus2@dwa.gov.za	Private Bag X11259 Nelspruit, 1200
Economic Development, Environment and Tourism: Regional Director	Sam Maluleke	013 766 4584		smaluleka@mpg.gov.za	Private Bag X11215 Nelspruit 1200
Mpumalanga Department of Social Development	Ms Melody M	013 766 3080	013 766 3458	MelodyM@dsdmpu.gov.za	Private Bag X11213 Nelspruit 1200
Mpumalanga Parks and Tourism Agency: Regional Director	Mr. Wilson Makaringa	013 766 4832 / 4849	013 766 46 14	whmakaringe@mpg.gov.za	Private Bag X11215 Nelspruit 1200
Mpumalanga Department of Public Works, Roads and Transport: Head of Department	Mr. Kgopana Mathew Mohlasedi	013 766 6554	013 766 8449	kmohlasedi@mpg.gov.za	Private Bag X 11310 Nelspruit 1200
Ward Councillors					
Bushbuckridge Local Municipality: Executive Mayor	CLR Renias Khumalo	013 799 1851	013 799 1865	khumalor@bushbuckridge.gov.za	Private Bag X9308 Bushbuckridge

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Authority/Organ of State	Contact person (Title, Name and Surname)	Tel No	Fax No	e-mail	Postal address
					1280
Social Development: Bushbuckridge Local Municipality	CLR Flomina Ntimba	082 8270 410	013 799 1865	khosaf@bushbuckridge.gov.za	Private Bag X9308 Bushbuckridge 1280
Bushbuckridge Local Municipality	Ms. Hellen Nonyane	082-692 6002	013 799 1865 / 2130 / 086 241 6765	nonyaneh@bushbuckridge.gov.za / hlatseno@gmail.com	Private Bag X9308 Bushbuckridge 1280
MMC-Environment-Bushbuckridge Local Municipality	Mr. B.T. Mokoena	079 874 4339		tebogomokoena@ovi.com	PO Box 479, Acornhoek, Mpumalanga
Ward Councillor: Ronaldsey	Thandi Maphane	079 874 3378	013 799 1865		PO Box 1338 Thulamahashi 1365
Ward 36 Councillor: Edinburgh "B", Rolle "A" and "B", Allandale	Ms. Lydia Mabunda	079 874 3349	013 799 1865		PO Box 1062 Thulamahashi 1365
Ward 31 Councillor: Thulamahashe	Mr. Rodgers Tshobede	082 226 2827 / 082 827 0411	013 799 1865	tshobeterd@gmail.com	PO Box 386 Thulamahashe 1365
Ward 3 Councillor: Calcutta "A"	Charles Monareng	071 609 4850		monarengcp@gmail.com	PO Box 2049 Mkhuhlu 1246
Ward 18 Councillor: Tsakani	Ruth Busisiwe Raganya	082 827 0400		raganya23@gmail.com	PO Box 758 Acornhoek 1360
Ward 22 Councillor: Dingleydale	Enas Selowe	079 874 4336		enasselowe@gmail.com	Voicemail
Ward 24 Councillor: Cunningmoore, Oakley	Phumaphi Bongco	082 827 0302		busisiwepontso@gmail.com	PO Box 852 Mkhuhlu 1246
Ward 26 Councillor: Kildare	Johan Mthabane	082 827 0407			PO Box 764 Ximhungwe 1281
Ward 29 Councillor: Rolle	Tutani Makaringe	082 827 0323		tutanimillion@gmail.com	PO Box 474 Thulamahashe 1365
Ward 30 Councillor: Ludlouw, Islington, Burlington	Cutberry Mthisi	079 874 3372		robertcutbery@gmail.com	Voicemail
Ward 33 Councillor: Hluvukani	Difani Mashabane	079 874 3380		mlambo.sipho@yahoo.co.uk	No answer on phone
Ward 34 Councillor: Clare	Mkoli Mnisi	082 827 0388			PO Box 190 Hluvukani 1363
Ward 35 Councillor: Ronaldsey, Cunningmoore "B", Kildare "B"	Luther Mhaule	082 827 0383		luthermhaule36@gmail.com	PO Box 2055 Mkhuhlu 1246

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

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

6. CONSULTATION WITH OTHER STAKEHOLDERS

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

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

A list of registered I&APs must be included as [Appendix E5](#).

Copies of any correspondence and minutes of any meetings held must be included in [Appendix E6](#).

SECTION D: IMPACT ASSESSMENT

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

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

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

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Activity	Impact summary	Significance	Proposed mitigation
Alternative 1 (Preferred Alternative): Green Route			
Planning and Design	Direct impacts: <ul style="list-style-type: none"> • Flora and Fauna <ul style="list-style-type: none"> – Impact to highly sensitive communities. 	-12	<ul style="list-style-type: none"> • The alignment of towers and the power line should be adjusted to prevent the destruction of remaining large (>4 m) indigenous tree species including the three protected tree species (<i>Pterocarpus angloensis</i> – Wild teak, <i>Philenoptera violacea</i> – Apple-Leaf and <i>Sclerocarya birrea</i> – Marula). • Temporary access and haulage routes must be designed prior to construction commencing to ensure that the most preferable access and haulage routes for each transmission tower site has been identified. Use should be made of existing roads as far as possible. • Further mitigation measures are included in the Impact Assessment (Appendix F) and Environmental Management Programme – EMPr (Appendix G).
	<ul style="list-style-type: none"> • Wetlands and Surface Water Bodies <ul style="list-style-type: none"> – Damage and degradation of wetlands and surface water bodies. 	-11	<ul style="list-style-type: none"> • When the route of the power line is being finalised in the pre-construction phase, it is recommended that proposed tower positions be subject to a walk down by a surface water specialist in order to confirm that no towers are to be placed within a surface water feature. A crucial aspect of this walk down will also be to assess whether planned access routes for construction vehicles would cross / traverse any surface water features (in particular seepage wetland features), and to highlight any no-go areas in this context. It is strongly recommended that this walk down be done in summer when the vegetation and hydrology of such features would be most prominent and recognisable.
	<ul style="list-style-type: none"> • Avifauna <ul style="list-style-type: none"> – Bird collisions. 	-9	<ul style="list-style-type: none"> • An avifaunal walk through is recommended in order to confirm the high sensitivity areas to identify the exact spans of the power line to which the mitigation for bird collisions is required.
	Indirect impacts: None.		
	Cumulative impacts: None.		
Construction	Direct impacts: <ul style="list-style-type: none"> • Topography and soils <ul style="list-style-type: none"> – Disruption of surface soils. – Erosion. 	-8	<ul style="list-style-type: none"> • Disturbed areas of natural vegetation as well as cut and fills must be rehabilitated immediately to prevent soil erosion. • Limit construction, maintenance and inspection activities to dry periods in order to curb occurrence/ augmentation of erosion in areas of existing erosion. • No vehicles should be allowed to cross rivers or streams in any area other than an approved crossing, taking care to prevent any impact (particularly erosion) in surrounding habitat. • Remove and store topsoil separately in areas where excavation/degradation takes place. Topsoil should be used for rehabilitation purposes in order to facilitate re-growth of species that occur naturally in the area.
	<ul style="list-style-type: none"> • Surface water (including wetlands) <ul style="list-style-type: none"> – Construction of power line across riparian corridors 	-11	<ul style="list-style-type: none"> • All power line spans placed across a riparian zone must be subject to the acquisition of the relevant authorisation in terms of GN1199 from the DWS. • As far as possible infrastructure 32 m buffer should be less than 50 m² in order for Activity

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Activity	Impact summary	Significance	Proposed mitigation
	<p>would impact the riparian zone. This would degrade riparian habitat integrity.</p> <ul style="list-style-type: none"> – Proliferation of alien vegetation into the riparian zone when the servitude is cleared. 		<p>11 of LN1 not to be triggered.</p> <ul style="list-style-type: none"> • Only vegetation clearing within the servitude centreline clearing should be allowed, with retention of as much woody vegetation as possible. • Construction of spans within riparian areas must be carefully monitored by the ECO and any construction team environmental officers.
	<ul style="list-style-type: none"> • Flora and Fauna <ul style="list-style-type: none"> – Loss of protected tree species. – Loss of faunal habitats. – Threatened fauna. – Increased human presence during construction. – Vegetation clearance. – Disturbance to livestock. – Fire. 	-9	<ul style="list-style-type: none"> • All protected species not to be removed must be clearly marked and such areas fenced off if required. • The alignment of transmission towers and the power line should be adjusted to prevent the destruction of any remaining large (>4 m) indigenous or protected tree species including the two protected tree species (<i>Pterocarpus angloensis</i> – Wild teak and <i>Sclerocarya birrea</i> – Marula). The Department of Agriculture, Forestry and Fisheries (DAFF) will have to be approached to obtain the required permits for the removal of any protected tree species if necessary. • Only an 8 m strip may be cleared flush with the ground to allow vehicular passage during construction. No scalping shall be allowed on any part of the servitude road unless absolutely necessary. • All remaining Aloes (<i>Aloe greatheadii</i>), bulbous plants (geophytes) should be replanted if unearthed during the construction phase of the project. • All alien vegetation in the total servitude shall be cleared and treated with herbicides. • Movement of workers must be limited to areas under construction and access to the undeveloped areas, especially the surrounding open areas must be strictly regulated ("no-go" areas during construction activities). • As a precautionary mitigation measure it is recommended that the developer and construction Contractor as well as an independent environmental control officer (ECO) should be made aware of the possible presence of certain threatened animal species (South African Python, African Bullfrog, White-throated or Rock Monitor, Water Monitor) prior to the commencement of construction activities. In the event that any of the above-mentioned species are discovered they should be allowed to move away from the construction area and not interfered with. • Prior to construction and vegetation clearance a suitably qualified Zoologist/Botanist or Ecologist should closely examine the proposed construction areas (tower supports) for the presence of any animal burrows (including spiders and scorpions), rocky outcrops, logs, stumps and other debris and relocate any affected animals to appropriate habitat away from the servitude or tower.

