

Eskom Holdings (SOC) Ltd
– Gauteng Operating Unit



**FINAL BASIC ASSESSMENT REPORT FOR THE PROPOSED
CONSTRUCTION OF THE DIAMOND-BYNES
(BOSCHKOP) 132KV POWERLINE WITHIN THE CITY OF
TSHWANE METROPOLITAN MUNICIPALITY, GAUTENG
PROVINCE**

J34156

DEA REF: 14/12/16/3/3/1/1359

ORIGINAL

July 2017

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BASIC ASSESSMENT REPORT



environmental affairs

Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

(For official use only)

File Reference Number:

Application Number:

Date Received:

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

Kindly note that:

1. This **basic assessment report** is a standard report that may be required by a competent authority in terms of the EIA Regulations, 2010 and is meant to streamline applications. Please make sure that it is the report used by the particular competent authority for the activity that is being applied for.
2. This report format is current as of **1 September 2012**. It is the responsibility of the applicant to ascertain whether subsequent versions of the form have been published or produced by the competent authority
3. The report must be typed within the spaces provided in the form. The size of the spaces provided is not necessarily indicative of the amount of information to be provided. The report is in the form of a table that can extend itself as each space is filled with typing.
4. Where applicable **tick** the boxes that are applicable in the report.
5. An incomplete report may be returned to the applicant for revision.
6. The use of "not applicable" in the report must be done with circumspection because if it is used in respect of material information that is required by the competent authority for assessing the application, it may result in the rejection of the application as provided for in the regulations.
7. This report must be handed in at offices of the relevant competent authority as determined by each authority.
8. No faxed or e-mailed reports will be accepted.
9. The signature of the EAP on the report must be an original signature.
10. The report must be compiled by an independent environmental assessment practitioner.
11. Unless protected by law, all information in the report will become public information on receipt by the competent authority. Any interested and affected party should be provided with the information contained in this report on request, during any stage of the application process.
12. A competent authority may require that for specified types of activities in defined situations only parts of this report need to be completed.
13. Should a specialist report or report on a specialised process be submitted at any stage for any part of this application, the terms of reference for such report must also be submitted.
14. Two (2) colour hard copies and one (1) electronic copy of the report must be submitted to the competent authority.
15. Shape files (shp) for maps must be included on the electronic copy of the report submitted to the competent authority.

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SECTION A: ACTIVITY INFORMATION

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

YES	NO
	X

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

GIBB (Pty) Ltd (GIBB) has been appointed by Eskom Holdings SOC Ltd, Eskom Distribution – Gauteng Operating Unit (Eskom) to undertake an Environmental Authorisation (EA) process in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998) as amended (NEMA), and the Environmental Impact Assessment Regulations of 2010 for the construction of the proposed 132kV powerline from the newly proposed Diamond Substation connecting to the existing Bynes 132kV powerline in Boschkop. The study area is furthermore situated in the City of Tshwane Metropolitan Municipality (CTMM), Gauteng Province (refer to **Figure 1 & Appendix A**).

Eskom has applied for EA from the National Department of Environmental Affairs (DEA), Reference number: **14/12/16/3/3/1/1359**.

Project Details

The proposed project involves the construction of:

- An approximate 11 km 132kV overhead distribution powerline from the newly proposed Diamond Substation connecting to the existing Bynes 132kV powerline; A 500m corridor has been assessed along the proposed route to determine the environmental impacts and significance of these impacts associated with the proposed development; and
- Construction of the newly proposed Diamond Substation (3 substation alternatives considered).

It should be noted that the main purpose of the proposed powerline and associated substation is to strengthen the existing electricity supply grid in the area, and as such provide the area with adequate and reliable power supply to meet current and future electricity demands.

Also, based on the proposed route and nature of the project, several watercourse features will be affected by the 132kV powerline and as such a Water Use Licence Application (WULA) process must be undertaken for the project prior to the commencement of any triggered 'water use' activities.

Study Area

Route Alternative 1 (Preferred alternative):

The Preferred Route Alternative connects from the existing Bynes 132kV powerline in the east and extends in a north-westerly direction for approximately 10.5 km before it connects to **one** of three *Diamond substation alternatives*.

Please refer to Figure 1 below for the Locality Map of the project. Alternatively, please refer to Appendix A of the report for an A3 size Locality Map of the project.

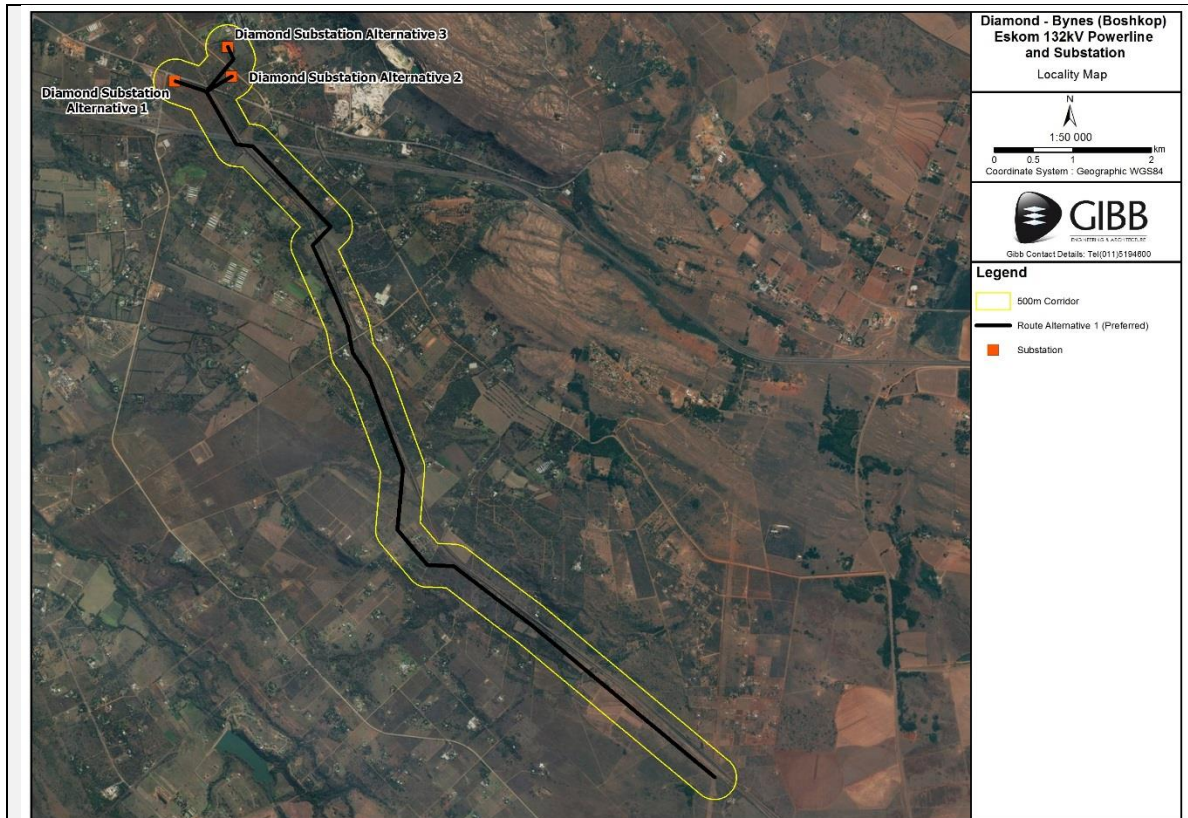


Figure 1: Diamond-Bynes 132kV powerline locality map indicating Route Alternative 1 (black line) along with the respective substation alternatives (red dots)

PLEASE NOTE:

Multiple route alternatives were considered in previous iterations of this report and were found to be unfeasible. Further alignment alternatives, apart from the preferred alignment, will therefore not be discussed in any further detail in this report.

132kV Monopole Structures:

The structures proposed for this project is the single circuit steel mono-poles (**Figure 2**). These mono-pole structures are characterised as follows:

- The footprint for the mono-pole structures is between **0.5 m² and 8m²** in size;
- The mono-pole structures will be buried to a depth of between **2m and 3.6m**;
- The height of the mono-pole structures will range between **18m and 30m**;
- The span lengths between the mono-pole structures will vary on average between **30m and 350m** depending on terrain. Span lengths can be to a maximum of 350m if the topography allows for this. These variations are due to a number of factors including the structure, the terrain, ground clearance requirements, topology and geology; and
- The operation and construction servitudes will be **31.0m** (i.e. **15.5m** on either side of the centre line).



Figure 2: Single circuit steel mono-pole structures to be used for the Pylon structures

In addition to this, various tower types can be used depending on the terrain and powerline profile.

These tower types constitute the following:

- Mono-pole guyed intermediate suspension structures;
- Mono-pole self-supporting intermediate suspension structures;
- Mono-pole angle strain structures;
- Mono-pole intermediate strain structures;
- H-Pole structures; and
- 3 Pole strain structures.

The pylons will be steel and the average span between two towers can vary between 30m and 350m depending on the ground profile and the terrain it covers. It will therefore be possible to avoid locating the pylon structure within specifically identified sensitive environmental features, such as wetlands.

The size of the foundation footprint is related to the soil type and structure to be used.

The steel mono-pole structure also has a concrete cap at the foot of each steel mono-pole structure (**Figure 3**) with a diameter ranging between 1.2m to 2m and 0.5m deep.



Figure 3: Single circuit steel mono-pole structures to be used for the Pylon structures

It is proposed that the Steel Mono-pole structures will be used along with strain structures located in between them, depending on the terrain. Please note that this will be finalised prior to construction. Refer to **Appendix C** for facility illustrations of the type of pylon structures that are under consideration.

Servitude Requirements and Clearances:

The servitude width for a 132kV distribution line is 31m (15.5m on either side of the centre line of the powerline). The minimum vertical clearance to buildings, poles and structures not forming part of the powerline must be 3.8 m, while the minimum vertical ground clearance is 7.5m in urban areas and 10.5m for national road crossings. The minimum distance of a 132 kV distribution line extending parallel to proclaimed public roads is 95m from the centreline of the distribution line servitude to the centreline of the road servitude. The minimum distance between any part of a tree or shrub and any bare phase conductor of a 132kV distribution line must be 3.8m to allow for the possible lateral movement of this vegetation that could be a potential hazard for distribution lines that are operational and energised. The Occupational Health and Safety Act, 1993 (Act No. 85 of 1993) provides for statutory clearances. Table 1 below summarizes some of the key clearances relevant to the proposed 132kV powerline.

Table 1: Clearance specifications (Eskom, 2007)

Clearances	Minimum Clearance Distance (m)
Ground clearance	6.3
Building structures not part of powerline	3.8
Above roads in townships, proclaimed roads	7.5
Telkom telephone lines	2.0
Spoornet Tracks	10.9

Should the preferred distribution line corridor receive positive EA from the DEA, and following on from successful negotiations with landowners, the final determination of the centreline for the distribution line and co-ordinates of each bend in the line will be determined. **It is important to note that the line depicted on the locality map is simply the centreline of the 500m corridor assessed, whereas the finalised route alignment may extend anywhere within the corridor itself.** Optimal tower sizes and positions will be identified and verified through comprehensive ground survey of the preferred route, where these positions will be reflected and incorporated as part of the management actions forming part of the project specific Environmental Management Programme (EMPr).

Trees and large shrubs encroaching on the clearance requirements of the distribution line, will be trimmed or cleared (where necessary). If any tree or shrub in other areas interfere with the operation and/or reliability of the distribution line it will be trimmed or completely cleared. In areas where distribution lines cross existing orchards or agricultural lands in use, the footprint of the structures will be minimised and full scale clearing of the servitude will be avoided to allow continued use of the arable land, unless otherwise negotiated with the affected landowner/s. Clearing of vegetation will take place along approved profiles and in accordance with the approved EMPr for the project and the **Eskom Vegetation Management Standard 240-52456757**.

Access:

Access is required during both the construction and operation/maintenance phases of the powerline's life cycle. Access to the 132kV powerline will be confined to the powerline servitude itself and existing access roads and tracks will be used to gain access to construction sites and the servitude. Therefore, transportation activities for construction (construction material and teams) and maintenance activities will make use of both existing access roads and the powerline servitude.

It should be noted that there are existing tracks and access roads in the vicinity of the powerline for majority of the route. Where it is not possible to use existing tracks, transportation will occur along the approved powerline servitude.

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). Guided Strain structures require smaller foundations for support the in-line suspension structures, which contribute to the cost of the construction of the line. Foundations will be mechanically excavated, following which a layer of concrete will be cast into the bottom of the foundation. The excavated foundation foundations will then be back filled with soil/ cement mixture and then compacted in layers for the setting of the foundations. In areas where access to the structure position prohibits the use of concrete mixing trucks, uphill pumping or gravity feeding of concrete up to distances of 200m will be implemented. Prior to erecting the structures and activities associated with the infilling of the foundations, the excavated foundations will be covered/fenced-off in order to safeguard unsuspecting animals and people from injury. All foundations will be back-filled, stabilised through compaction, and capped with concrete to a level of 200mm above ground level.

Insulators:

Composite insulators have a glass-fibre core with silicon sheds for insulation and are used to insulate the conductors from the towers. Glass and porcelain have been used to insulate the conductors for many years, and is the most commonly used throughout the industry. These

products are, however, heavy and susceptible to damage by vandals, as well as contamination by pollution. Composite insulators are lightweight and resistant to both vandalism and pollution. Composite (Long rod type) insulators with silicone based weathershed material will be used for the insulators forming part of this project.

132 kV Steel Lattice Structures

Lattice structures will be considered for very long distance spans which can't be reached with steel monopoles, or where space does not allow for the installation of guys for strain steel monopole structures. Electrical safety clearance to ground which cannot be obtained by steel monopoles might also necessitate the installation of lattice structures. The installation of lattice structures will however only be implemented in sections where absolutely necessary due to the high implementation costs associated with it.