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Activity	Impact summary	Significance	Proposed mitigation
			<ul style="list-style-type: none"> • No open fires shall be allowed on site under any circumstance. The Contractor shall have fire-fighting equipment available on all vehicles working on site, especially during the winter months. • Further mitigation measures are included in the Impact Assessment (Appendix F) and EMP (Appendix G).
	<ul style="list-style-type: none"> • Avifauna <ul style="list-style-type: none"> – Disturbance of birds, impact on Red Data and other avifaunal species. – Destruction or alteration of bird habitat, impact on Red Data and other species. 	-8	<ul style="list-style-type: none"> • Strict control should be maintained over all activities during construction. • During construction, if any of the “Focal Species” identified in the avifaunal report (Appendix D) are observed to be roosting and/or breeding in the vicinity, an avifaunal specialist is to be contacted for further instruction. • Strict control should be maintained over all activities during construction, in particular heavy machinery and vehicle movements, and staff. It is difficult to mitigate properly for this as some habitat destruction is inevitable.
	<ul style="list-style-type: none"> • Heritage and Palaeontology <ul style="list-style-type: none"> – Destruction of sites of cultural significance such as graves. 	-8	<ul style="list-style-type: none"> • If during construction any cultural heritage resources or graves are unearthed, all work has to be stopped until the site has been inspected and mitigated by a cultural heritage practitioner. • Any discovered artefacts shall not be removed under any circumstances. Any destruction of a site can only be allowed once a permit is obtained and the site has been mapped and noted. Permits must be obtained from the South African Heritage Resources Agency.
	<ul style="list-style-type: none"> • Waste <ul style="list-style-type: none"> – Waste generation will have a negative impact on the environment if not adequately controlled. 	-8	<ul style="list-style-type: none"> • Where possible, construction waste on site must be reused or recycled. • Burning of waste will not be permitted. • Further mitigation measures are included in the Impact Assessment (Appendix F) and EMP (Appendix G).
	<ul style="list-style-type: none"> • Dust <ul style="list-style-type: none"> – Generation of fugitive dust. 	-8	<ul style="list-style-type: none"> • Frequent and effective dust-suppression is advised, particularly along dirt roads. Dust must be suppressed on the construction site during dry periods by the regular application of water. Water used for this purpose must be used in quantities that will not result in the generation of run-off.
	<ul style="list-style-type: none"> • Noise <ul style="list-style-type: none"> – Increased noise pollution. 	-8	<ul style="list-style-type: none"> • Surrounding communities and adjacent landowners are to be notified in advance of noisy construction activities. • Construction staff working in areas where the 8-hour ambient noise levels exceed 85 dBA should wear ear protection equipment.
	<ul style="list-style-type: none"> • Social <ul style="list-style-type: none"> – Possible job creation. 	+8	<ul style="list-style-type: none"> • Jobs should be given to local residents during construction (such as clearing of servitudes and digging of holes. Should this not be possible, it should be explained to residents that the nature of the development does not allow it, so that false expectations of possible jobs do not exist.

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Activity	Impact summary	Significance	Proposed mitigation
	<ul style="list-style-type: none"> • Visual <ul style="list-style-type: none"> – Clearing of vegetation could partially alter the landscape as viewed from the surrounding area. – Construction equipment may be visually intrusive. 	-7	<ul style="list-style-type: none"> • Phased, rather than indiscriminate clearing of the length of the alignment to be undertaken. • Vegetation clearing to be limited to the servitude, and to be limited to species specimens presenting a fire danger or clearance danger.
	<p>Indirect impacts:</p> <ul style="list-style-type: none"> • Flora <ul style="list-style-type: none"> – Alien and exotic species encroachment. 	-8	<ul style="list-style-type: none"> • Exotic weeds and invaders that might establish on the re-vegetated areas should be controlled to allow the grass to properly establish. • Monitoring the potential spread of declared weeds and invasive alien vegetation to neighbouring land and protecting the agricultural resources and soil conservation works are regulated by the Conservation of Agricultural Resources Act, No. 43 of 1983 and NEM: Biodiversity Act, No 10 of 2004 and Regulations should be addressed on a continual basis.
	<p>Cumulative impacts:</p> <p>Cumulative loss of riparian habitat due to clearing of riparian vegetation and due to the risk of increased proliferation of alien invasive plant species within the riparian corridor associated with the new servitude could occur. These cumulative effects exist in the context of the most important existing impacts on riparian zones which are removal of woody vegetation from riparian corridors for fuel (firewood), intense overgrazing by cattle and potential hydrological changes due to increased seasonality of flows due to catchment degradation and transformation of wetlands in the catchment of drainage lines.</p> <p>Impacts on individual surface water features across the site could result in a cumulative impact on respective catchments, although other land use-related practices are more likely to cause wetland loss / degradation.</p> <p>Pollutants released into more than one surface water features through construction activities could result in downstream impacts, although this is thought to be unlikely.</p>		
Operational	<p>Direct impacts:</p> <ul style="list-style-type: none"> • Surface water (including wetlands) <ul style="list-style-type: none"> – Power line servitudes constructed through riparian areas will be kept cleared of most woody and non-grassy vegetation, thus constituting an impact on the affected part of the riparian corridor for the entire operational lifespan of the power line. – Alien vegetation encroachment. 	-9	<ul style="list-style-type: none"> • Operational clearing of vegetation within the servitude must be limited to vegetation above the minimum clearance zone within the centreline, and indigenous shrubs should be allowed to remain should these not pose a fire risk. • It is critical that all alien invasive vegetation management in the servitude be undertaken at regular intervals (at least every 6 months) for the operational life of the power line servitude. This must not just be undertaken for riparian areas but for servitudes in adjacent areas. As part of this management all alien invasive vegetation within the servitude must be removed. • Operational line access procedures must ensure that there is no vehicular access into wetlands, unless in an emergency situation. • If an emergency maintenance situation arises that requires access into wetlands to be required, access into the wetland must be carefully controlled, and all relevant Eskom environmental procedures must be followed. Any damage to the wetland must be fully rehabilitated.

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Activity	Impact summary	Significance	Proposed mitigation
	<ul style="list-style-type: none"> • Avifauna <ul style="list-style-type: none"> – Collisions with overhead power lines. – Possible bird electrocution. 	-9	<ul style="list-style-type: none"> • A “Bird Friendly” monopole structure, with a bird perch (as per standard Eskom guidelines) should be used for the transmission tower structures. • Mark sections of line in high sensitivity areas with anti-collision marking devices on the earth wire to increase the visibility of the power line and reduce likelihood of collisions. Marking devices should be spaced 10 m apart. High sensitivity areas should be finalised in a site “walkthrough” by an avifaunal specialist once the final route is decided and towers/pylons pegged as a condition of the EMPr (Appendix G).
	<ul style="list-style-type: none"> • Waste <ul style="list-style-type: none"> – Negative impact on the environment, if not controlled adequately 	-7	<ul style="list-style-type: none"> • Where possible, operational waste on site must be reused or recycled. • Burning of waste material will not be permitted. • Further mitigation measures are included in the Impact Assessment (Appendix F) and EMPr (Appendix G).
	<ul style="list-style-type: none"> • Social <ul style="list-style-type: none"> – Improve reliability of electricity supply. – Increased supply of electricity to new users. – Encourages economic growth. 	+11	<ul style="list-style-type: none"> • No mitigation proposed.
	<ul style="list-style-type: none"> • Visual <ul style="list-style-type: none"> – Visual intrusion. 	-9	<ul style="list-style-type: none"> • Limiting of operational vegetation clearing along the servitude to woody vegetation higher than maximum clearance height. • Use of monopoles to limit visibility factor of power line.
	<p>Indirect impacts:</p> <ul style="list-style-type: none"> • Flora and Fauna <ul style="list-style-type: none"> – Surrounding areas and species present in the direct vicinity of the study area could be affected by indirect impacts resulting from maintenance activities. 	-8	<ul style="list-style-type: none"> • Maintenance activities must be restricted to the power line servitude.
	<ul style="list-style-type: none"> • Health & Safety <ul style="list-style-type: none"> – Exposure to electromagnetic fields. – Potential risk of electrocution. 	-9	<ul style="list-style-type: none"> • In general, it is not recommended that humans should live under power lines due to the effects of EMF. However, the radiation decreases with an increase in distance from the source. The EMFs are insignificant on the servitude border. • Safety and security issues should be addressed as a priority by Eskom. It is recommended that the landowners and affected community members be contacted in advance to ensure that they are forewarned of the construction and maintenance activities planned in the area. In addition, the local community must be educated about the dangers of high voltage electricity.

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Activity	Impact summary	Significance	Proposed mitigation
			<ul style="list-style-type: none"> • Further mitigation measures are included in the Impact Assessment (Appendix F).
	<p>Cumulative impacts:</p> <ul style="list-style-type: none"> • Socio-economic <ul style="list-style-type: none"> – Economic growth within the area will be stimulated. 		
Decommissioning and Closure	<p>Direct impacts:</p> <ul style="list-style-type: none"> • Waste <ul style="list-style-type: none"> – Negative impact on the environment, if not controlled adequately or disposed of correctly. 		<ul style="list-style-type: none"> • Waste must be disposed off in the appropriate manner at a licensed disposal site. • Disposal of waste must be in accordance with relevant legislative requirements.
	<ul style="list-style-type: none"> • Surface water (including wetlands) <ul style="list-style-type: none"> – Removal of the towers placed in wetlands could cause damage to the hydrology and vegetation of the wetland. – Increase the risk of alien invasive plant encroachment. – Erosion and siltation. 	-10	<ul style="list-style-type: none"> • Decommissioning to be guided by Eskom guidelines for construction / decommissioning. • Decommissioning to be monitored by an ECO according to the stipulations of the EMPr. • No temporary accesses to be constructed through any surface water feature and no machinery to enter any wetland unless authorised under the EMPr by the ECO as part of a decommissioning activity. • After decommissioning of the power line, management of alien invasive vegetation should continue for a period. • Further mitigation measures are included in the Impact Assessment (Appendix F) and the EMPr (Appendix G).
	<ul style="list-style-type: none"> • Erosion <ul style="list-style-type: none"> – Increased erosion. 	-8	<ul style="list-style-type: none"> • Rehabilitation of areas affected by construction and operation activities should ideally commence at the start of the rainy season. • All areas where topsoil was removed or placing of monopoles should be landscaped in order to reflect surrounding conditions. • Erosion monitoring and control should be conducted. This should be in the form of inspections subsequent to rains. Topsoil should be replaced in all areas that were eroded. It is critical that adequate topsoil remains in construction areas, implying that topsoil might need to be supplemented in some areas until such time that a layer of vegetation has stabilised the soil. • Further mitigation measures are included in the EMPr (Appendix G).
	<p>Indirect impacts:</p> <ul style="list-style-type: none"> • Visual <ul style="list-style-type: none"> – Positive visual impact as the landscape could be returned to a more natural appearance. 	+10	<ul style="list-style-type: none"> • No mitigation proposed.

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Activity	Impact summary	Significance	Proposed mitigation
	Cumulative impacts: None.		
Alternative 3: Purple Route			
Planning and Design	Direct impacts:		
	<ul style="list-style-type: none"> • Flora and Fauna <ul style="list-style-type: none"> – Impact to highly sensitive communities. 	-13	<ul style="list-style-type: none"> • The alignment of towers and the power line should be adjusted to prevent the destruction of remaining large (>4 m) indigenous tree species including the three protected tree species (<i>Pterocarpus angloensis</i> – Wild teak, <i>Philenoptera violacea</i> – Apple-Leaf and <i>Sclerocarya birrea</i> – Marula) as well as the Red Listed ‘Declining’ Cape Poison Bulb (<i>Boophone disticha</i>). • Temporary access and haulage routes must be designed prior to construction commencing to ensure that the most preferable access and haulage routes for each transmission tower site has been identified. Use should be made of existing roads as far as possible. • Further mitigation measures are included in the Impact Assessment (Appendix F).
	<ul style="list-style-type: none"> • Wetlands and Surface Water Bodies <ul style="list-style-type: none"> – Damage and degradation of wetlands and surface water bodies due to the route crossing numerous seasonal drainage lines. 	-10	<ul style="list-style-type: none"> • When the route of the power line is being finalised in the pre-construction phase, it is recommended that proposed tower positions be subject to a walk down by a surface water specialist in order to confirm that no towers are to be placed within a surface water feature. A crucial aspect of this walk down will also be to assess whether planned access routes for construction vehicles would cross / traverse any surface water features (in particular seepage wetland features), and to highlight any no-go areas in this context. It is strongly recommended that this walk down be done in summer when the vegetation and hydrology of such features would be most prominent and recognisable.
	<ul style="list-style-type: none"> • Avifauna <ul style="list-style-type: none"> – Bird collisions. 	-9	<ul style="list-style-type: none"> • An avifaunal walk through is recommended in order to confirm the high sensitivity areas to identify the exact spans of the power line to which the mitigation for bird collisions is required.
	Indirect impacts: None.		
Cumulative impacts: None.			
Construction	Direct impacts:		
	<ul style="list-style-type: none"> • Topography and soils <ul style="list-style-type: none"> – Disruption of surface soils. – Erosion. 	-8	<ul style="list-style-type: none"> • Disturbed areas of natural vegetation as well as cut and fills must be rehabilitated immediately to prevent soil erosion. • Limit construction, maintenance and inspection activities to dry periods in order to curb occurrence/ augmentation of erosion in areas of existing erosion. • No vehicles should be allowed to cross rivers or streams in any area other than an approved crossing, taking care to prevent any impact (particularly erosion) in surrounding habitat. • Remove and store topsoil separately in areas where excavation/degradation takes place. Topsoil should be used for rehabilitation purposes in order to facilitate re-growth of species that occur naturally in the area. • Further mitigation measures are included in the Impact Assessment (Appendix F) and EMPr

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Activity	Impact summary	Significance	Proposed mitigation
	<ul style="list-style-type: none"> • Surface water (including wetlands) <ul style="list-style-type: none"> – Construction of power line across riparian corridors would impact the riparian zone. This would degrade riparian habitat integrity. – Proliferation of alien vegetation into the riparian zone when the servitude is cleared. 	-10	(Appendix G). <ul style="list-style-type: none"> • No batching or chemical / fuel storage areas to be located within any surface water feature or within 100 m of a wetland or other surface water feature. • No temporary construction accesses to be constructed through any surface water feature and no machinery to enter any wetland unless authorised under the EMPr by the ECO as part of a construction activity • All power line spans placed across a riparian zone must be subject to the acquisition of the relevant authorisation in terms of GN1199 from the DWS. • As far as possible infrastructure within the 32 m buffer should be less than 50 m² in order for Activity 11 of LN1 not to be triggered. • Only vegetation clearing within the servitude centreline clearing should be allowed, with retention of as much woody vegetation as possible. • Construction of spans within riparian areas must be carefully monitored by the ECO and any construction team environmental officers. • Further mitigation measures are included in the Impact Assessment (Appendix F).
	<ul style="list-style-type: none"> • Flora and Fauna <ul style="list-style-type: none"> – Loss of protected tree species. – Loss of faunal habitats. – Threatened fauna. – Increased human presence during construction. – Vegetation clearance. – Disturbance to livestock. – Fire. 	-10	<ul style="list-style-type: none"> • All protected species not to be removed must be clearly marked and such areas fenced off if required. • The alignment of transmission towers and the power line should be adjusted to prevent the destruction of any remaining large (>4 m) indigenous or protected tree species including the two protected tree species (<i>Pterocarpus angloensis</i> – Wild teak and <i>Sclerocarya birrea</i> – Marula). The Department of Agriculture, Forestry and Fisheries (DAFF) will have to be approached to obtain the required permits for the removal of any protected tree species if necessary. • Only an 8 m strip may be cleared flush with the ground to allow vehicular passage during construction. No scalping shall be allowed on any part of the servitude road unless absolutely necessary. • All remaining Aloes (<i>Aloe greatheadii</i>), bulbous plants (geophytes) should be replanted if unearthed during the construction phase of the project. • All alien vegetation in the total servitude shall be cleared and treated with herbicides. • Movement of workers must be limited to areas under construction and access to the undeveloped areas, especially the surrounding open areas must be strictly regulated ("no-go" areas during construction activities). • As a precautionary mitigation measure it is recommended that the developer and construction Contractor as well as an independent environmental control officer (ECO) should be made aware of the possible presence of certain threatened animal species (South African Python, African Bullfrog, White-throated or Rock Monitor, Water Monitor) prior to the commencement of construction activities. In the event that any of the above-