The single circuit steel lattice structures (**Figure 4**) will comprise the following characteristics:

- The footprint for the steel lattice structure ranges between **36m²** and **64m²** in size;
- The foundations will be installed to a depth of between **2m** and **4m**;
- The height of the lattice structures will range between **18m** and **30m**;
- Lattice structures will allow span lengths of up to **500m** depending on terrain and if the topography allows it. These variations are due to a number of factors including the structure, the terrain, ground clearance requirements, topology and geology.
- The operation and construction servitudes will be **31m** (i.e. **15.5m** on either side of the centre line).

Foundations: for the 132kV lattice structures

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 lattice structures require bigger foundations and have a bigger footprint than in-line suspension structures of equal length, which contribute to the cost of the construction of the line. The foundations will be the "Pad and Chimney" type which consist of a steel reinforced pad and at the bottom of a mechanically excavated hole and a steel reinforced chimney column with a stub onto which structure legs are bolted above ground level. The pad and the majority of the chimney is buried and a small concrete column of between 150mm and 600mm will be visible above ground level at each leg of the tower – refer to picture 4 for the visible impact of the foundation. In areas where access to the structure position prohibits the use of concrete mixing trucks, uphill pumping or gravity feeding of concrete up to distances of 200m will be implemented. Prior to erecting the structures and infilling of the foundations, the excavated foundations will be covered/fenced-off in order to safeguard unsuspecting animals and people from injury.



Figure 4: Single circuit steel lattice structures

Construction Process for distribution lines:

The powerlines will be constructed in the following simplified sequence:

- Step 1:** Determination of technically feasible distribution line alternatives;
- Step 2:** Environmental 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 distribution line and placement of towers;
- Step 7:** Issuing of tenders and award of contract to construction companies;
- Step 8:** Pegging of structures;
- Step 9:** Vegetation clearance and construction of access roads (where required);
- 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; and
- Step 15:** Continued maintenance.

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The Substation will be constructed in the following simplified sequence:

- Step 1:** Survey of the site;
- Step 2:** Project and site-specific EMPr;
- Step 3:** Design of Substation;
- Step 4:** Issuing of tenders and award of contract;
- Step 5:** Establishment of construction camp, vegetation clearance and development of access roads (where required);
- Step 6:** Construction of terrace and foundations;
- Step 7:** Assembly and erection of equipment;
- Step 8:** Connection of conductors to equipment;
- Step 9:** Rehabilitation of any disturbed areas and protection of erosion sensitive areas;
- Step 10:** Testing and commissioning; and
- Step 11:** Continued maintenance.

Stringing of Conductors:

Tension stringing gear is used to string the conductors between towers. The line is strung in sections (from bend to bend). Cable drums are placed at the beginning of the sections of the line during this stringing process. In order to minimise any potential negative impacts on the surrounding area, these cable drums should be placed within the servitude.

Construction Period:

An estimated construction period of 12-18 months is envisaged for the project. The construction period will however depend on the season and environmental conditions in which construction is undertaken and as such may be reduced in favourable conditions.

On-going Maintenance:

During the life span of the powerline, which is approximately 25 years, on-going maintenance will be performed at regular intervals. Eskom maintenance staff and contractors employed by Eskom will undertake the maintenance works as required.

Details of the EAP

GIBB (Pty) Ltd. (GIBB) is an integrated group of scientists, project managers, engineers and architects providing cost-effective solutions and specialist services in a wide range of disciplines. The multi-disciplinary consulting, management and design approach allows for the execution of projects in a holistic manner, as this is believed to be the best approach to fully meet the needs of our Clients and all parties involved.

The GIBB Environmental Services Division has a formidable track record and comprises highly qualified and experienced technical staff *viz*, environmental scientists, environmental engineers and geologists that collectively form the GIBB national environmental team. The team members have broad experience in terms of working on a range of environmental projects within the public and private sector. Please refer to the Table below for the EAP and environmental scientist details whom are involved with this particular project.

Project EAP:	Umeshree Naicker		
Contact Person:	GIBB (Pty) Ltd		
Physical Address:	Woodmead North Office Park		
Postal Address:	PO Box 2700, Rivonia		
Postal code:	2128	Fax:	011 807 5670
Telephone:	011 519 4701	Cell:	--
Email:	unaicker@gibb.co.za		

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Expertise to conduct EIA:	Umeshree Naicker is a senior environmental scientist with eight (8) years' experience in the environmental management field. Her key experience includes Project management, Scoping & Environmental Impact Reporting, Basic Assessments, and Client Liaison. She also has experience as an Environmental Control Officer. She has worked extensively in South Africa within the renewable energy sector.
Environmental Scientist	
Alécia Barnard	
Physical Address:	Podium at Menlyn 43 Ingersol Road GIBB Office, Ground floor Menlyn, 0102
Postal Address:	PO Box 35007, Menlo Park
Postal code:	0102
Telephone:	012 348 5880
Email:	albarnard@gibb.co.za
Expertise to conduct EIA:	Alécia Barnard is an environmental scientist with five (5) years' experience in the environmental management field. Her key experience includes Project administration, Public Participation Process, Environmental site Audits, Scoping & Environmental Impact Reporting, Basic Assessments, Water Use Licenses, Waste Management Licenses, Mining and Prospecting Right Applications, Air Emissions Licenses and Section 24G Applications.

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

EIA Regulations of 2010 under which application was lodged:

Listed activity as described in GN R.544, 545 and 546	Description of project activity that triggers listed activity – if activities in GN R. 546 are triggered, indicate the triggering criteria as described in the second column of GN R. 543
<i>e.g. GN R.544 Item XX(x): The construction of a bridge within 32m of a water course</i>	<i>e.g. A bridge measuring 5m in height and 10m in length, no wider than 8 meters will be built over the Vaal river</i>
GN R.544 Item 10(i): The construction of facilities or infrastructure for the transmission and distribution of electricity – (i) Outside urban areas or industrial complexes with a capacity of more than 33 but less than 275 kilovolts;-	The proposed Diamond-Bynes distribution line and associated substation will be 132kV.
GN R.544 Item 11(xi): The construction of: (xi) infrastructure or structures covering 50 square metres or more Where such construction occurs within a watercourse or within 32 metres of watercourse, measured from the edge of a watercourse,	Several watercourses may be crossed along the powerline route, and as such pylons may be constructed within 32 metres of the watercourse.

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<p>excluding where such construction will occur behind the development setback line.</p>	
<p>GN R.544 Item 22(ii): The construction of a road, outside urban areas,</p> <p>(ii) Where no reserve exists where the road is wider than 8 metres.</p>	<p>Access roads may be required at certain sections to access the powerline for construction and maintenance purposes.</p>
<p>GN R.544 Item 23(ii): The transformation of undeveloped, vacant or derelict land to-</p> <p>(ii) residential, retail, commercial, recreational, industrial or institutional use, outside an urban area and where the total area to be transformed is bigger than 1 hectare but less than 20 hectares.</p>	<p>The proposed Diamond substation is located outside the urban edge and the size of the proposed substation will be approximately 1.5 hectares.</p>
<p>GN R.546 Item 4(b) (iii): The construction of a road wider than 4 metres with a reserve less than 13.5 metres.</p> <p>(b) In Gauteng:</p> <p>(iii) 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>Access roads of wider than 4m but with a reserve less than 13.5m may be required along certain sections to access the powerline within Gauteng, where such roads and powerline alignments may extend through sensitive areas.</p>
<p>GN R.546 Item 12(b):</p> <p>The clearance of an area of 300 square metres or more of vegetation where 75% or more of the vegetative cover constitutes indigenous vegetation.</p> <p>(b) Within a critical biodiversity areas identified in bioregional plans;</p>	<p>Vegetation clearance would be required for the proposed construction of the Diamond-Bynes 132kV powerline, which extends through an identified <u>Critical Biodiversity Area</u>.</p>
<p>GN R.546 Item 14(a)(i):</p> <p>The clearance of an area of 5 hectares or more of vegetation where 75% or more of the vegetative cover constitutes indigenous vegetation, except where such removal of vegetation is required for:</p> <ol style="list-style-type: none"> (1) purposes of agriculture or afforestation inside areas identified in spatial instruments adopted by the competent authority for agriculture or afforestation purposes; (2) the undertaking of a process or activity included in the list of waste management activities published in terms of section 19 of the National Environmental Management: 	<p>Along certain sections of the powerline, vegetation clearance will be required for the erection of the pylons. Bush clearing of approximately 16m wide (8m on either sides of the powerline) will be required for the 132kV powerline.</p>

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<p>Waste Act, 2008 (Act No. 59 of 2008) in which case the activity is regarded to be excluded from this list;</p> <p>(3) the undertaking of a linear activity falling below the thresholds in Notice 544 of 2010.</p> <p>(a) In Eastern Cape, Free State, KwaZulu-Natal, Gauteng, Limpopo, Mpumalanga, Northern Cape, Northwest and Western Cape:</p> <p>(i) All areas outside urban areas.</p>	
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Comparison of triggered listed activities from EIA Regulations 2010 to updated Regulations of 2014 (as amended):

Listed activity as described in GN R.544, 545 and 546 EIA Regulations 2010	Listed activity as described in GN R.327, 325 and 324 EIA Regulations 2014 (as amended in 2017)	Description of project activity that triggers listed activity
<p>GN R.544 Item 10(i): The construction of facilities or infrastructure for the transmission and distribution of electricity –</p> <p>(i) Outside urban areas or industrial complexes with a capacity of more than 33 but less than 275 kilovolts;-</p>	<p>GN R.327 Item (11)(i): The development of facilities or infrastructure for the transmission and distribution of electricity—</p> <p>(i) outside urban areas or industrial complexes with a capacity of more than 33 but less than 275 kilovolts</p>	<p><i>The proposed Diamond-Bynes distribution line and associated substation will have a capacity of 132kV and is located outside urban areas and / or industrial complexes.</i></p>
<p>GN R.544 Item 11(xi): The construction of:</p> <p>(xi) infrastructure or structures covering 50 square metres or more;</p> <p>Where such construction occurs within a watercourse or within 32 metres of watercourse, measured from the edge of a watercourse, excluding where such construction will occur behind the development setback line.</p>	<p>GN R.327 Item (12) (ii): The development of:</p> <p>(ii) infrastructure or structures with a physical footprint of 100 square metres or more;</p> <p>Where such development occurs –</p> <p>(a) within a watercourse (c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse.</p>	<p><i>Several watercourses may be crossed along the powerline route, and as such pylons may be constructed within 32 metres of the watercourse.</i></p>
<p>GN R.544 Item 22(ii): The construction of a road, outside urban areas,</p>	<p>GN R.327 Item (24)(ii): The development of a road—</p>	<p><i>Access roads wider than 8 metres may be required at certain sections to access the powerline.</i></p>

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<p>(ii) Where no reserve exists where the road is wider than 8 metres.</p>	<p>(ii) with a reserve wider than 13.5 meters, or where no reserve exists where the road is wider than 8 metres.</p>	
<p>GN R.544 Item 23(ii): The transformation of undeveloped, vacant or derelict land to-</p> <p>(ii) residential, retail, commercial, recreational, industrial or institutional use, outside an urban area and where the total area to be transformed is bigger than 1 hectare but less than 20 hectares.</p>	<p>GN R.983 Item (27): The clearance of an area of 1 hectares or more, but less than 20 hectares of indigenous vegetation, except where such clearance of indigenous vegetation is required for –</p> <p>(i) the undertaking of a linear activity; or</p> <p>(ii) maintenance purposes undertaken in accordance with a maintenance management plan.</p>	<p><i>The proposed Diamond substation will be approximately 1.5 hectares in size.</i></p>
<p>GN R.546 Item 4(b) (i) (iii) (viii): The construction of a road wider than 4 metres with a reserve less than 13.5 metres.</p> <p>(b) In Gauteng:</p> <p>(iii) 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>GN R.324 Item (4) (c) (iv) (vi): The development of a road wider than 4 metres with a reserve less than 13.5 metres.</p> <p>(c) In Gauteng:</p> <p>(iv) Sites identified as Critical Biodiversity Areas (CBAs) or Ecological Support Areas (ESAs) in the Gauteng Conservation Plan or in bioregional plans;</p> <p>(vi) Sensitive areas identified in an environmental management framework adopted by the relevant environmental authority;</p>	<p><i>Access roads may be required along certain sections to access the powerline within Gauteng, where such roads and powerline alignments may extend through sensitive, CBA and ESA areas.</i></p>
<p>GN R.546 Item 12(b): The clearance of an area of 300 square metres or more of vegetation where 75% or more of the vegetative cover constitutes indigenous vegetation.</p> <p>(b) Within a critical biodiversity areas identified in bioregional plans;</p>	<p>GN R.324 Item (12)(c)(ii): The clearance of an area of 300 square metres or more of indigenous vegetation except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan.</p> <p>(c) In Gauteng:</p>	<p><i>Vegetation clearance would be required for the proposed construction of the Diamond-Bynes 132kV powerline, which extends through an identified Critical Biodiversity Area.</i></p>

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	(ii) Within Critical Biodiversity Areas or Ecological Support Areas identified in the Gauteng Conservation Plan or bioregional plans	
<p>GN R.546 Item 14(a)(i):</p> <p>The clearance of an area of 5 hectares or more of vegetation where 75% or more of the vegetative cover constitutes indigenous vegetation, except where such removal of vegetation is required for:</p> <p>(4) purposes of agriculture or afforestation inside areas identified in spatial instruments adopted by the competent authority for agriculture or afforestation purposes;</p> <p>(5) the undertaking of a process or activity included in the list of waste management activities published in terms of section 19 of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) in which case the activity is regarded to be excluded from this list;</p> <p>(6) the undertaking of a linear activity falling below the thresholds in Notice 544 of 2010.</p> <p>(a) In Eastern Cape, Free State, KwaZulu-Natal, Gauteng, Limpopo, Mpumalanga, Northern Cape, Northwest and Western Cape:</p> <p style="text-align: center;">(ii) All areas outside urban areas.</p>	--	<p><i>This Activity is no longer relevant in terms of the EIA Regulations of 2014</i></p>
(NEW)	GN R.324 Item (14)(ii)(c)(c): The development of:	<i>The proposed substation and powerline route alternatives</i>

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	<p>(ii) Infrastructure or structures with a physical footprint of 10 square metres or more;</p> <p>Where such development occurs –</p> <p>(c) if no development setback has been adopted, within 32 metres of a watercourse, measured from the edge of a watercourse;</p> <p>(c) In Gauteng:</p> <p>(iv) Sites identified as Critical Biodiversity Areas (CBAs) or Ecological Support Areas (ESAs) in the Gauteng Conservation Plan or in bioregional plans;</p>	<p><i>extend through areas identified as CBA and ESAs, in close proximity to various watercourse features.</i></p>
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2. FEASIBLE AND REASONABLE ALTERNATIVES

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

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

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

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

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

DESCRIPTION OF ALTERNATIVES:

One (1) route and three (3) substation site alternatives exist for the proposed Diamond-Bynes 132kV powerline development.