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Activity	Impact summary	Significance	Proposed mitigation
			<p>mentioned species are discovered they should be allowed to move away from the construction area and not interfered with.</p> <ul style="list-style-type: none"> • Prior to construction and vegetation clearance a suitably qualified Zoologist/Botanist or Ecologist should closely examine the proposed construction areas (tower supports) for the presence of any animal burrows (including spiders and scorpions), rocky outcrops, logs, stumps and other debris and relocate any affected animals to appropriate habitat away from the servitude or tower. • No open fires shall be allowed on site under any circumstance. The Contractor shall have fire-fighting equipment available on all vehicles working on site, especially during the winter months. • Further mitigation measures are included in the Impact Assessment (Appendix F) and EMPr (Appendix G).
	<ul style="list-style-type: none"> • Avifauna <ul style="list-style-type: none"> – Disturbance of birds, impact on Red Data and other avifaunal species. – Destruction or alteration of bird habitat, impact on Red Data and other species. 	-8	<ul style="list-style-type: none"> • Strict control should be maintained over all activities during construction. • During construction, if any of the “Focal Species” identified in the avifaunal report (Appendix D) are observed to be roosting and/or breeding in the vicinity, an avifaunal specialist is to be contacted for further instruction. • Strict control should be maintained over all activities during construction, in particular heavy machinery and vehicle movements, and staff. It is difficult to mitigate properly for this as some habitat destruction is inevitable.
	<ul style="list-style-type: none"> • Heritage and Palaeontology <ul style="list-style-type: none"> – Destruction of sites of cultural significance such as graves. 	-8	<ul style="list-style-type: none"> • If during construction any cultural heritage resources or graves are unearthed, all work has to be stopped until the site has been inspected and mitigated by a cultural heritage practitioner. • Any discovered artefacts shall not be removed under any circumstances. Any destruction of a site can only be allowed once a permit is obtained and the site has been mapped and noted. Permits must be obtained from the South African Heritage Resources Agency. • Further mitigation measures are included in the Impact Assessment (Appendix F) and the EMPr (Appendix G).
	<ul style="list-style-type: none"> • Waste <ul style="list-style-type: none"> – Waste generation will have a negative impact on the environment if not adequately controlled. 	-8	<ul style="list-style-type: none"> • Where possible, construction waste on site must be reused or recycled. • Burning of waste will not be permitted. • Further mitigation measures are included in the Impact Assessment (Appendix F).
	<ul style="list-style-type: none"> • Dust <ul style="list-style-type: none"> – Generation of fugitive dust. 	-8	<ul style="list-style-type: none"> • Frequent and effective dust-suppression is advised, particularly along dirt roads. Dust must be suppressed on the construction site during dry periods by the regular application of water. Water used for this purpose must be used in quantities that will not result in the generation of run-off.
	<ul style="list-style-type: none"> • Noise 	-8	<ul style="list-style-type: none"> • Surrounding communities and adjacent landowners are to be notified in advance of noisy

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Activity	Impact summary	Significance	Proposed mitigation
	<ul style="list-style-type: none"> – Increased noise pollution. 		construction activities. <ul style="list-style-type: none"> • Construction staff working in areas where the 8-hour ambient noise levels exceed 85 dBA should wear ear protection equipment.
	<ul style="list-style-type: none"> • Social <ul style="list-style-type: none"> – Possible job creation. 	+8	<ul style="list-style-type: none"> • Jobs should be given to local residents during construction (such as clearing of servitudes and digging of holes. Should this not be possible, it should be explained to residents that the nature of the development does not allow it, so that false expectations of possible jobs do not exist.
	<ul style="list-style-type: none"> • Visual <ul style="list-style-type: none"> – Clearing of vegetation could partially alter the landscape as viewed from the surrounding area. – Construction equipment may be visually intrusive. 	-7	<ul style="list-style-type: none"> • Phased, rather than indiscriminate clearing of the length of the alignment to be undertaken. • Vegetation clearing to be limited to the servitude, and to be limited to species specimens presenting a fire danger or clearance danger.
	<p>Indirect impacts:</p> <ul style="list-style-type: none"> • Flora <ul style="list-style-type: none"> – Alien and exotic species encroachment. 	-8	<ul style="list-style-type: none"> • Exotic weeds and invaders that might establish on the re-vegetated areas should be controlled to allow the grass to properly establish. • Monitoring the potential spread of declared weeds and invasive alien vegetation to neighbouring land and protecting the agricultural resources and soil conservation works are regulated by the Conservation of Agricultural Resources Act, No. 43 of 1983 and the NEM: Biodiversity Act, No 10 of 2004 and Regulations and should be addressed on a continual basis.
	<ul style="list-style-type: none"> • Wetlands <ul style="list-style-type: none"> – Erosion and/or sedimentation of the wetland downslope of the transmission tower location and the access roads. – Encroachment of alien species. 	-8	<ul style="list-style-type: none"> • Provision of adequate stormwater measures and controls during construction. • The establishment and re-growth of alien vegetation must be controlled after the removal of grass. All declared aliens must be identified and managed in accordance with the Conservation of Agricultural Resources Act, 1983 (Act No.43 of 1983) and the NEM: Biodiversity Act, No 10 of 2004 and Regulations .
<p>Cumulative impacts:</p> <p>Cumulative loss of riparian habitat due to clearing of riparian vegetation and due to the risk of increased proliferation of alien invasive plant species within the riparian corridor associated with the new servitude could occur. These cumulative effects exist in the context of the most important existing impacts on riparian zones which are removal of woody vegetation from riparian corridors for fuel (firewood), intense overgrazing by cattle and potential hydrological changes due to increased seasonality of flows due to catchment degradation and transformation of wetlands in the catchment of drainage lines.</p> <p>Impacts on individual surface water features across the site could result in a cumulative impact on respective catchments, although other land use-related practices are more likely to cause wetland loss / degradation.</p> <p>Pollutants released into more than one surface water features through construction activities could result in downstream impacts, although this is thought to be</p>			

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Activity	Impact summary	Significance	Proposed mitigation
	unlikely		
Operational	Direct impacts: <ul style="list-style-type: none"> • Flora <ul style="list-style-type: none"> – Disturbance to sensitive habitats 	-10	<ul style="list-style-type: none"> • No vehicles should be allowed to cross rivers or streams in any area other than an approved crossing, taking care to prevent any impact (particularly erosion) in surrounding habitat. • All buffers around wetlands and rivers should be maintained. • Further mitigation measures are included in the Impact Assessment (Appendix F) and the EMPr (Appendix G).
	<ul style="list-style-type: none"> • Surface water (including wetlands) <ul style="list-style-type: none"> – Power line servitudes constructed through riparian areas will be kept cleared of most woody and non-grassy vegetation, thus constituting an impact on the affected part of the riparian corridor for the entire operational lifespan of the power line. – Alien vegetation encroachment. 	-10	<ul style="list-style-type: none"> • Operational clearing of vegetation within the servitude must be limited to vegetation above the minimum clearance zone within the centreline, and indigenous shrubs should be allowed to remain should these not pose a fire risk. • It is critical that all alien invasive vegetation management in the servitude be undertaken at regular intervals (at least every 6 months) for the operational life of the power line servitude. This must not just be undertaken for riparian areas but for servitudes in adjacent areas. As part of this management all alien invasive vegetation within the servitude must be removed. • Operational line access procedures must ensure that there is no vehicular access into wetlands, unless in an emergency situation. • If an emergency maintenance situation arises that requires access into wetlands to be required, access into the wetland must be carefully controlled, and all relevant Eskom environmental procedures must be followed. Any damage to the wetland must be fully rehabilitated.
	<ul style="list-style-type: none"> • Avifauna <ul style="list-style-type: none"> – Collisions with overhead power lines. – Possible bird electrocution. 	-9	<ul style="list-style-type: none"> • A “Bird Friendly” monopole structure, with a bird perch (as per standard Eskom guidelines) should be used for the transmission tower structures. • Mark sections of line in high sensitivity areas with anti-collision marking devices on the earth wire to increase the visibility of the power line and reduce likelihood of collisions. Marking devices should be spaced 10 m apart. High sensitivity areas should be finalised in a site “walkthrough” by an avifaunal specialist once the final route is decided and towers/pylons pegged as a condition of the EMPr.
	<ul style="list-style-type: none"> • Waste <ul style="list-style-type: none"> – Negative impact on the environment, if not controlled adequately. 	-7	<ul style="list-style-type: none"> • Where possible, operational waste on site must be reused or recycled. • Disposal of waste must be in accordance with relevant legislative requirements. • Further mitigation measures are included in the Impact Assessment (Appendix F) and the EMPr (Appendix G).
	<ul style="list-style-type: none"> • Social <ul style="list-style-type: none"> – Improve reliability of electricity supply. – Increased supply of electricity to new users. 	+11	<ul style="list-style-type: none"> • No mitigation proposed.

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Activity	Impact summary	Significance	Proposed mitigation
	<ul style="list-style-type: none"> – Encourages economic growth. 		
	<ul style="list-style-type: none"> • Visual <ul style="list-style-type: none"> – Visual intrusion 	-9	<ul style="list-style-type: none"> • Limiting of operational vegetation clearing along the servitude to woody vegetation higher than maximum clearance height. • Use of monopoles to limit visibility factor of power line.
	<p>Indirect impacts:</p> <ul style="list-style-type: none"> • Flora and Fauna <ul style="list-style-type: none"> – Surrounding areas and species present in the direct vicinity of the study area could be affected by indirect impacts resulting from maintenance activities 	-8	<ul style="list-style-type: none"> • Maintenance activities must be restricted to the power line servitude.
	<ul style="list-style-type: none"> • Health & Safety <ul style="list-style-type: none"> – Exposure to electromagnetic fields. – Potential risk of electrocution. 	-9	<ul style="list-style-type: none"> • In general, it is not recommended that humans should live under power lines due to the effects of EMF. However, the radiation decreases with an increase in distance from the source. The EMFs are insignificant on the servitude border. • Safety and security issues should be addressed as a priority by Eskom. It is recommended that the landowners and affected community members be contacted in advance to ensure that they are forewarned of the construction and maintenance activities planned in the area. In addition, the local community must be educated about the dangers of high voltage electricity.
	<p>Cumulative impacts:</p> <ul style="list-style-type: none"> • Socio-economic <ul style="list-style-type: none"> – Economic growth within the area will be stimulated.. 		
Decommissioning and Closure	<p>Direct impacts:</p> <ul style="list-style-type: none"> • Waste <ul style="list-style-type: none"> – Negative impact on the environment, if not controlled adequately or disposed of correctly. 	-7	<ul style="list-style-type: none"> • Disposal of waste must be in accordance with relevant legislative requirements. • Waste must be disposed off in the appropriate manner at a licensed disposal site.
	<ul style="list-style-type: none"> • Surface water (including wetlands) <ul style="list-style-type: none"> – Removal of the towers placed in wetlands could cause damage to the hydrology and vegetation of the wetland. 	-10	<ul style="list-style-type: none"> • Decommissioning to be guided by Eskom guidelines for construction / decommissioning. • Decommissioning to be monitored by an ECO according to the stipulations of the EMPr. • No temporary accesses to be constructed through any surface water feature and no machinery to enter any wetland unless authorised under the EMPr by the ECO as part of a decommissioning activity. • After decommissioning of the power line, management of alien invasive vegetation should

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Activity	Impact summary	Significance	Proposed mitigation
	<ul style="list-style-type: none"> – Increase the risk of alien invasive plant encroachment. – Erosion and siltation. 		<ul style="list-style-type: none"> continue for a period. • Further mitigation measures are included in the Impact Assessment (Appendix F) and EMPr (Appendix G).
	<ul style="list-style-type: none"> • Erosion <ul style="list-style-type: none"> – Increased erosion. 	-8	<ul style="list-style-type: none"> • All areas where topsoil was removed or placing of mono poles should be landscaped in order to reflect surrounding conditions. • Erosion monitoring and control should be conducted. This should be in the form of inspections subsequent to rains. Topsoil should be replaced in all areas that were eroded. It is critical that adequate topsoil remains in construction areas, implying that topsoil might need to be supplemented in some areas until such time that a layer of vegetation has stabilised the soil. • Further mitigation measures are included in the Impact Assessment (Appendix F) and EMPr (Appendix G).
	<p>Indirect impacts:</p> <ul style="list-style-type: none"> • Visual <ul style="list-style-type: none"> – Positive visual impact as the landscape could be returned to a more natural appearance. 	+10	<ul style="list-style-type: none"> • No mitigation proposed.
	<p>Cumulative impacts:</p> None.		
Alternative 1: Proposed Tsakani Substation			
Planning and Design	<p>Direct impacts:</p> None.		
	<p>Indirect impacts:</p> None.		
	<p>Cumulative impacts:</p> None.		
Construction	<p>Direct impacts:</p> <ul style="list-style-type: none"> • Topography and Soils <ul style="list-style-type: none"> – Disruption of surface soils. – Erosion. 	-7	<ul style="list-style-type: none"> • Disturbed areas of natural vegetation as well as cut and fills must be rehabilitated immediately to prevent soil erosion. • Limit construction, maintenance and inspection activities to dry periods in order to curb occurrence/ augmentation of erosion in areas of existing erosion. • No vehicles should be allowed to cross rivers or streams in any area other than an approved crossing, taking care to prevent any impact (particularly erosion) in surrounding habitat. • Remove and store topsoil separately in areas where excavation/degradation takes place. Topsoil should be used for rehabilitation purposes in order to facilitate re-growth of species that occur naturally in the area.

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Activity	Impact summary	Significance	Proposed mitigation
			<ul style="list-style-type: none"> • Further mitigation measures are included in the Impact Assessment (Appendix F) and the EMPr (Appendix G).
	<ul style="list-style-type: none"> • Water Resources <ul style="list-style-type: none"> – Pollution of surface and ground water 	-10	<ul style="list-style-type: none"> • Waste water should be directed into the proper systems. • Sewage water should not be channelled through surface water bodies or be allowed to flow freely or stagnate on the soil surface. • Adequate sanitary facilities and ablutions must be provided for construction workers. • Use and or storage of materials, fuels and chemicals which could potentially leak into the ground must be controlled. • Further mitigation measures are included in the Impact Assessment (Appendix F) and the EMPr (Appendix G).
	<ul style="list-style-type: none"> • Flora <ul style="list-style-type: none"> – Construction of the substation. 	-4	<ul style="list-style-type: none"> • Gardens or landscaped areas should be planted with indigenous grasses, forbs, shrubs and trees, which are water wise and require minimal horticultural practices.
	<ul style="list-style-type: none"> • Access Road <ul style="list-style-type: none"> – Destruction of flora and faunal habitats. – Impact on wetlands or surface water features. 	-4	<ul style="list-style-type: none"> • Limit construction, maintenance and inspection activities to dry periods in order to curb occurrence/ augmentation of erosion in areas that might be conducive to soil erosion. • Demarcate construction areas in order to control movement of personnel, vehicles and provide boundaries for construction sites in order to limit spread of impacts. • Disturbance of vegetation must be limited only to areas of construction. • The removal or picking of any protected trees or protected plants shall not be permitted unless the relevant permits are in place. • Limit construction, maintenance and inspection activities to dry periods when Red Data species of the area are most likely to be absent or hibernating, limiting potential impacts to a large extent. • No temporary roads or construction accesses must be constructed through any wetland or other surface water feature unless there is no other feasible option for access to stretches of the alignment. • It is also strongly recommended that no permanent access roads / tracks along the servitude be constructed through any surface water feature. Rather existing track / road crossings of these surface water features should be used (even if they are a distance upstream or downstream of the crossing) and upgraded where necessary. • No track / access road must be developed through any seepline wetland, even if the wetland is located away from the alignment. • Tracks / roads should not be developed across any sodic area on the footslopes adjacent to valley bottom riparian corridors due to the risk of erosion (gully / rill development) that could adversely affect riparian zones or adjacent wetlands. Such areas must be designated as sensitive and access into them prevented.