As previously noted the route alternative connect to one of three substation alternatives with minor deviations.

ROUTE ALTERNATIVE

Powerline Route Alternative 1 (Preferred):

The Preferred Alternative connects from the existing Bynes 132kV powerline in the east and extends in a north-westerly direction for approximately 10.5 km before it connects to **one** of three *Diamond substation alternatives*.

GPS coordinates for the route has been provided in **Appendix A2** of this report.

PLEASE NOTE:

Multiple route alternatives were considered in previous iterations of this report and were found to be unfeasible. Further alignment alternatives, apart from the preferred alignment, will therefore not be discussed in any further detail in this report.

SUBSTATION SITE ALTERNATIVES

Diamond Substation Alternative 1

The footprint of this alternative is approximately 1.5ha in extent and is located north of the R104 (Bronkhorstspuit road). In order to access this substation site, an existing informal dirt road extending north from the R104 for an approximate distance of 0.6km will be used.

Diamond Substation Alternative 2

The footprint of this alternative is approximately 1.5ha in extent and is located south of the R104 (Bronkhorstspuit road). In order to access this substation site, an existing informal dirt road (located south of the R104) which extends in a western direction parallel to the R104 for an approximate distance of 0.4km will be used.

Diamond Substation Alternative 3(preferred alternative)

The footprint of this alternative is approximately 1.5ha in extent and is located further north of the R104 (Bronkhorstspuit road). In order to access this substation site an existing informal dirt road (located north of the R104) will be used

Topography, hydrology, land ownership, servitude negotiations, line maintenance, socio-economic and environmental aspects were considered during the assessment of the powerline route and each substation alternative as shown in **Section D** below.

Please refer to **Figure 5** below which outlines the proposed Diamond-Bynes 132kV powerline route and associated Diamond substation alternatives.

BASIC ASSESSMENT REPORT

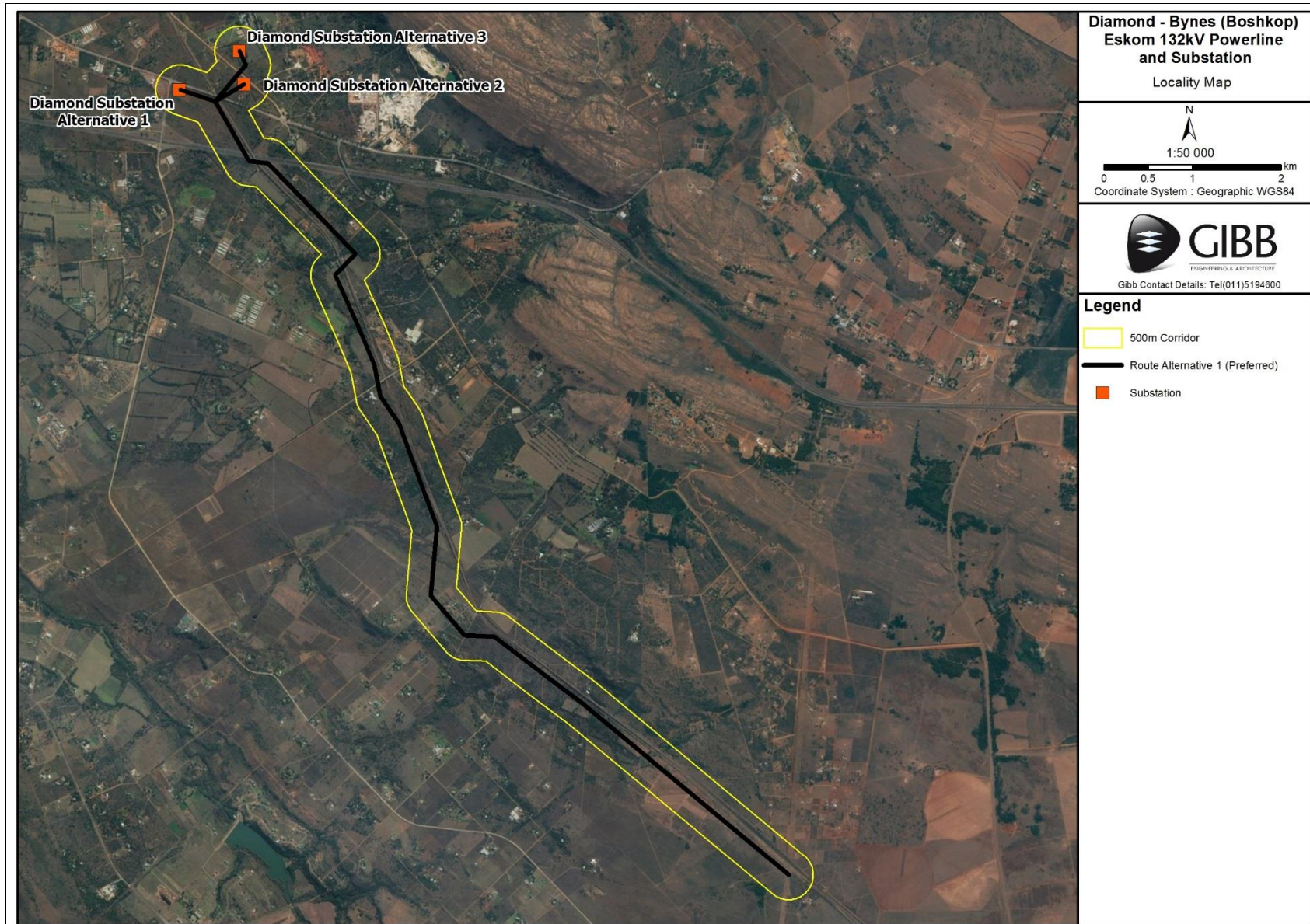


Figure 5: Route Alternative 1 (Preferred – Black line) and Diamond Substation Alternative 1, 2 & 3 (red dots)

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a) Site alternatives

Alternative 1		
Description	Lat (DDMMSS)	Long (DDMMSS)
Diamond Substation Alternative 1	25°46'6.15"S	28°26'30.94"E
Alternative 2		
Description	Lat (DDMMSS)	Long (DDMMSS)
Diamond Substation Alternative 2	25°46'6.69"S	28°26'8.92"E
Alternative 3 (Preferred)		
Description	Lat (DDMMSS)	Long (DDMMSS)
Diamond Substation Alternative 3 (Preferred)	25°45'54.00"S	28°26'29.05"E

In the case of linear activities:

Alternative: **Latitude (S):** **Longitude (E):**

Alternative S1 (Preferred)

The proposed Diamond-Bynes 132kV powerline Route Alternative 1 (preferred) extends in a south-east to north-westerly direction towards the N4 highway in the Donkerhoek area.

• Start point of the activity T-off from the existing Bynes 132kV powerline (point R)	25°50'23.98"S	28°29'50.61"E
• Bend 1	25°49'6.06"S	28°28'3.49"E
• Bend 2:	25°49'5.62"S	28°27'52.69"E
• Bend 3	25°48'52.61"S	28°27'40.38"E
• Bend 4	25°48'29.97"S	28°27'42.60"E
• Middle/Additional point of the activity	25°47'56.22"S	28°27'28.86"E
• Bend 5	25°47'47.12"S	28°27'21.99"E
• Bend 6	25°47'37.15"S	28°27'19.85"E
• Bend 7	25°47'7.53"S	28°27'5.58"E
• Bend 8	25°47'0.59"S	28°27'12.85"E
• Bend 9	25°46'30.81"S	28°26'41.06"E
• Bend 10	25°46'30.07"S	28°26'34.13"E
• Bend 11	25°46'10.64"S	28°26'10.64"E
• End point of the activity Connection to the newly proposed Diamond Substation Alternative 1	25°46'6.15"S	28°26'30.94"E
• End point of the activity Connecting to the newly proposed Diamond Substation Alternative 2	25°46'6.69"S	28°26'8.92"E
• End point of the activity Connection to the newly proposed Diamond Substation Alternative 3	25°45'54.00"S	28°26'29.05"E

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

REFER TO APPENDIX A2 FOR GPS CO-ORDINATES TAKEN EVERY 500m.

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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 – N/A

Layout alternatives are not applicable to the construction of the proposed Diamond-Bynes 132kV powerline and associated infrastructure.

c) Technology alternatives – N/A

Alternative technologies have not been considered as the technology to be used for the development is already considered the most appropriate technology and in some cases has been specifically designed for the existing environmental conditions and terrain, as specified by standard Eskom specifications and international best practice. The pylons under consideration for this project are the most appropriate based on the terrain and design integrity as well as for the purpose for which the powerline is to be constructed.

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

No other alternatives have been considered for this development

e) No-go alternative

The No-go alternative in the context of this project implies that the powerline will not be constructed. If the project does not proceed, the potential negative impacts associated with this development related to the risk of collisions of birds, clearing of vegetation, soil erosion and wetland degradation would be completely avoided.

The surrounding area will however, be negatively affected due to the lack of a constant and reliable electricity supply. This will directly inhibit future developments and economic growth in the area. The need for stable and reliable power supply to meet current and future demand will outweigh the potential impacts to the surrounding environment. The impacts to the surrounding environment can be proactively mitigated to acceptable levels.

The No-Go Alternative is therefore not recommended.

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

3. PHYSICAL SIZE OF THE ACTIVITY

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

Alternative:

Alternative A1¹

Diamond Substation 1

Alternative A2

Diamond Substation 2

Alternative A3

Diamond Substation 2

Size of the activity:

1,500m²

1,500m²

1,500m²

¹ "Alternative S" refers to site alternatives.

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or, for linear activities:

Alternative:
Alternative S1

Length of the activity:

11km

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

Alternative:

Alternative S1 (31m servitude)

Size of the site/servitude:

341,000 m²

4. SITE ACCESS

Does ready access to the site exist?

YES	NO
X	

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

m

Describe the type of access road planned:

Due to the close proximity of the proposed powerline to existing roads in the area, these roads and tracks will be used during construction and maintenance activities related to the project. Where no access roads exist, temporary tracks will be developed for the construction phase of the powerline. Please note that as far as possible all impacting activities will take place within the servitude of the approved powerline alignment. It is however important to note that the powerline servitude as well as the substation will not result in breaking of property fences. Eskom will access the landowner property either through privately established gates or alternatively through the landowner's own gate, where Eskom alone will have the keys to the Eskom locks placed on the gates. The specific terms relating to this will however have to be agreed upon during the landowner negotiations process prior to the commencement of the construction phase.

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.

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 X	NO	Please explain
The powerline and structures will be located in a servitude area that will be registered by Eskom upon completion of landowner negotiations. Landowner consideration negotiations will only be undertaken by the Eskom Lands and Rights division following the receipt of positive Environmental Authorisation (EA).			

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2. Will the activity be in line with the following?			
(a) Provincial Spatial Development Framework (PSDF)	YES <input checked="" type="checkbox"/>	NO <input type="checkbox"/>	Please explain
<p>The Gauteng Provincial Spatial Development Framework (GSDF) was completed in February 2011 and is valid from the date of approval. The GSDF draws upon and aims to give effect to the vision put forward in the Gauteng Employment Growth and Development Strategy (GEGDS), namely building a prosperous, sustainable growing provincial economy to eradicate poverty and improve social development. Ensuring the sustainability of the resource base upon which the general well-being of the people of Gauteng depend.</p> <p>The GSDF was prepared in accordance with the principles of bioregional planning adapted to suit the requirements of Gauteng. Gauteng has the largest population in the country and the construction of the proposed powerline will have a positive impact on the local economy and growing population of the area. This is due to the provision of consistent and reliable supply of electricity to the surrounding area which promotes economic growth. The economic growth in the local communities in the area is much needed as members of the community will directly benefit from the job opportunities created.</p> <p>The Gauteng Provincial Spatial Development Plan recognises that the electricity supply is under stress in the province and large development projects are affected by the electricity limitations.</p>			
(b) Urban edge / Edge of Built environment for the area	YES <input type="checkbox"/>	NO <input checked="" type="checkbox"/>	Please explain
<p>The City of Tshwane Metropolitan Municipality (CTMM) was established on 5 December 2000 when the following local authorities which had previously served the greater Pretoria and surrounding areas were integrated. The following local authorities were amalgamated:</p> <ul style="list-style-type: none"> • The Greater Pretoria Metropolitan Council • The City Council of Pretoria • The Town Council of Centurion • The Northern Pretoria Metropolitan Substructure • The Hammanskraal Local Area Committee • The Eastern Gauteng Services Council • The Pienaarsrivier Transitional Representative Council • The Crocodile River Transitional Council • The Western Gauteng Services Council • The Winterveld Transitional Representative Council • The Temba Transitional Representative Council • The Mabopane Transitional Representative Council • The Ga-Rankuwa Transitional Representative Council • The Eastern District Council <p>Following the integration of the abovementioned local authorities to form part of the CTMM, the municipality was classified as a Category A Grade 6 urban municipality. The Municipality includes the following towns and townships: Pretoria, Centurion, Akasia, Soshanguve, Mabopane, Atteridgeville, Ga-Rankuwa, Winterveld, Hammanskraal, Temba, Pienaarsrivier, Crocodile River and Mamelodi. It serves a geographical area of 6,298 km² and has a population of 2,921,488 with an average of approximately 464 people per km².</p> <p>The proposed development will take place <u>outside</u> the urban edge.</p>			