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Activity	Impact summary	Significance	Proposed mitigation
			<ul style="list-style-type: none"> • In the event of the need for a river crossing: <ul style="list-style-type: none"> – Should culverts be used as the structure for crossing a river or watercourse, culvert structures must be placed so that the base of the culvert is located at the current level of the current bed of the watercourse. No water must be impounded behind the culvert structure at a level lower than the base of the culvert during low flows. In addition the culvert must not create a step (drop in levels) between its base and the downstream watercourse that would hinder the movement of aquatic biota up the system. – Where channelled wetlands / watercourses crossed by the road / access track are associated with adjacent areas of wetland or riparian habitat which would be subject to periodic inundation by spate flows in the channel (caused by overtopping of the banks of the channel), the crossing structure must be extended to include this area of wetland / riparian habitat to the boundary of the wetland / riparian habitat. – All tracks / access roads that are developed must have formal stormwater measures included in the design so that no erosion develops on these tracks that could lead to the siltation of downslope surface water features.
	<ul style="list-style-type: none"> • Heritage and Palaeontology <ul style="list-style-type: none"> – Impact on sites of cultural significance such as graves 	-7	<ul style="list-style-type: none"> • If during construction any cultural heritage resources or graves are unearthed, all work has to be stopped until the site has been inspected and mitigated by a cultural heritage practitioner. • Any discovered artefacts shall not be removed under any circumstances. Any destruction of a site can only be allowed once a permit is obtained and the site has been mapped and noted. Permits must be obtained from the South African Heritage Resources Agency. • Any mitigation measures applied by an archaeologist, in the sense of excavation and documentation, should be published in order to bring this information into the public domain.
	<ul style="list-style-type: none"> • Waste <ul style="list-style-type: none"> – Negative impact on the environment, if not controlled adequately or disposed of correctly. 	-7	<ul style="list-style-type: none"> • Where possible, construction waste on site must be reused or recycled. • Disposal of waste must be in accordance with relevant legislative requirements. • Further mitigation measures are included in the Impact Assessment (Appendix F) and the EMPr (Appendix G).
	<ul style="list-style-type: none"> • Dust <ul style="list-style-type: none"> – Fugitive dust generation. 	-7	<ul style="list-style-type: none"> • Frequent and effective dust-suppression is advised, particularly along dirt roads. Dust must be suppressed on the construction site during dry periods by the regular application of water. Water used for this purpose must be used in quantities that will not result in the generation of run-off.
	<ul style="list-style-type: none"> • Noise <ul style="list-style-type: none"> – Increased noise pollution. 	-7	<ul style="list-style-type: none"> • Surrounding communities and adjacent landowners are to be notified in advance of noisy construction activities. • Construction staff working in areas where the 8-hour ambient noise levels exceed 85 dBA should wear ear protection equipment.
	<ul style="list-style-type: none"> • Visual 	-7	<ul style="list-style-type: none"> • Phased, rather than indiscriminate clearing of the construction site to be undertaken. Only

BASIC ASSESSMENT REPORT

Activity	Impact summary	Significance	Proposed mitigation
	<ul style="list-style-type: none"> – Clearing of vegetation could partially alter the landscape as viewed from the surrounding area – Construction equipment may be visually intrusive. 		<ul style="list-style-type: none"> • footprint of substation to be cleared of vegetation. • Construction lighting to be limited to that which is necessary.
	<ul style="list-style-type: none"> • Social <ul style="list-style-type: none"> – Possible job creation. 	+8	<ul style="list-style-type: none"> • Jobs should be given to local residents during construction (such as clearing of servitudes and digging of holes. Should this not be possible, it should be explained to residents that the nature of the development does not allow it, so that false expectations of possible jobs do not exist.
	<p>Indirect impacts: None.</p>		
	<p>Cumulative impacts: None.</p>		
Operational	<p>Direct impacts:</p> <ul style="list-style-type: none"> • Waste <ul style="list-style-type: none"> – Negative impact on the environment, if not controlled adequately or disposed of correctly. 	-6	<ul style="list-style-type: none"> • Where possible, construction waste on site must be reused or recycled. • Burning of waste material will not be permitted. • Further mitigation measures are included in the Impact Assessment (Appendix F) and the EMPr (Appendix G).
	<ul style="list-style-type: none"> • Visual <ul style="list-style-type: none"> – Impact on potential sensitive viewing locations. – Visual intrusion and light spill. 	-9	<ul style="list-style-type: none"> • Lighting to be switched on when operationally required. • All lighting to be inward facing to prevent light spill.
	<ul style="list-style-type: none"> • Social <ul style="list-style-type: none"> – Improve reliability of electricity supply. – Increased supply of electricity to new users. – Encourages economic growth. 	+11	<ul style="list-style-type: none"> • No mitigation proposed.
	<p>Indirect impacts:</p> <ul style="list-style-type: none"> • Fauna and Flora <ul style="list-style-type: none"> – Destruction of sensitive habitats and disturbance to species within the area. 	-8	<ul style="list-style-type: none"> • No mitigation proposed.

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Activity	Impact summary	Significance	Proposed mitigation
	Cumulative impacts: <ul style="list-style-type: none"> • Socio-economic <ul style="list-style-type: none"> – Establishment of economic growth within the area. 		
Decommissioning and Closure	Direct impacts: <ul style="list-style-type: none"> • Waste <ul style="list-style-type: none"> – Negative impact on the environment, if not controlled adequately or disposed of correctly. 	-9	<ul style="list-style-type: none"> • Disposal of waste must be in accordance with relevant legislative requirements. • Waste must be disposed off in the appropriate manner at a licensed disposal site.
	<ul style="list-style-type: none"> • Removal of equipment. 	-7	<ul style="list-style-type: none"> • All hardened surfaces within the construction camp area should be ripped, all imported materials removed, and the area shall be top soiled and landscaped. • All structures comprising of the construction camp are to be removed from site. • The area that previously housed the construction camp is to be checked for spills of substances such as oil, paint, etc, and these shall be cleaned up and contaminants disposed of appropriately.
	<ul style="list-style-type: none"> • Erosion. 	-8	<ul style="list-style-type: none"> • Rehabilitation of areas affected by decommissioning activities should ideally commence at the start of the rainy season. • Recommended rehabilitation is in the form of active re-vegetation of affected areas, including areas where surface disturbances resulted from construction. • All partially constructed areas should be completed and prepared for final rehabilitation and re-vegetation. • All areas where topsoil was removed or placing of monopoles should be landscaped in order to reflect surrounding conditions. • Erosion monitoring and control should be conducted. This should be in the form of inspections subsequent to rains. Topsoil should be replaced in all areas that were eroded. It is critical that adequate topsoil remains in construction areas, implying that topsoil might need to be supplemented in some areas until such time that a layer of vegetation has stabilised the soil.
	Indirect impacts: <ul style="list-style-type: none"> • Visual <ul style="list-style-type: none"> – Positive visual impact as the landscape could be returned to a more natural appearance. 	+10	<ul style="list-style-type: none"> • No mitigation proposed.
Cumulative impacts:			

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Activity	Impact summary	Significance	Proposed mitigation
	None.		
Alternative 2: Proposed Tsakani Substation			
Planning and Design	Direct impacts: None.		
	Indirect impacts: None.		
	Cumulative impacts: None.		
Construction	Direct impacts: <ul style="list-style-type: none"> • Topography and Soils <ul style="list-style-type: none"> – Disruption of surface soils. – Erosion. 	-8	<ul style="list-style-type: none"> • Disturbed areas of natural vegetation as well as cut and fills must be rehabilitated immediately to prevent soil erosion. • Limit construction, maintenance and inspection activities to dry periods in order to curb occurrence/ augmentation of erosion in areas of existing erosion. • No vehicles should be allowed to cross rivers or streams in any area other than an approved crossing, taking care to prevent any impact (particularly erosion) in surrounding habitat. • Remove and store topsoil separately in areas where excavation/degradation takes place. Topsoil should be used for rehabilitation purposes in order to facilitate re-growth of species that occur naturally in the area. • Further mitigation measures are included in the Impact Assessment (Appendix F) and the EMPr (Appendix G).
	<ul style="list-style-type: none"> • Water Resources <ul style="list-style-type: none"> – Pollution of surface and ground water. 	-10	<ul style="list-style-type: none"> • Waste water should be directed into the proper systems. • Sewage water should not be channelled through surface water bodies or be allowed to flow freely or stagnate on the soil surface. • Adequate sanitary facilities and ablutions must be provided for construction workers. • Use and or storage of materials, fuels and chemicals which could potentially leak into the ground must be controlled. • Further mitigation measures are included in the Impact Assessment (Appendix F) and the EMPr (Appendix G).
	<ul style="list-style-type: none"> • Flora <ul style="list-style-type: none"> – Construction of the substation. 	-4	<ul style="list-style-type: none"> • Gardens or landscaped areas should be planted with indigenous grasses, forbs, shrubs and trees, which are water wise and require minimal horticultural practices.
	<ul style="list-style-type: none"> • Access Road <ul style="list-style-type: none"> – Destruction of flora and faunal habitats. – Impact on wetlands or surface water features. 	-4	<ul style="list-style-type: none"> • Limit construction, maintenance and inspection activities to dry periods in order to curb occurrence/ augmentation of erosion in areas that might be conducive to soil erosion. • Demarcate construction areas in order to control movement of personnel, vehicles and provide boundaries for construction sites in order to limit spread of impacts. • Disturbance of vegetation must be limited only to areas of construction.