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<p>(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?).</p>	<p>YES X</p>	<p>NO</p>	<p>Please explain</p>
<p>The Integrated Development Plan (IDP) is the over-arching strategic plan of the City of Tshwane Local Municipality (CTTM). The IDP for the municipality has identified electricity as a service delivery need and prioritises the need to provide universal access to this service. The CTTM will focus on providing basic services to areas that do not have basic services. The CTTM has identified insufficient provision and maintenance of electricity as a priority concern (CTTM IDP 5 years plan 2011-2016). In line with the National outcomes set for the implementation of the IDP, the proposed project will assist in speeding up the growth and transformation of the economy to create decent work and sustainable livelihoods. The proposed development is aligned to the IDP and supports the municipal objectives and priorities for service delivery and infrastructural development in the area.</p>			
<p>(d) Approved Structure Plan of the Municipality</p>	<p>YES X</p>	<p>NO</p>	<p>Please explain</p>
<p>The proposed development falls within the category of service infrastructure and as such will have no bearing on the municipality's Structure Plans.</p>			
<p>(e) An Environmental Management Framework (EMF) adopted by the Department (e.g. Would the approval of this application compromise the integrity of the existing environmental management priorities for the area and if so, can it be justified in terms of sustainability considerations?)</p>	<p>YES X</p>	<p>NO</p>	<p>Please explain</p>
<p>The Environmental Management Framework (EMF) aims to ensure that environmental limits to development are included in spatial planning documents. The need for spatial environmental information is critical both as a guide to areas that should be protected from excessive development, as well as to highlight to other planning disciplines the opportunities those environmental resources present to enhancing development. Further to this, the EMF aims to guide protection and enhancement of environmental assets as an integrated process with development patterns throughout the Gauteng Province.</p> <p>The proposed project is in line with the desired outcomes and objectives of the Environmental Management Framework adopted by the Department and will not compromise the integrity of the existing environmental management priorities for the area. Appropriate and effective mitigation measures, aligned to the desired outcomes, will be incorporated into the EMPr and adhered to throughout the various development phases of the proposed project. Pylon structures constitute a small overall footprint, where the pylons will be strategically placed to allow the powerline to span over environmentally sensitive areas identified by the specialists forming part of this project.</p>			
<p>(f) Any other Plans (e.g. Guide Plan)</p>	<p>YES</p>	<p>NO X</p>	<p>Please explain</p>
<p>No other plans applicable</p>			

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<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>	<p>YES X</p>	<p>NO</p>	<p>Please explain</p>
<p>The current land use for the proposed project area consists mostly of Agriculture. Apart from farming, various projects and programmes have been identified within the credible IDP of Gauteng to initiate skills development, economic development, and increase social economic growth, create much needed job opportunities and promote tourism development throughout the district.</p> <p>Based on the information outlined above, it is clear that the proposed project is aligned to the desired outcomes and objectives of the projects and programmes identified within the IDP specific to the area affected by the proposed development.</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>	<p>YES X</p>	<p>NO</p>	<p>Please explain</p>
<p>Electricity provision in South Africa is a critical concern, as it is impossible to create an economically sound country without a secure and reliable electricity source. As previously mentioned, the proposed development forms part of the country's strategy to meet the currently growing and future electricity consumption requirements.</p> <p>Given that the provision and maintenance of electricity supply has been highlighted as a key area of concern in the Municipality's IDP, increasing the capacity of the electrical infrastructure throughout the study area will work towards providing a stable and reliable supply of electricity which in return will encourage development in areas which have previously been limited. In addition to this, the proposed development may also serve to improve the livelihoods of local communities by assisting the Local Government in providing electricity to them. Local employment opportunities will also be created during the construction phase of the proposed development.</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>	<p>YES X</p>	<p>NO</p>	<p>Please explain</p>
<p>No additional services will be required to cater for the new electricity infrastructure. Water will be sourced commercially and locally from the municipality; however due to the nature of the development, large volumes of water will not be required.</p> <p>During the construction phase, water will only be used for concrete batching activities and portable water will be required for drinking and cleaning activities. The municipality has been provided an opportunity to comment on this BAR. Proof of this communication (request for comments from the Municipality) will be included in Appendix E4 of the Final BAR to be submitted to the competent authority (DEA) for decision making.</p>			

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<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>	<p>YES X</p>	<p>NO</p>	<p>Please explain</p>
<p>Provision and maintenance of electricity supply has been highlighted as a key area of concern in municipal IDP. The development will contribute to the enhancement of service infrastructure within the municipality and is therefore mandated to prioritise the upgrade of the electricity supply network. The relevant municipality has been provided an opportunity to comment on this BAR and proof of this communication will be included in Appendix E4 of the Final BAR for submission to the competent authority (DEA) for decision making.</p>			
<p>7. Is this project part of a national programme to address an issue of national concern or importance?</p>	<p>YES X</p>	<p>NO</p>	<p>Please explain</p>
<p>The project forms part of the national programme to address the need for social and economic growth within the local communities of the Gauteng Province.</p>			
<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>	<p>YES X</p>	<p>NO</p>	<p>Please explain</p>
<p>It should be noted that the powerline extends in close proximity to existing service infrastructure (i.e. low voltage powerlines and Transnet railway line) within the study area. Even though the area is generally appreciated for its natural state, the powerline alignment has been identified as such to be situated in close proximity to existing infrastructure and thus limit its visual intrusion on the surrounding environment.</p> <p>Thus the proposed development is within context and would not be highly incongruous within this setting.</p>			
<p>9. Is the development the best practicable environmental option for this land/site?</p>	<p>YES X</p>	<p>NO</p>	<p>Please explain</p>
<p>The proposed powerline crosses mostly farmland with minimal environmental impact. The majority of properties situated along the powerline alignment is utilised for grazing purposes. The regional importance of the development in terms of the improved reliability of electricity supply, economic and social growth in the surrounding communities, outweighs the potential loss of a minor amount of natural vegetation. The powerline will however be located along the borders of property boundaries in order to limit its impact on arable farmland, whereas grazing underneath the powerline will be permitted given that the safety clearance requirements are adhered to.</p>			
<p>10. Will the benefits of the proposed land use/development outweigh the negative impacts of it?</p>	<p>YES X</p>	<p>NO</p>	<p>Please explain</p>
<p>Most of the negative impacts associated with the proposed development are of <u>low significance</u> following mitigation measures. Improved reliability of electricity supply and the increase of supply to the surrounding areas will result in both social and economic growth which is considered to be of a high significance. The development will also create temporary employment opportunities during the construction and possibly the operational phases which is considered to be of a <u>High positive</u> significance.</p>			

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11. Will the proposed land use/development set a precedent for similar activities in the area (local municipality)?	YES	NO X	Please explain
<p>The construction of the electricity grid is not driven by profit gains but rather to ensure service delivery to the surrounding area and communities. This will inherently have a positive impact on the surrounding communities and region in terms of social and economic growth as well as economic stability. Infrastructure for service delivery will not set a precedent for similar activities in the area at large. However, should additional powerlines be required in the area in future it may be beneficial to align them parallel to one another in order to consolidate the impacts and lessen the severity thereof.</p> <p>With this being said, the proposed 132kV powerline cannot be aligned to extend alongside the existing 33kV powerline that exists in the area, as the space alongside it is needed for future upgrades to occur with regards to the 33kV powerline. The proposed powerline does however extend along the existing Transnet railway line for majority of its alignment, to fit in with the existing linear infrastructure and visual character of the area.</p>			
12. Will any person's rights be negatively affected by the proposed activity/ies?	YES	NO X	Please explain
<p>Potentially affected landowners (both directly and adjacently affected) have been notified timeously (please refer to Appendix E2) with regards to the proposed development and provided an opportunity to comment.</p> <p>The proposed powerline will ultimately be owned by Eskom during the operation and maintenance phases thereof. Therefore, the proposed servitude and powerlines has been assessed on behalf of Eskom, where all Eskom procedures will be implemented and adhered to with regards to landowner negotiations, land acquisition and access. The specific terms of conduct will be discussed and agreed upon by way of signing an agreement during the landowner negotiations process, prior to the commencement of any construction activities.</p> <p>As such, no juristic or natural person's right will be adversely affected.</p>			
13. Will the proposed activity/ies compromise the "urban edge" as defined by the local municipality?	YES	NO X	Please explain
<p>Urban edge is essentially a strategy to counter urban sprawl, encourage densification and protect natural resources.</p> <p>To promote integration of the social, economic, institutional and physical aspects of land development is one of the strategies that the urban edge for the CTMM in Gauteng sets out to accomplish. The proposed construction of the 132kV overhead powerline will be in line with this strategy and is therefore not seen as compromising the urban-edges of the municipality.</p>			
14. Will the proposed activity/ies contribute to any of the 17 Strategic Integrated Projects (SIPS)?	YES X	NO	Please explain
SIP 10. Electricity transmission and distribution to all.			

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15. What will the benefits be to society in general and to the local communities?	Please explain
<p>The potential benefit of the proposed powerline and associated infrastructure to the Gauteng Province is centred on the stimulation of the local economy through the additional employment opportunities created and supplied by the powerline construction and maintenance thereof. Some of the surrounding households are still reliant on domestic fires, which in turn negatively impacts on the environment in terms of air quality as well as through the uncontrolled harvesting of woodlands.</p> <p>On a local and regional scale, economies will also be stimulated in the form of additional employment opportunities which will act as a catalyst for promoting economic growth in the area. The proposed development will align with Eskom's long term planning for the area and will provide a platform for future electrification of the surrounding households.</p>	
16. Any other need and desirability considerations related to the proposed activity?	Please explain
<p>As outlined previously, the proposed development is needed in order to improve the reliability of the electricity supply throughout the area and to support the various electricity improvement initiatives within the CTMM. The project will promote economic growth throughout the area and furthermore decrease the number of residents within Gauteng who are still reliant on domestic fires. The use of domestic fires for household use impacts negatively on the environment in terms of air quality as well as through the uncontrolled harvesting of woodlands.</p> <p>The proposed project will therefore assist in speeding up the growth and transformation of the economy to create work opportunities, sustainable livelihoods and a stable economy.</p>	
17. How does the project fit into the National Development Plan for 2030?	Please explain
<p>The National Development Plan (NDP) for 2030 has a vision that by 2030 South Africa will have an energy sector that promotes economic growth and development through adequate investments in energy infrastructure and the provision of quality energy services (National Development Plan, 2011). It furthermore emphasises the need to create 11 million more employment opportunities.</p> <p>Based on the abovementioned statement and requirements associated with achieving this goal, the proposed development is aligned with the NDP in that it will assist with the promotion of economic growth by means of producing electricity, strengthening the local electrical feed supply and additional employment opportunities.</p>	
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 proposed development has been adequately considered by the Environmental Assessment Practitioner (EAP) and identified specialists, and all potential impacts that may have a significant impact on the receiving environment have been considered and mitigated to acceptable levels as required by the NEMA 2010 EIA Regulations (and subsequent to this, the 2014 EIA Regulations (as amended)). The findings of the specialist reports have been integrated into this assessment thus giving effect to holistic environmental management.</p> <p>The conclusions of the environmental impact assessment have been concisely summarised to adequately inform decision-making by the competent authority. A comprehensive Public Participation Process will be undertaken, which will conform to requirements in Chapter 6 of the Environmental Impact Assessment Regulations. Furthermore, all Interested and Affected Parties will be given an opportunity to review and comment on all documents and reports related to this project.</p>	

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

The primary objective of the project is to provide a stable electricity supply to the municipality and surrounding areas. Provision of a stable electricity supply with spare capacity will encourage future development in the area and potentially improve the economic situation through additional employment opportunities.

The social, economic and environmental impacts have been identified and rated by the EAP with the assistance of numerous specialists. The Basic Assessment Process has been advertised and members of the public will be given the opportunity to register as an Interested and Affected Party (I&AP) as described in Section C: Public Participation and a comment and response report (CRR) will be attached to the Final BAR (**Appendix E**).

Majority of the negative impacts associated with the project will occur during the construction phase. Where negative impacts are unavoidable, they will be mitigated accordingly as stipulated in the project specific EMPr. Recommendations and mitigation measures presented in the EMPr will aim to reduce the disturbance to ecosystems and the loss of biodiversity richness. Where negative impacts are unavoidable, strict management and rehabilitation is recommended to minimise the severity of these potential impacts. The use of potentially polluting substances will be managed according to requirements stipulated in the EMPr. The Developer is bound to the stipulations of the EMPr and will be held accountable should the EMPr not be implemented as stated.

The impacts of the proposed powerline on wetlands and other environmentally sensitive areas, will be reduced by micro-siting of pylons to avoid placing them within wetland areas or their buffer zones (unless agreed upon). The labour force will be given environmental health and safety training prior to commencing any work. Daily 'tool box talks' will be used to inform workers of any specific environmental or health and safety concerns relating to the development activities or location. The cost of rehabilitation required due to pollution or unnecessary environment degradation resulting from the activity will be the responsibility of the developer.

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11. APPLICABLE LEGISLATION, POLICIES AND/OR GUIDELINES

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

Title of legislation, policy or guideline	Applicability to the project	Administering authority	Date
Constitution of the Republic of South Africa	The constitution paved the way for the protection of the natural environment and heritage resources through the recognition of the rights to a safe and healthy environment.	South African Government	
National Environmental Management Act, 1998 (Act No. 107 of 1998)	NEMA is the key environmental management legislation and states in section 2(4)(k) that "the environment is held in public trust for the people, the beneficial use of resources must serve the public interest and the environment must be protected as the people's common heritage" thereby paving the way for EIA process to assess developments that may have a harmful impact on the environment	DEA	1998
Environmental Impact Assessment (EIA) Regulations, 2010 (Government Notice No. R543, R544 and R546, 18 June 2010)	The EIA regulations describe the EIA process to be followed including the public participation process, and the listed activities that may have a harmful impact on the environment and must be assessed.	DEA	2010
Environmental Impact Assessment (EIA) Regulations, 2014 (as amended) (Government Notice Regulation No. 327, 325 and 324 of 4 December 2014)	The EIA regulations describe the EIA process to be followed including the public participation process, and the listed activities that may have a harmful impact on the environment and must be assessed.	DEA	2014
National Heritage Resources Act, 1999 (Act No. 25 of 1999)	Under section 38(1) of the NHRA any person who intends to construct a powerline or other linear development exceeding 300m in length must notify the responsible heritage resources agency of its intention.	SAHRA	1999
National Water Act, 1998 (Act No. 36 of 1998)	This Act provides for the protection and management of water resources. A Water Use License Application is made to authorise water use	DWS	1998

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	activities pertaining to the altering of the bed and banks of a watercourse and diverting the flow of water in a watercourse. A WUL Application will be submitted as the need for construction of a powerline over a watercourse has been identified, and the construction of tower structures within 500m of a wetland may occur.		
Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983)	In terms of section 6 of the Act, the Minister may prescribe control measures with which all land users have to comply. The control measure may relate to the regulating of the flow pattern of run-off water, the control of weeds and invader plants, and the restoration or reclamation of eroded land or land which is otherwise disturbed or denuded. This act will regulate construction activities to prevent the spreading of invasive species and to ensure successful rehabilitation of the receiving environment.	DEA	1983
National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004)	The Biodiversity Act provides for the management and protection of the country's biodiversity within the framework established by NEMA. It provides for the protection of species and ecosystems in need of protection, sustainable use of indigenous biological resources, and equity in bio-prospecting. Some Critical Biodiversity Areas and vulnerable and endangered ecosystems have been identified by the vegetation specialist in the study site.	DEA	2004
National Forests Act, 1998 (Act No. 84 of 1998)	The proposed project may result in the disturbance or damage to a tree protected under the NFA.	Department of Agriculture, Forestry and Fisheries (DAFF)	1983
National Environmental Management: Protected Areas Act, 2003 (Act No. 57 of 2003)	The Protected Areas Act provides for the protection and conservation of ecologically viable areas representative of the country's biological diversity,	DEA	2003

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	its natural landscapes and seascapes. The proposed routes both preferred and alternative routes runs through a non-statutory protected area.		
Electricity Regulations Act, 2006 (Act No. 4 of 2006)	This act establishes a nationally regulatory framework for the electricity supply industry, and provides for licenses and registrations as the manner in which generation, transmission, distribution, reticulation, trading and the import and export of electricity are regulated. The erection of new electricity distribution infrastructure is thus regulated in terms of this act.	NERSA	2006
National Energy Act, 2008 (Act No. 34 of 2008)	The Act allows for the regulation, construction and maintenance of security of energy supply in South Africa. The act empowers the energy regulator to invest in the construction and maintenance of energy infrastructure, which includes the installation of electrical infrastructure in areas where the grids are operating at near maximum capacity as well as where electricity is needed for the successful operation of various economically empowering procedures.	South African National Energy Development Institute.	2008
National Road Traffic Act, 1996 (Act No. 93 of 1996)	All the requirements stipulated in the NRTA regarding traffic matters will need to be complied with during the construction, operation and decommissioning phases of the proposed powerline.	South African National Roads Agency Limited (SANRAL)	1996
City of Tshwane Metropolitan Municipality Integrated Development Plan (IDP)	The IDP identifies the need to install, upgrade and increase the electricity grid in the local municipality, thus supports the proposed installation of distribution line.	City of Tshwane Metropolitan Municipality	2011-2016
Gauteng EMF	The Gauteng EMF is a decision making tool that should be used to facilitate the consideration of applications for EA in order to protect the natural resources within the district.	Gauteng Province	2014
Gauteng Biodiversity Conservation Plan	This Conservation plan provides the boundaries and	GDARD	2011

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	<p>areas where critical biodiversity zones and important support areas have been identified and accepted by the provincial authority. The location of the CBAs in the CTMM have been taken acknowledged and mitigation measures to minimise impacts on these CBAs have been proposed by the competent vegetation specialist</p>		
Gauteng Spatial Development Framework	<p>This GSDF was used to determine whether the proposed development is aligned to the outcomes and goals set in the Provincial Spatial Development Framework drawn up for the Gauteng.</p>	Office of the Premier of the Gauteng	2012
Municipal by-laws	<p>All municipal by-laws applicable to the study area will need to be complied with during the construction, operation and decommissioning phases of the proposed powerline development</p>	City of Tshwane Metropolitan Municipality	Varies

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12. WASTE, EFFLUENT, EMISSION AND NOISE MANAGEMENT

a) Solid waste management

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

YES X	NO
Minimal	

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

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

All solid waste which is not reusable, will be collected at a central location and will be stored temporarily until removed to a recognised landfill site. Waste will under no circumstances be allowed to be burned or buried on site. Please note that due to the nature of the project the amount of construction waste that will be generated will be minimal – i.e. approximately 1kg of general waste generated per day.

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

An approved registered municipal landfill site.

Will the activity produce solid waste during its operational phase?

YES	NO X
m ³	

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

N/A

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

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

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 X
-----	-----------------------

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 X
-----	-----------------------

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

b) Liquid effluent

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

YES	NO X
-----	-----------------------

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

m³

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

YES	NO X
-----	-----------------------

BASIC ASSESSMENT REPORT

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 X
-----	---------

If YES, provide the particulars of the facility:

Facility name:			
Contact person:			
Postal address:			
Postal code:			
Telephone:	Cell:		
E-mail:	Fax:		

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 X
-----	---------

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

YES	NO X
-----	---------

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:

During the construction phase, it is expected that there will be short-term dust generation and emissions from vehicles and machinery. However, the dust and emissions will have a medium- to short-term duration and have a limited impact on the very immediate surrounding areas. Appropriate dust suppression measures will be implemented to reduce the severity of emission related impacts. It is recommended that construction vehicles be serviced and kept in good mechanical condition to minimise possible exhaust emission.
--

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 X
-----	---------

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 X	NO
----------	----

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

YES	NO X
-----	---------

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

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

BASIC ASSESSMENT REPORT

Noise control regulations and SANS 10103: Short term noise impacts are anticipated during the construction phase of the project. It is however anticipated that the noise will be localised and contained within the construction site. The applicant must adhere to the relevant provincial noise control legislation (if any) as well as SANS 10103. Working hours should be restricted to 07h00 to 18h00 Monday to Friday excluding public holidays unless otherwise agreed with direct and adjacently affected landowners.

13. WATER USE

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

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

If water is to be extracted from groundwater, river, stream, dam, lake or any other natural feature, please indicate the volume that will be extracted per month:

Does the activity require a water use authorisation (general authorisation or water use license) from the Department of Water Affairs?

litres	
YES X	NO

As previously stated this powerline crosses drainage lines, several wetland and watercourse features along various sections of the proposed alignment. The main impact of the powerline is due to construction of the pylon structures (which has a very small local footprint). The pylon structures will be positioned to avoid the actual drainage lines and watercourses, where applicable, but may occur within the buffer area of the watercourses.

A water use license (WUL) will be applied for from the Department of Water and Sanitation (DWS) in a separate process. Please note that Section 21 (c) and (i) activities are likely to be triggered

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 that have been taken to ensure that the activity is energy efficient:

N/A

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

N/A

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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):

- 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
X	

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**.

Alternative 1 (Preferred alternative):

Property description/physical address:

Province	Gauteng Province
District Municipality	City of Tshwane Metropolitan Municipality
Local Municipality	City of Tshwane Metropolitan Municipality
Ward Number(s)	Ward 100
Farm name and number	Refer to Appendix E for farm details
Portion number	Refer to Appendix E for farm details
SG Code	Refer to Appendix E for SG codes.

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.

List attached in Appendix E

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

Agriculture	
-------------	--

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

- Is a change of land-use or a consent use application required?
- | | |
|-----|-----------|
| YES | NO |
| | X |

BASIC ASSESSMENT REPORT

1. 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
------	-------------	-------------	-------------	--------------	-------------	------------------

2. LOCATION IN LANDSCAPE

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

2.1 Ridgeline <input checked="" type="checkbox"/>	2.4 Closed valley <input type="checkbox"/>	2.7 Undulating plain / low hills <input checked="" 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 checked="" type="checkbox"/>	2.6 Plain <input checked="" type="checkbox"/>	2.9 Seafront <input type="checkbox"/>			

3. GROUNDWATER, SOIL AND GEOLOGICAL STABILITY OF THE SITE

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

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

4. GROUND COVER

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

Alternative 1 (Preferred Alternative):

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

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.

According to C-Plan data, Route Alternative 1 (Preferred Alternative) extends through several unchannelled valley bottom wetland features along the alignment. The main impact of the powerline is related to the construction of the pylon structures, each of which will occupy only a very small local footprint. The tower structures will however be positioned in such a way (within the assessed 500m corridor) to avoid being located within any watercourse or other environmentally sensitive features.

The river identified in the immediate vicinity of the powerline route is considered to be non-perennial and the wetlands has been identified as being permanent due to its inundation and saturation periods. The proposed powerline falls within the Western Bankenveld Aquatic Ecoregion and is located within quaternary catchment A23A. The Present Ecological State (PES) for A23A is indicated to be category E (seriously modified), whereas the PES of the unchannelled valley bottom wetland features fall under a Category C (moderately modified), depending on feature assessed.



Figure 6: Representative image of the unchannelled valley bottom wetlands identified along the Diamond-Bynes alignment alternative.

A detailed study on the wetlands and drainage lines were undertaken by a wetland specialist (Mr Steven van Staden from Scientific Aquatic Services) and the full report is attached in **Appendix D**.

6. LAND USE CHARACTER OF SURROUNDING AREA

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

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

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

The proposed powerline will cross the Dinokeng railway line as well as the N4 National Road, however there will be no impact on these features. All height and distance restrictions will be adhered to.

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

N/A

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

N/A

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

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

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

Please refer to **Figure 7** below for the environmental sensitivity map indicating the CBA areas which may be impacted by the proposed powerline development.

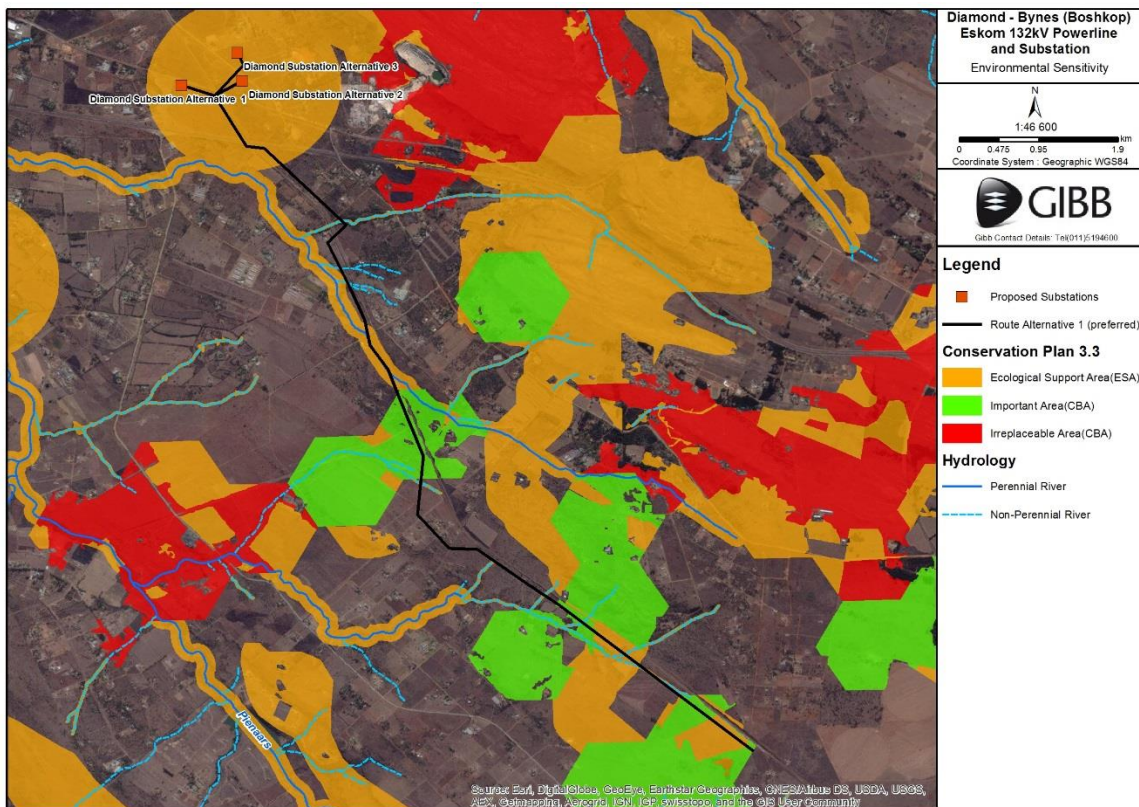


Figure 7: Environmental Sensitivity Map – CBA areas

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 X	NO
Uncertain	

A number of informal burial sites were located scattered along Alternative 1 route alignment. It is however important to note that **none of the graves are physically located within the 500m corridor assessed as part of the project**. One of the best known cemetery sites is the Donkerhoek / Diamond Hill military cemetery. The cemetery contains graves of British soldiers whom died during the battle of Diamond Hill / Donkerhoek from 11 – 12 June 1900. It should however be noted that it is not envisaged proposed development will impact on these historic sites (burial sites and military cemetery), due to the fact that the site is located more than 2.5km east of the powerline.

Please refer to **Figure 8** below for the Donkerhoek / Diamond Hill military cemetery.



Figure 8: Donkerhoek / Diamond Hill military cemetery

A detailed study on the Heritage resources of the affected area was undertaken by a Heritage specialist (Dr Johnny van Schalkwyk) and the full report is attached in Appendix D.

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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:

GIBB appointed Johnny van Schalkwyk Consulting to assess the potential impacts to heritage resources that may occur during the construction and operation of a proposed distribution powerline and associated substation in the Boschkop area (Gauteng Province), in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998) as amended, in compliance with Section 38 of the National Heritage Resources Act, 1999 (Act No. 25 of 1999), (NHRA) as amended.