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Activity	Impact summary	Significance	Proposed mitigation
			<ul style="list-style-type: none"> • The removal or picking of any protected trees or protected plants shall not be permitted unless the relevant permits are in place. • Limit construction, maintenance and inspection activities to dry periods when Red Data species of the area are most likely to be absent or hibernating, limiting potential impacts to a large extent. • No temporary roads or construction accesses must be constructed through any wetland or other surface water feature unless there is no other feasible option for access to stretches of the alignment. • It is also strongly recommended that no permanent access roads / tracks along the servitude be constructed through any surface water feature. Rather existing track / road crossings of these surface water features should be used (even if they are a distance upstream or downstream of the crossing) and upgraded where necessary. • No track / access road must be developed through any seepline wetland, even if the wetland is located away from the alignment. • Tracks / roads should not be developed across any sodic area on the footslopes adjacent to valley bottom riparian corridors due to the risk of erosion (gully / rill development) that could adversely affect riparian zones or adjacent wetlands. Such areas must be designated as sensitive and access into them prevented. • In the event of the need for a river crossing: <ul style="list-style-type: none"> – Should culverts be used as the structure for crossing a river or watercourse, culvert structures must be placed so that the base of the culvert is located at the current level of the current bed of the watercourse. No water must be impounded behind the culvert structure at a level lower than the base of the culvert during low flows. In addition the culvert must not create a step (drop in levels) between its base and the downstream watercourse that would hinder the movement of aquatic biota up the system. – Where channelled wetlands / watercourses crossed by the road / access track are associated with adjacent areas of wetland or riparian habitat which would be subject to periodic inundation by spate flows in the channel (caused by overtopping of the banks of the channel), the crossing structure must be extended to include this area of wetland / riparian habitat to the boundary of the wetland / riparian habitat. – All tracks / access roads that are developed must have formal stormwater measures included in the design so that no erosion develops on these tracks that could lead to the siltation of downslope surface water features.
	<ul style="list-style-type: none"> • Heritage and Palaeontology <ul style="list-style-type: none"> – Impact on sites of cultural significance such as graves. 	-7	<ul style="list-style-type: none"> • If during construction any cultural heritage resources or graves are unearthed, all work has to be stopped until the site has been inspected and mitigated by a cultural heritage practitioner. • Any discovered artefacts shall not be removed under any circumstances. Any destruction of

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Activity	Impact summary	Significance	Proposed mitigation
			<p>a site can only be allowed once a permit is obtained and the site has been mapped and noted. Permits must be obtained from the South African Heritage Resources Agency.</p> <ul style="list-style-type: none"> Any mitigation measures applied by an archaeologist, in the sense of excavation and documentation, should be published in order to bring this information into the public domain.
	<ul style="list-style-type: none"> Waste <ul style="list-style-type: none"> Negative impact on the environment, if not controlled adequately or disposed of correctly. 	-7	<ul style="list-style-type: none"> Where possible, construction waste on site must be reused or recycled. Disposal of waste must be in accordance with relevant legislative requirements. Further mitigation measures are included in the Impact Assessment (Appendix F) and the EMPr (Appendix G).
	<ul style="list-style-type: none"> Dust <ul style="list-style-type: none"> Fugitive dust generation. 	-7	<ul style="list-style-type: none"> Frequent and effective dust-suppression is advised, particularly along dirt roads. Dust must be suppressed on the construction site during dry periods by the regular application of water. Water used for this purpose must be used in quantities that will not result in the generation of run-off.
	<ul style="list-style-type: none"> Noise <ul style="list-style-type: none"> Increased noise pollution. 	-7	<ul style="list-style-type: none"> Surrounding communities and adjacent landowners are to be notified in advance of noisy construction activities. Construction staff working in areas where the 8-hour ambient noise levels exceed 85 dBA should wear ear protection equipment.
	<ul style="list-style-type: none"> Visual <ul style="list-style-type: none"> Clearing of vegetation could partially alter the landscape as viewed from the surrounding area. Construction equipment may be visually intrusive. 	-7	<ul style="list-style-type: none"> Phased, rather than indiscriminate clearing of the construction site to be undertaken. Only footprint of substation to be cleared of vegetation. Construction lighting to be limited to that which is necessary.
	<ul style="list-style-type: none"> Social <ul style="list-style-type: none"> Possible job creation. 	+8	<ul style="list-style-type: none"> Jobs should be given to local residents during construction (such as clearing of servitudes and digging of holes. Should this not be possible, it should be explained to residents that the nature of the development does not allow it, so that false expectations of possible jobs do not exist.
	Indirect impacts: None.		
	Cumulative impacts: None.		
Operational	Direct impacts: <ul style="list-style-type: none"> Waste <ul style="list-style-type: none"> Negative impact on the environment, if not controlled adequately or disposed of 	-6	<ul style="list-style-type: none"> Where possible, construction waste on site must be reused or recycled. Burning of waste material will not be permitted. Further mitigation measures are included in the Impact Assessment (Appendix F).

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Activity	Impact summary	Significance	Proposed mitigation
	correctly.		
	<ul style="list-style-type: none"> • Visual <ul style="list-style-type: none"> – Visual intrusion. – Light spill. 	-9	<ul style="list-style-type: none"> • Lighting to only be switched on when operationally required. • All lighting to be inward facing to prevent light spill.
	<ul style="list-style-type: none"> • Social <ul style="list-style-type: none"> – Improve reliability of electricity supply. – Increased supply of electricity to new users. – Encourages economic growth. 	+11	<ul style="list-style-type: none"> • No mitigation proposed.
	<p>Indirect impacts:</p> <ul style="list-style-type: none"> • Fauna and Flora <ul style="list-style-type: none"> – Destruction of sensitive habitats and disturbance to species within the area. 	-8	<ul style="list-style-type: none"> • No mitigation proposed.
	<p>Cumulative impacts:</p> <ul style="list-style-type: none"> • Socio-economic <ul style="list-style-type: none"> – Establishment of economic growth within the area. 		
Decommissioning and Closure	<p>Direct impacts:</p> <ul style="list-style-type: none"> • Waste <ul style="list-style-type: none"> – Negative impact on the environment, if not controlled adequately. 	-9	<ul style="list-style-type: none"> • Disposal of waste must be in accordance with relevant legislative requirements. • Waste must be disposed off in the appropriate manner at a licensed disposal site.
	<ul style="list-style-type: none"> • Removal of equipment. 	-7	<ul style="list-style-type: none"> • All hardened surfaces within the construction camp area should be ripped, all imported materials removed, and the area shall be top soiled and landscaped. • All structures comprising of the construction camp are to be removed from site. • The area that previously housed the construction camp is to be checked for spills of substances such as oil, paint, etc., and these shall be cleaned up and contaminants disposed of appropriately.
	<ul style="list-style-type: none"> • Erosion. 	-8	<ul style="list-style-type: none"> • Rehabilitation of areas affected by decommissioning activities should ideally commence at the start of the rainy season. • Recommended rehabilitation is in the form of active re-vegetation of affected areas, including areas where surface disturbances resulted from construction. • All partially constructed areas should be completed and prepared for final rehabilitation and re-vegetation.

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Activity	Impact summary	Significance	Proposed mitigation
			<ul style="list-style-type: none"> All areas where topsoil was removed or placing of monopoles should be landscaped in order to reflect surrounding conditions. Erosion monitoring and control should be conducted. This should be in the form of inspections subsequent to rains. Topsoil should be replaced in all areas that were eroded. It is critical that adequate topsoil remains in construction areas, implying that topsoil might need to be supplemented in some areas until such time that a layer of vegetation has stabilised the soil.
	Indirect impacts: <ul style="list-style-type: none"> Visual <ul style="list-style-type: none"> Positive visual impact as the landscape could be returned to a more natural appearance. 	+10	<ul style="list-style-type: none"> No mitigation proposed.
	Cumulative impacts: None.		
No-go Option			
	Direct impacts: <ul style="list-style-type: none"> The No-go option means that the proposed power line and substation project will not be constructed and the area will retain its status quo. However there is a great demand for electricity generation and supply within the area. Therefore, the no-go option is not a beneficial or a viable option for the communities of Thulamahashe, Edinburgh, Ludlow, and Dingleydale. 	0	None.
	Indirect impacts: None.		
	Cumulative impacts: None.		

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

2. ENVIRONMENTAL IMPACT STATEMENT

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

After taking into account the assessment of potential impacts associated with the 132 kV power line alternatives and the proposed Tsakani substation alternatives, the summary of average planning and design, construction, operation and decommissioning and closure impacts is presented below with preference indicated according to the key hereunder.

Preference
Least Preference
No Preference

Without Mitigation (WoM)

With Mitigation (WM)

Please note: The greater the negative rating, the higher the impact.