Johnny van Schalkwyk Consulting identified that Archaeological resources were not widespread throughout the area; however a number of informal burial sites were found to be scattered along the proposed route alignment. It is important to note that **none of the burial sites were found to be located within the assessed 500m corridor**, as they are situated approximately 2.5km away. Due to the nature of the project and the fact that the powerline will not physically intersect the burial sites, it is not envisaged that the proposed development will have a significant impact on the heritage sites themselves. Therefore, the overall heritage significance of the sites have been rated as very-low.

It has been concluded from the assessment that the proposed powerline and associated substation development may proceed along the proposed route alternative, given that the required mitigation measures and recommendations are effectively implemented and adhered to.

Should any palaeontological material, archaeological material or human burials be uncovered during the course of the development, work should be stopped immediately and the findings needs to be reported to the relevant heritage authorities.

Based on the information provided above, the heritage specialist recommends that the development proceeds given that the proposed mitigation measures and recommendations are effectively implemented and adhered to. Please refer to Appendix D for the complete HIA.

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

YES	NO X
YES	NO X

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

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

Please refer to Annexure D for the full Heritage Impact Assessment specialist report.

8. SOCIO-ECONOMIC CHARACTER

a) Local Municipality

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

Level of unemployment:

City of Tshwane Metropolitan Municipality:

Even though the CTMM boasts a vibrant, diverse and growing economy which contributed 26.8% to Gauteng's Gross Domestic Profit (GDP) and 9.4% to the national GDP in 2016, employment opportunities are still an area of concern in the municipality. The total population size of this municipality is 2,921,488 and the unemployment rate is estimated at 24.2%. Amongst the working age group (15–64 years) in the area, constituting of 71.9% of the total population, it is estimated that 32.6% are unemployed. Only 23.4% of the population aged 20+ partook in higher education enrolment.

The unemployment concern is also further highlighted by the annual household income profile of the municipality. According to the Census 2011 data, nearly 15% of households have no source of income and approximately 46% of households in the municipality earn an annual income of less than R76 401.00. Individual monthly incomes vary greatly amongst population groups and over 44 per cent of individuals in the City have no source of income whilst another 9.6 per cent of the population earns less than R401 per month and almost 21 per cent of the population earns between R401 and R1 600 per month. **Figure 9** below represents the average percentage and household income of the CTMM.

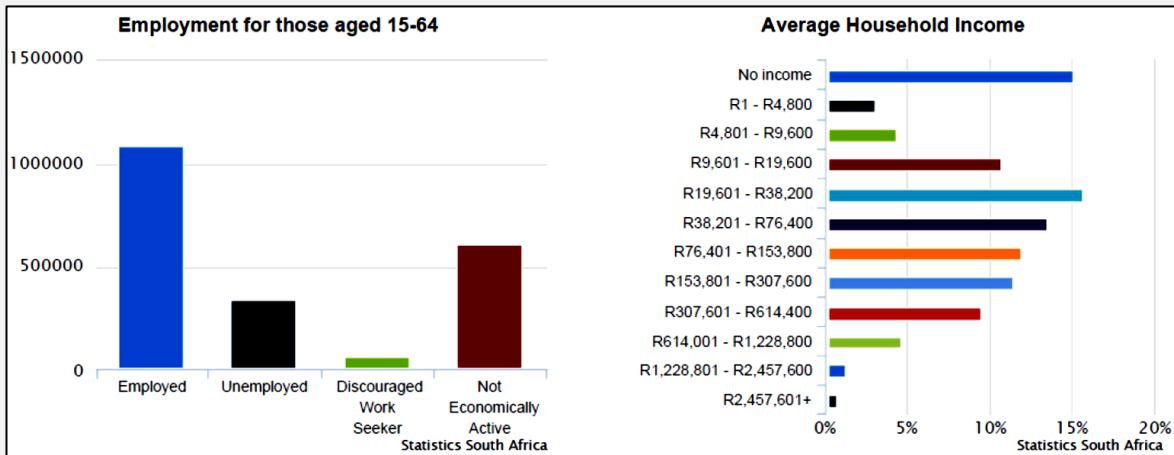


Figure 9: Average employment percentage and household income

Of the 991,536 households within the CTMM, 88.6% have electricity for lighting; 76.6% has a flush toilet that is connected to sewerage systems; and 80.7% have weekly refuse removal. **Figure 10** below represents the ethnic makeup of the overall population in CTMM. According to this information, the most dominant ethnic group residing within this area, contributing 75.4% of the overall population size, is the Black African ethnic group. The remaining 24.6% of the population is spread across the remaining ethnic groups identified as Coloured (2%), Indian/ Asian (1.8%), White (20.1%) and other.

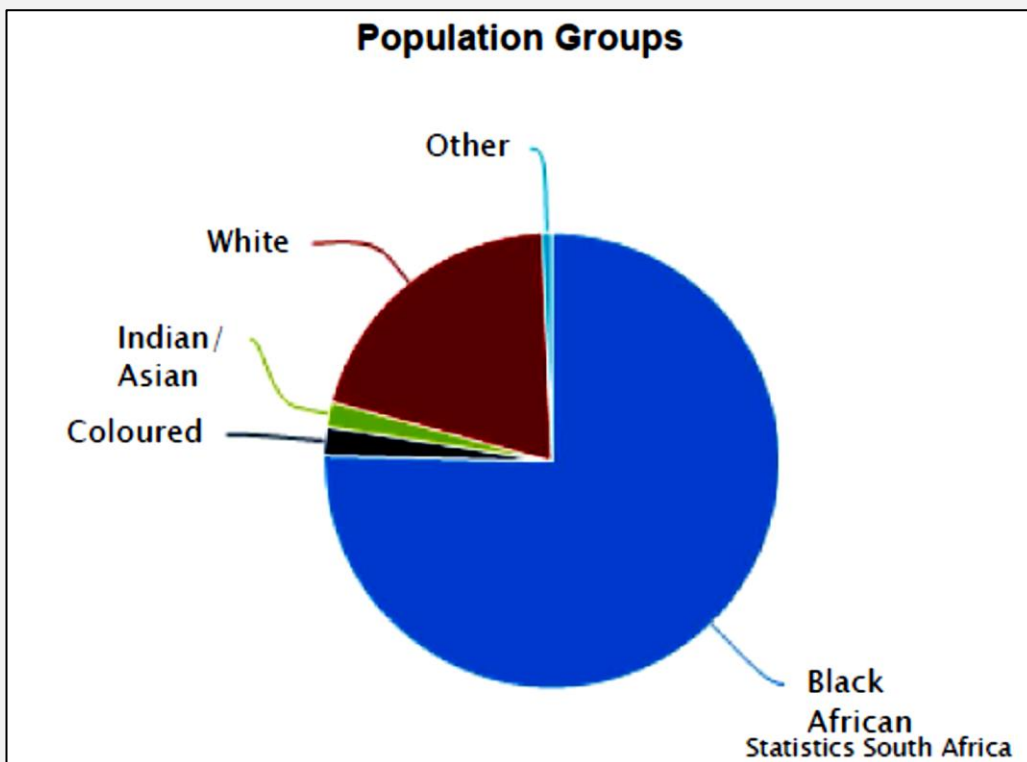


Figure 10: Ethnic makeup of the CTMM

(Ref: Statistics South Africa – www.beta2.statssa.gov.za).

Economic profile of local municipality:

The lack of energy resources within rural areas of South Africa is recognised as a major factor retarding socio-economic development.

City of Tshwane Metropolitan Municipality:

The total population size of the municipality is 2,921,488, and the key economic sectors are community services and government, followed by finance and manufacturing. Metal products, machinery and household products are the largest sub-sectors within manufacturing. The municipality further has a well-established manufacturing sector, with the automotive industry representing the most significant component.

Level of education:

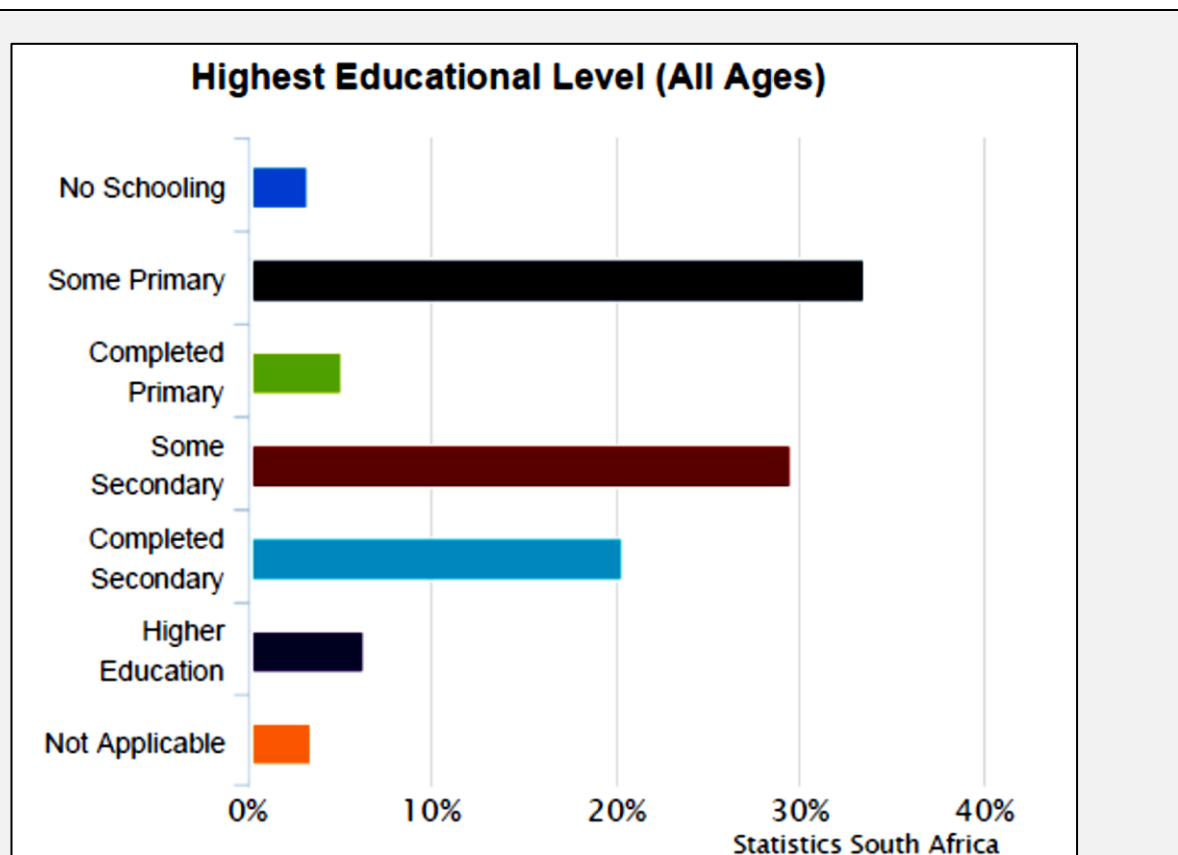


Figure 11: Education percentage

In 2011, an approximate 3.1% of the total population residing in the CTMM had no form of schooling. Coupled with those individuals who only completed some form of primary education (a further 33.3%). As such approximately half of the population had limited educational skills, which in turn would hinder their employability on the general employment market. It is statistically proven that only an estimated 6.1% of the population obtained a higher education.

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b) Socio-economic value of the activity

What is the expected capital value of the activity on completion?	R80 Million	
What is the expected yearly income that will be generated by or as a result of the activity?	Unknown	
Will the activity contribute to service infrastructure?	YES X	NO
Is the activity a public amenity?	YES	NO X
The proposed 132kV powerline and associated substation will serve its purpose in upgrading and strengthening the existing electrical feed supply in the area.		
How many new employment opportunities will be created in the development and construction phase of the activity/ies?	Eskom undertakes an open tendering process to employ suitable contractors to carry out the construction phase of the development. Contractors are required to employ local unskilled labourers for non-specialized work.	
What is the expected value of the employment opportunities during the development and construction phase?	This can only be established once the contractor is appointed	
What percentage of this will accrue to previously disadvantaged individuals?	>= 90 %	
How many permanent new employment opportunities will be created during the operational phase of the activity?	None. Eskom will maintain the powerline once constructed	
What is the expected current value of the employment opportunities during the first 10 years?	N/A	
What percentage of this will accrue to previously disadvantaged individuals?	N/A	

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, Tel: (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.

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

Systematic Biodiversity Planning Category				If CBA or ESA, indicate the reason(s) for its selection in biodiversity plan
Critical Biodiversity Area (CBA)	Ecological Support Area (ESA)	Other Natural Area (ONA)	No Natural Area Remaining (NNR)	Endangered vegetation types from the NCBCP and the WCBCP
				Vulnerable vegetation types from the STEP and NCBCP and WCBCP

- 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	60%	<p>The natural habitat units predominantly found throughout the study area includes the <i>Acacia Karroo – Acacia caffra</i> Mixed Woodland, <i>Acacia caffra – Combretum molle</i> closed woodland, <i>Englerophytum magalismsontanum</i> (stamvrug) rocky grassland and the <i>Searsia lancea – Combretum erythrophyllum</i> riparian/wetland vegetation.</p> <p>The <i>Acacia Karroo</i> woodland vegetation unit is considered to be moderately sensitive due to its moderate species richness. The <i>Acacia caffra</i> is considered to be highly sensitive due to the tree species high species richness. The <i>Englerophytum magalismsontanum</i> grassland is known to support a few Red listed plants and is known for its high species richness.</p> <p>Even though the vegetation units found throughout the study area constitutes a moderate to high sensitivity and support a vast array of species, alteration in the natural state of these vegetation units were noted. This is due to overgrazing and invasion of alien invasive plant species.</p>
Near Natural (includes areas with low to moderate level of alien invasive plants)	35%	Disturbances on the habitat conditions found throughout the study area are caused by farming and cattle grazing activities, as well as the introduction of Bluegum plantations.
Degraded (includes areas heavily invaded by alien plants)	0%	No areas exist which are heavily degraded and/ or invaded by alien plant species.
Transformed (includes cultivation, dams, urban, plantation, roads, etc.)	5%	Throughout the study area, roads, powerlines and a railway line exists along the proposed powerline route, where the vegetation has been transformed due to the implementation and continued operation of the infrastructure. This transformation of natural vegetation however does not comprise a significant proportion of the study area.

Please refer to **Figure 12** below for the affected reaches of the CBA and ESA areas.

BASIC ASSESSMENT REPORT

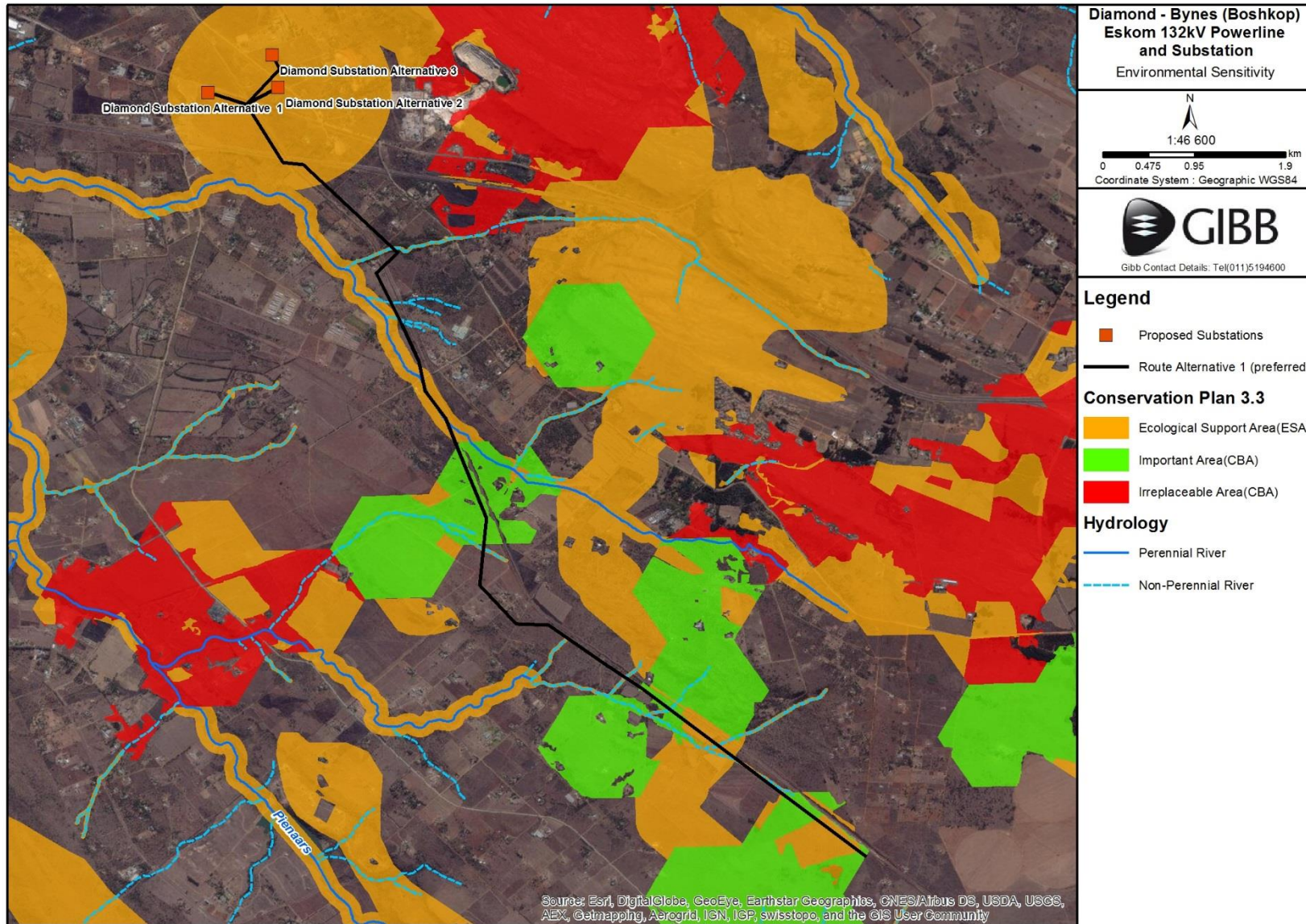


Figure 12: Affected CBA & ESA areas relevant to the proposed development

BASIC ASSESSMENT REPORT

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 and unchanelled valley bottom wetlands)			Estuary		Coastline	
	Endangered							
	Vulnerable							
	Least Threatened	YES X	NO	UNSURE	YES	NO X	YES	NO X

The proposed development extends over two terrestrial ecosystems namely the Marikana Thornveld in the west of the study area, along with a small section of Rand Highveld Grassland. The Marikana Thornveld and Rand Highveld Grassland ecosystems constitute an *endangered* conservation status.

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)

Please refer to Appendix D of this report for the detailed Ecological Impact Assessment undertaken for the project.

Vegetation:

The vegetation types that will be affected by the proposed development are the Marikana Thornveld in the west, with a small section of the route being located in the Rand Highveld Grassland. These vegetation units constitute an *endangered* conservation status and is made up by the following habitat units:

- *Acacia Karroo – Searsia lancea Mixed Woodland*;
- *Disturbed Acacia Karroo Mixed woodland*;
- *Combretum erythrophyllum – Phragmites australis riverine/ wetland vegetation*;
- *Open Acacia Karroo open woodland*; and
- Altered vegetation

Acacia Karroo – Searsia lancea Mixed Woodland

This Marikana Thornveld woodland occurred along the powerline route alternatives on the flatter slopes below the Magaliesberg as well as in patches along the railway line. The area towards the Magaliesberg mountain was more species rich as it was less affected by agriculture, development and urbanisation. The areas along the N4 highway was fragmented and mixed with woodland patches that has been affected and altered in some ways

The dominant species that were visible throughout this vegetation unit were *Acacia Karroo*, *Searsia lancea* and *Ziziphus mucronata* with *Acacia caffra* present in more rocky areas. The herbaceous layer included grasses such as *Themeda triandra*, *Heteropogon contortis* and *Cymbopogon excavatus* grasses visible in the herbaceous layer. The herbaceous layer of this vegetation is often poorly developed and Forbes such as *Vernonia oligocephala*, *Hermannia depressa* and *Ipomoea bathycolpos*. From a habitat sensitivity point of view, this habitat unit is considered to constitute a moderate sensitivity due to its moderate species richness and habitat value for a wide variety of faunal species.

Disturbed Acacia Karroo Mixed woodland

Several areas along the proposed route alternatives were characterized by Acacia Karroo woodland that has been disturbed. Due to this disturbance, this woodland habitat supports a lower species richness than what is observed in undisturbed woodland areas. The form of disturbance found throughout this woodland area, is the occurrence of exotic invasive vegetation as well as sections where only homogenous vegetation is found as opposed to a diversity of vegetation types. Due to the disturbance that has occurred, this habitat unit is considered to constitute a low sensitivity.

Searsia lancea – Combretum erythrophyllum riparian/wetland vegetation

The dominant species that were visible throughout this vegetation unit specifically in close proximity to larger streams, were trees such as *Combretum erythrophyllum* (river bushwillow) and *Searsia lancea* (Common Karee). The watercourse features found throughout the study area is known to support several species in terms of habitat and shelter. Even though some disturbances were noted throughout this vegetation unit, it is considered to constitute a high sensitivity.

Acacia Karroo open woodland

This woodland occurred in the south of the study area where the Marikana Thornveld starts to transition to the Rand Highveld Grassland. The dominant tree species were Acacia Karroo and *Searsia lancea*. Several forbs and grass species were present with *Themeda triandra*, *Eragrostis chloromelas* and *Heteropogon contortis* being prominent as well as the forbs *Hypoxis hemerocallidae* and *Acaclypha angustata*. This habitat is considered to have a moderate conservation.

Altered Vegetation

The Natural composition in the altered vegetation has been changed drastically. It occurs at several spots along the proposed Powerline corridor. The dominant habitat includes exotic trees such and *Eucalyptus sp.*, *Melia azedarach*, *Pinus sp.* *Lantana camara*, *jacaranda mimusfolia* and poison grass such as *cynodon dactylon*, *Hyparrchenia hirta* and *digitaria eriantha*. The disturbed habitat includes agricultural practices such as ploughed fields, but also associated with development such as factories, farmsteads and barns.

Please refer to **Figure 13** below for the map indicating the location of the habitat unit in respect to the proposed development.

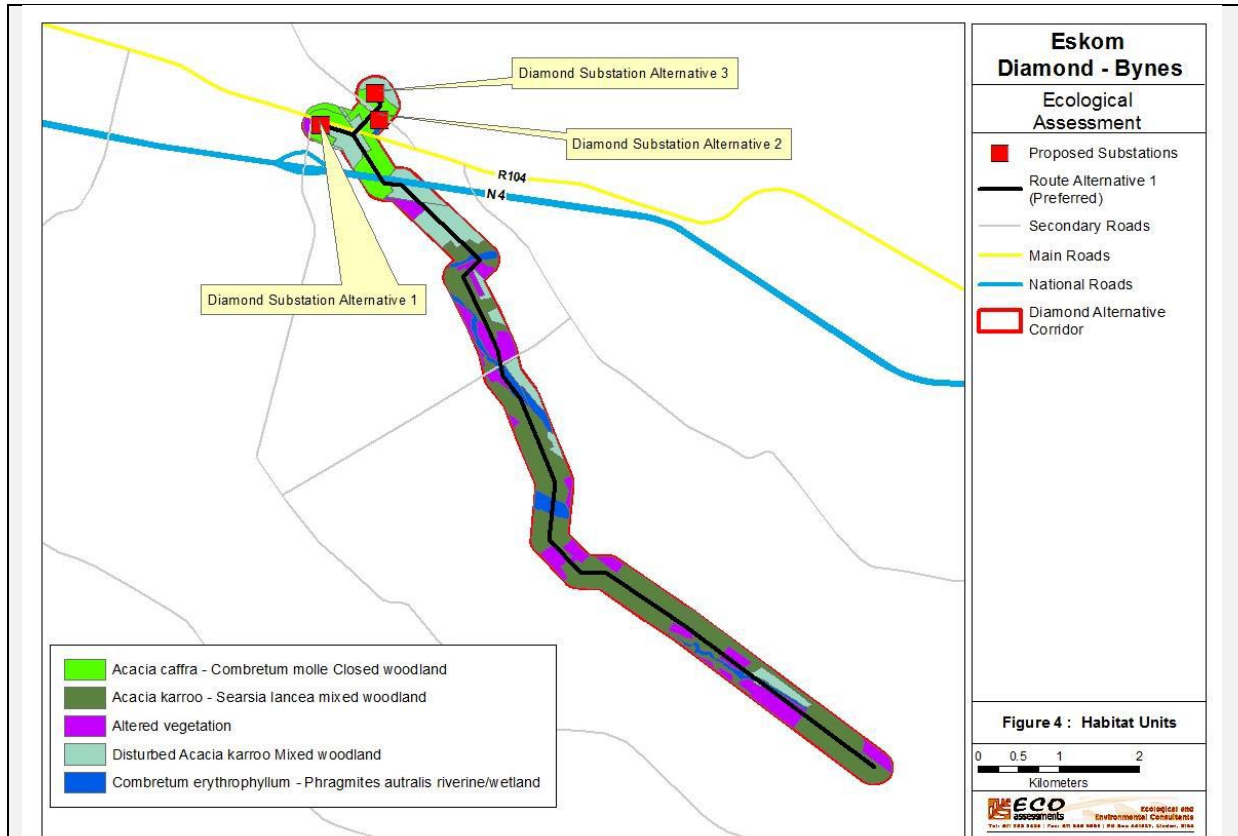


Figure 13: Habitat Units found throughout the study area

Topography, geology and soils:

The Marikana Thornveld is typically represented by open Acacia Karoo woodland, occurring in valleys and slightly undulating plains and some lowland hills in the western portion of the study area. The Rand Highveld grassland vegetation type, which affects a south eastern section of the route, occurs in a highly variable landscape with extensive sloping plains and a series of ridges slightly elevated over undulating surrounding plains. The vegetation species constitute rich, wiry, sour grassland alternating with low, sour shrubland found along rocky outcrops and steeper slopes.

The various unchannelled valley bottom wetland features were encountered along the proposed Route Alternative 1 (preferred). A map indicating the location of these features are included in **Figure 14** below.