	Green Route (Alt 1) WoM	Green Route (Alt 2) WM	Purple Route (Alt 1) WoM	Purple Route (Alt 2) WM	Tsakani Substation (Alt 1) WoM	Tsakani Substation (Alt 1) WM	Tsakani Substation (Alt 2) WoM	Tsakani Substation (Alt 2) WM
Planning - Direct	-10.67	-7.00	-12.00	-8.00	0.00	0.00	0.00	0.00
Planning - Indirect	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Planning - Cumulative	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Construction - Direct	-7.72	-5.61	-7.83	-5.72	-5.20	-3.40	-5.20	-3.40
Construction - Indirect	-8.00	-6.00	-8.00	-6.00	0.00	0.00	0.00	0.00
Construction - Cumulative	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Operation - Direct	-9.40	-6.80	-10.70	-7.13	-7.50	-5.50	-7.50	-5.50
Operation - Indirect	-8.33	-7.67	-8.33	-7.67	-8.00	-8.00	-8.00	-8.00
Operation - Cumulative	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Decommissioning - Direct	-8.00	-5.00	-8.00	-5.00	-8.00	-5.00	-8.00	-5.00
Decommissioning - Indirect	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Decommissioning - Cumulative	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Alternative Route 1 (Preferred alternative – Green Route)

The aim of the project is to construct a 18 km 132 kV power line and substation in order to provide sufficient capacity for new clients and improve the reliability of energy supply. Based on the impact identification and proposed mitigation measures, including the proposed rehabilitation measures (EMPr) the EAP is of the view that Alternative Route 1 (Green Route) be approved. From the impact analysis table shown above, during the planning and design, construction, and operation phases the green route has the lowest rating (with mitigation values).

According to the impact identification and assessment, the EAP supports Alternative Route 1 as it will be located in an area that is mainly degraded and transformed with limited habitat diversity. There are existing access roads, informal tracks, sand mining activities and livestock pathways that have led to its current degraded and transformed state. In addition, fauna in the immediate vicinity of the existing lines as well as adjacent sand mining areas would already be relatively tolerant of disturbance as a result of maintenance activities as well as sand mining activities. Alternative Route 1 bisects several non-perennial drainage lines or rivers. The majority of the riparian vegetation along these seasonal rivers has already been removed for wood harvesting activities although certain sections along the Khokhovela River display a more natural species composition. All riverine areas including their associated riparian or hygrophilous vegetation along the seasonal drainage lines must be considered as sensitive habitats and activities must be strictly managed (see Appendix G).

From a water resource perspective, even though Alternative Route 1 crosses a number of wetlands and rivers (these include Sephiriri, Mphyanyana, Molapakgomo and Khokhovela rivers), which are characterised by a reed-dominated state, thus the impact of the power line on the riparian habitat integrity would be less intense than Alternative Route 3. Alternative Route 1 is situated near settlements and areas with a higher human footprint thus resulting in a greater number of crossings that are currently in an impacted state. All wetlands, rivers and watercourses and their associated riparian zones should be treated as highly sensitive areas, and be strictly maintained as 'no-go' areas, except in the case of construction activities such as stringing of the lines and clearing of vegetation. No lay down areas should be placed within riparian corridors and no construction right of ways should be created through or across watercourses (other than where existing roads / accesses cross watercourses).

Furthermore, from an avifaunal perspective, Alternative Route 1, which passes through disturbed areas and near numerous human settlements, is **preferred**.

In terms of the heritage impact assessment, no objects of heritage significance / importance have been found along this alignment.

Therefore, the level of disturbance and habitat destruction will be minimal considering the current status of the study area. Construction and decommissioning impacts for this alternative are short-term impacts and can be effectively mitigated by the measures and recommendations contained in the EMPr (See Appendix G).

Alternative Route 3 (Purple Route)

This alternative will originate from same point as Alternative Route 1 and run in a north eastern direction terminating at the same point as Alternative Route 1.

Based on the impact identification and proposed mitigation measures, including the proposed rehabilitation measures (EMPr) the EAP is of the view that Alternative Route 3 (Purple Route) is the

least most preferred alternative. From the impact analysis table shown above, during the planning and design, construction, and operation phases the purple route has the highest significance rating.

This alternative traverses an area that is largely natural with natural species composition. The study area has abundant large tree and shrub species and has very few disturbed areas. The alignment of the power line and associated transmission towers should be adjusted to prevent the destruction of remaining large (>4 m) indigenous tree species including the two protected tree species (*Pterocarpus angloensis* – Wild teak, *Philenoptera violacea* – Apple-Leaf and *Sclerocarya birrea* – Marula). A permit will be required from the Department of Agriculture, Forestry and Fisheries (DAFF) and the Provincial Nature Conservation for the removal of any protected tree species.

This area has limited access with few tracks, pathways and fenced sections which restrict activities such as wood harvesting, poaching, hunting and sand mining. This alternative, if approved, will have a greater impact on ecology than the other alternative (i.e. Green Route).

From a water resource perspective, Alternative Route 3 runs through areas of woodland in a partially or largely natural state and crosses significant water bodies include Sephiriri, Mphyanyana, Molapakgomo and Khokhovela rivers which have a higher ecological category than Alternative Route 1. Alternative 1 crosses the Mphyanyana River upstream of the Edinburgh Dam, a crossing of 250 m which may entail that a tower would need to be placed within the riparian zone or flanking wetland.

The avifauna assessment indicates that this alternative is least preferred as it traverses large areas of relatively undisturbed woodland which form bird habitats which need to be mitigated in the following ways:

- Mark the identified sections of line with anti-collision marking devices on the earth wire to increase the visibility of the line and reduce likelihood of collisions. Marking devices should be space 10 m apart. The sections of the line that pose a concern and require marking should be finalised in a site “walkthrough” once the final route is decided and the transmission towers/pylons are pegged.
- A “Bird Friendly” monopole structure, with a bird perch (as per standard Eskom guidelines) should be used for the transmission tower structures.

Construction and decommissioning impacts for this alternative are long term impacts which would require very strict adherence to the measures and recommendations contained in the EMPr.

Proposed Tsakani Substation (Alternative 1 & Alternative 2)

The proposed Tsakani substation will be situated in a low lying valley area within transformed and degraded bushveld habitat, adjacent to fallow agricultural lands and livestock enclosures. The Khokhovela River is located to the east of the substation site.

Two substation alternatives have been provided for comparative assessment. Neither of the two alternatives would physically affect any surface water features. There is thus no strong preference between the two substation alternative sites. However as the Alternative 2 Site would be located east of Alternative 1, a longer stretch of the alignment that would cross an ephemeral headward watercourse in incised terrain would need to be constructed. This would result in one more surface water crossing than if Alternative 1 was developed (although the incised nature of the valley head and marginal occurrence of a riparian zone along this watercourse would mean that this surface water feature would be able to be spanned without exerting a major impact on the surface water feature). Alternative 1 is marginally preferred due to the extra crossing associated with Alternative 2, but no major surface water-related issues are associated with either alternative.

No-go alternative (compulsory)

The no go option would be not to construct the 132 kV power line and proposed Tsakani substation. Currently, the existing infrastructure is overloaded with a large number of users / customers per line which results in frequent interruptions and outages. Therefore, the proposed power line and substation will aid in reducing the load on the feeders in the area and at the same time provide reliable energy supply.

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
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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.

- If during construction any cultural heritage resources or graves are unearthed all work has to be stopped until the site has been inspected and mitigated by a cultural heritage practitioner.
- A bird friendly monopole structure should be used to avoid electrocution of large raptors which are abundant in the proposed study area. In addition, thorough line marking is required to avoid bird collision.
- All wetlands, rivers and watercourses and their associated riparian zones should be treated as highly sensitive areas, and be strictly maintained as ‘no-go’ areas, except in the case of construction activities such as stringing of the lines and clearing of vegetation. No lay down areas should be placed within riparian corridors and no construction right of ways should be created through or across watercourses (other than where existing roads / accesses cross watercourses).
- The alignment of the power line and associated transmission towers should be adjusted to prevent the destruction of remaining large (>4 m) indigenous tree species including the two protected tree species (*Pterocarpus angloensis* – Wild teak, *Philenoptera violacea* – Apple-Leaf and *Sclerocarya birrea* – Marula). A permit will be required from the DAFF for the removal of any protected tree species.
- Remaining indigenous bulbous geophytes and aloes should be retained or replanted as far as possible.
- If Alternative 3 - Purple Route is selected, the identified sections of line should be marked with anti-collision marking devices on the earth wire to increase the visibility of the line and reduce likelihood of collisions as indicated in the Avifaunal Report (see Appendix D). Marking devices should be space 10 m apart. The sections of the line that pose a concern and require marking should be finalised in a site “walkthrough” once the final route is decided and the transmission towers are pegged.

Is an EMPr attached?

YES	NO
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The EMPr must be attached as Appendix G.

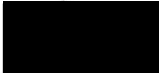
The details of the EAP who compiled the BAR and the expertise of the EAP to perform the Basic Assessment process must be included as **Appendix H**.

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

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

BASIC ASSESSMENT REPORT

Prashika Reddy
NAME OF EAP


SIGNATURE OF EAP

03/12/2014
DATE

SECTION F: APPENDICES

The following appendixes must be attached:

Appendix A: Maps

Appendix B: Photographs

Appendix C: Facility illustration(s)

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's declaration of interest

Appendix J: Additional Information