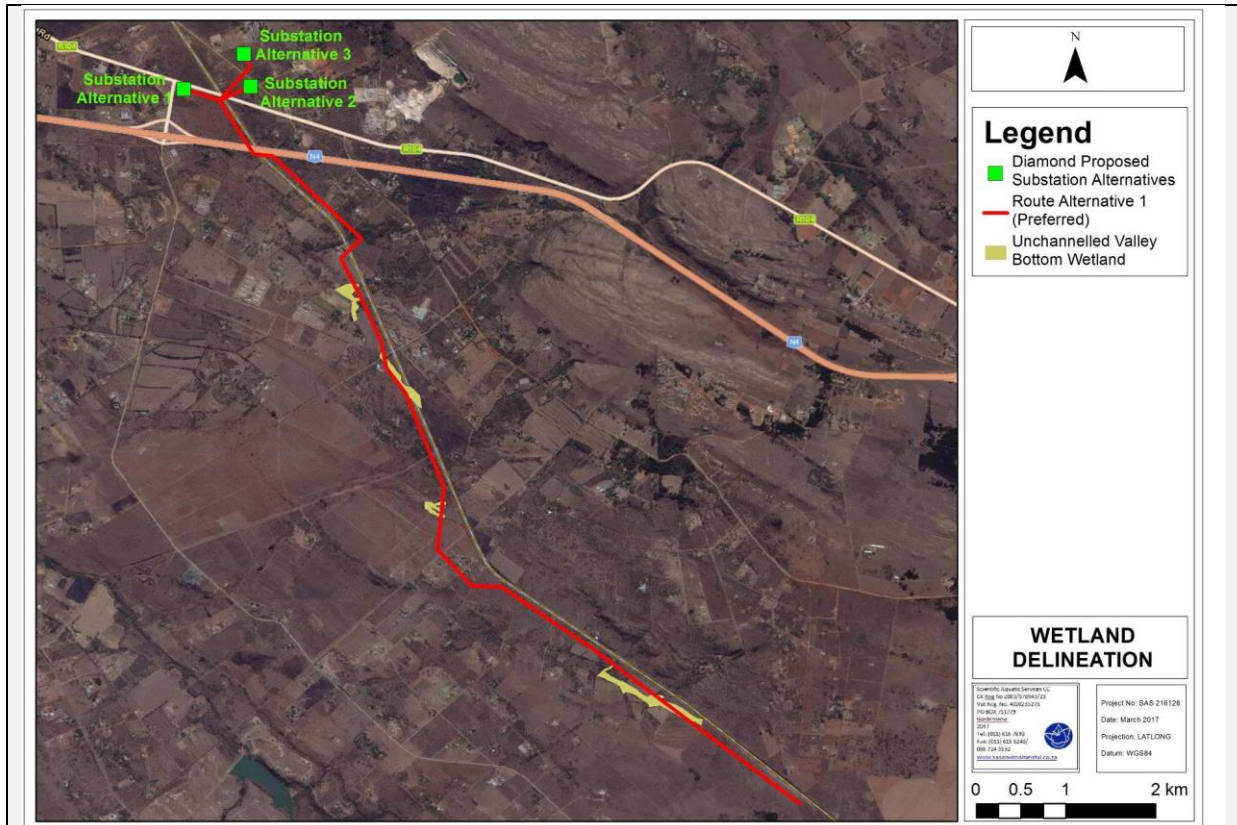


Figure 14: Wetland features found throughout the study area

Local Climate:

The climate typically constitutes a summer rainfall climate with very dry winters. Three seasons characterize the climate including a cool dry season from May to Mid-August, a hot dry season from Mid-August to October and a hot wet season from November to April. The study area normally receives about 517mm rain per annum, with most rainfall occurring mainly during the summer months. Temperatures experienced in summer are hot, reaching maximum temperatures of 28°C by day and dropping to a temperature of 14°C at night. Day temperatures in winter reach a maximum of 19°C, however night temperatures can drop to as low as 3°C, with occurrence of occasional frost.

Biodiversity:

It has been identified that the proposed Route Alternative 1 intercepts various areas of environmental sensitivity. The northern section of the powerline extends through an Ecological Support Area (ESA), whereas the southern section of the powerline extends through small sections of a Critical Biodiversity Area (CBA – Important Area) and ESA. The vegetation found in these areas are deemed fairly natural, however moderate alterations have occurred as a result of farming and grazing practices.

Flora:

Several Red listed species are recorded for the study area where the habitat of these plant species includes rocky grasslands, open and closed woodlands, rocky hillsides, riverine and wetland habitats. The conservation status for these vegetation types are indicated as both *least threatened* and

endangered. It should however be noted that due to the nature of the proposed development and the span distance of the powerline itself, it is not envisaged that these sensitive plant species will be impacted upon.

Faunal:

Mammals

Species observed during the site visit were limited due to the close proximity to human activity throughout the study area. Data obtained for the study area indicates that several sensitive mammal species potentially occur throughout. A desktop assessment of the study area indicate that the following sensitive species may potentially occur in the study area:

Scientific name	Common name	Status
<i>Atelerix frontalis</i>	South African hedgehog	Near Threatened
<i>Myotis welwitschii</i>	Welwitsch's hairy bat	Near Threatened
<i>Myotis tricolour</i>	Temminck's hairy bat	Near Threatened
<i>Pipistrellus rusticus</i>	Rusty bat	Near Threatened
<i>Miniopterus schreibersii</i>	Schreiber's long-fingered bat	Near Threatened
<i>Rhinolophus clivosus</i>	Geoffroy's horseshoe bat	Near Threatened
<i>Myotis welwitschii</i>	Welwitsch's hairy bat	Near Threatened
<i>Rhinolophus darlingi</i>	Darling's horseshoe bat	Near Threatened
<i>Rhinolophus blasii</i>	Peak-saddle horseshoe bat	Vulnerable
<i>Cloeotis percivalli</i>	Short-eared trident bat	Critically Endangered
<i>Mellivora capensis</i>	Honey badger	Near Threatened
<i>Neamblysomus julianae</i>	Juliana's Golden Mole	Vulnerable
<i>Leptailurus serval</i>	serval	Near Threatened

SA Hedgehog - The SA hedgehog has a wide tolerance for various habitats. They are nocturnal and although they can be found in most environments they prefer grass and bushveld that is not too damp, with a good covering of leaves and other debris.

Honey Badger - The ratel tolerates a wide range of conditions. It is an opportunistic insectivore and carnivore, but takes an even wider range of invertebrate and vertebrate prey, from insects to the young of large mammals, and it eats carrion. It also eats berries and fruits. It's digging ability, perhaps second only to the aardvark's, with whose holes its holes are often confused, enables it to extract buried food that is inaccessible to less-accomplished excavators. In addition, the ratel is one of the few mammalian predators on bees, feeding both on larvae and honey, hence the scientific name *Mellivora*, "honey eater," and its common name, honey badger (Wildlife campus 2014).

Bats - A range of bat species can potentially occur in the study area. Sufficient savanna and food sources exist in the study area to support bat populations. Several species are dependent on caves where they rest during the day. They will also use hollow trees and crevices in rocks for this purpose. Given the nature of this project, it is deemed unlikely for bats to be disturbed by the construction of a powerline.

Juliana's Golden mole - This threatened golden mole species is well-known to the Bronberg ridge which is approximately 7 km east of the proposed powerline route. This specie is confined to sandy soils, often pockets of weathered sandstone associated with rocky ridges, in the Savanna biome of South Africa, and marginally into the Grassland biome in the Tshwane district (Gauteng) (IUCNredlist.org). This species has not been recorded on the Magaliesberg as yet.

Serval (Tierboskat) - The serval is a slender, medium-sized cat that stands 54–62 centimetres at the shoulder and is active in the day as well as at night. The serval prefers areas with cover such as reeds and tall grasses and proximity to water bodies, such as wetlands and savannas (open woodland).

Reptiles & Amphibians

The reptile atlas of South Africa indicates that 57 Reptile species occur within the Boschkop area. These species include snakes, skinks, lizards, geckos, terrapins and tortoises. Five 95) endemic species are listed including Distant's Ground Agama (*Agama aculeate*), Transvaal Gecko (*Pachydactylus affinis*), Aurora house snake (*Lamprophis aurora*), Cape grass lizard (*Chamaesaura anguina anguina*) and the Coppery Grass Lizard (*Chamaesaura aenea*). These species have a *Least Concern* conservation status as endemic species. Other species that are worthy to mention are Southern African Python (*Python natalensis*), the Leopard Tortoise (*Stigmochelys pardalis*), two records for the Nile crocodile (*Crocodylus niloticus*) (Vulnerable) as well as the Striped Harlequin Snake (*Homoroselaps dorsalis*). All of these species have a *Near Threatened* status.

Further to this, amphibians are largely associated with wet areas such as rivers, streams, wetlands and pans. One prominent stream and associated valley bottom wetland area bisect the corridors that were assessed. Most of the amphibian species have a least Concern status, except for the Giant Bullfrog (*Pyxicephalus adspersus*) that is Near Threatened and listed for the area.

The Giant Bullfrog has this status in South Africa because many of its populations have been destroyed or otherwise adversely affected by human activities. Habitat loss, which is the most severe in Gauteng province, is having the greatest impact on the species. Bullfrogs use shallow, still-standing, seasonal water to breed.



Figure 15: Giant Bullfrog constituting a Near Threatened Conservation Status

The detailed Ecological Impact Assessment is included in Appendix D of this report.

Ecological Impact Assessment

Please refer to Table 2 below for the Impacts and Mitigation measures identified in the Ecological Impact Assessment:

Table 2: Ecological Impact Assessment

Impacts:	Mitigation Measures:
Loss of vegetation and associated faunal species	<ul style="list-style-type: none"> • Clearing of the servitude should be as narrow as possible; • A summer walkthrough should be conducted by a qualified botanist to identify any rare or threatened plant species; • Trees in the grassland habitats should be avoided as far as possible; • The relevant licenses and permits will need to be obtained for the removal of protected trees, sensitive plants; • Sensitive habitats should be avoided as far as is possible; • Demarcate the servitude with semi-permanent markers; • No painting or marking of rocks or vegetation shall be allowed; • No trees or branches should be used for fire making; • If herbicides are used for the removal of trees, it should be species specific; • Big trees that need to be removed must be cut and treated with pesticide.
Disturbance of eco-system processes	<ul style="list-style-type: none"> • A Fire Management Plan must be compiled by the Project team. No open fires will be allowed; • Rehabilitation efforts should be implemented along steep slopes to prevent erosion; • An indigenous grass mix must be used for rehabilitation; • Strips of bush must be maintained on steep slopes to limit risk of erosion; • Game must be fenced out of areas where rehabilitation efforts are underway; • A strategy must be developed to prevent the dispersal of alien plants.
Disturbance of riverine habitat	<ul style="list-style-type: none"> • No disturbance of riparian vegetation (riverine or wetland) should be allowed; • Existing roads must be used around riverine areas; • Pylons should be located further than 32m from the edge of riparian zones.
Loss of Red Listed plants	<ul style="list-style-type: none"> • Should any sensitive species be found, management measures should be adopted for the species and fenced if at all possible; • Sensitive plant species should be removed and relocated from points of direct impact before construction commences.
Loss of Red Listed bird species	<ul style="list-style-type: none"> • Incorporate bird perches onto the pylon structures; • Install bird flappers or devices in high risk sections of the powerline.
Loss of common and Red Listed faunal habitat	<ul style="list-style-type: none"> • No wild animals are allowed to be harmed or hunted; • Tortoises and porcupines should be removed to surrounding areas; • Relevant work personnel must be briefed and trained on the presence of dangerous species; • Vehicle traffic after dark should be limited as far as possible.

A detailed study on the ecological resources in the study area was undertaken by an Ecologist (Mr Mark Custers from ECO Assessments cc) and the full report is available in Appendix D.

From an Ecological point of view, the proposed substation locations have similar impacts on the receiving ecological conditions and as such either one of the site alternatives are preferred. Further to this, the proposed route alternative is considered to have no fatal flaws and as such may be implemented with the adherence to the proposed specialist mitigation measures and recommendations.

Avifauna Assessment:

Of the total avifauna, twelve (12) priority species were recognized as key in the assessment of avian impacts of the proposed Diamond-Bynes 132kV powerline in Boschkop. These are mostly nationally and/or globally threatened species which are known to occur, or could potentially occur, in relatively high numbers throughout the development area and could potentially be negatively affected by the proposed development. These species include the Blue Crane, Cape Vulture, Martial Eagle African

Fish-Eagle and African Hawk Eagle. These species were included because they are scarce, impact susceptible, predatory species that potentially play an important role in maintaining ecological balance in the local environment.

Please refer to Table 3 below for the Impacts and Mitigation measures identified in the Avifauna Assessment:

Table 3: Avifaunal Impact Assessment

Major Impacts:	Mitigation Measures:
Disturbance of raptors, large, terrestrial, wetland and savanna birds	<ul style="list-style-type: none"> • Ensure that all new lines are marked with bird flight diverters; • Ensure that all new powerline infrastructure are adequately insulated and bird-friendly; • Minimize disturbance impacts associated with maintenance of the lines by proper scheduling of activities; • Minimise the extent of woodland cleared in the servitude required for the route of the alignment; and • Establish practical and sustainable management plan for dealing with raptor stick nests built on the new line.
Habitat loss for raptors, large, terrestrial, wetland and savanna birds	
Mortality of raptors, large terrestrial and wetland birds	

A detailed study on the bird species found throughout the study area was undertaken by an Avifauna specialist (Mr Andrew Jenkins from Avisense Consulting) and the full report is attached in Appendix D of this report.

From an Avifaunal point of view, the proposed substation alternatives have similar impacts where either one may be implemented. Furthermore, no fatal flaws are associated with the proposed powerline development, therefore the project may be authorised and implemented provided the stipulated mitigation measures are effectively implemented.

Wetland Assessment:

The proposed project footprint falls within the Eastern Bankenveld and Highveld Aquatic Ecoregion and is located within A23A quaternary catchment reach. Four (4) wetland features (unchannelled valley bottom wetlands) are situated along the proposed powerline alignment. The unchannelled valley bottom wetland features obtained a score of 2.2, meaning that these features constitute moderately high levels of ecological function and service provision. As such the unchannelled valley bottom wetland features constitute a *moderately high importance*.

The PES of the **unchannelled valley bottom wetland features** falls into a Category C, which indicates that these features have been moderately modified due to their location in a region where agricultural activities occur and / or have historically occurred. As a result, deviations in water quality are expected to be moderate because of agricultural runoff and nutrient enrichment. The major impacts noted within the feature are related to altered morphology and hydrology associated with railway line construction and trampling and resulting erosion possibly by livestock and activities associated with crop production. Vegetation was considered representative of features in a natural state, although areas of woody encroachment and alien floral invasion was noted.

The results indicate that the largest impairment to integrity has occurred as a result of hydrological changes to the system along with changes to geomorphological structure.

Please refer to **Figure 16** for representative image of the unchannelled watercourse features situated along the proposed Diamond Bynes powerline route alternative.



Figure 16: Unchannelled valley bottom wetland feature situated along the proposed Diamond Bynes powerline alignment

Please refer to Table 3 below for the Impacts and Mitigation measures identified in the Wetland Impact Assessment:

Table 3: Wetland Impact Assessment

Impacts:	Mitigation Measures:
Impacts on Wetland Habitat and Ecological Structure	<ul style="list-style-type: none"> • No support structures should be constructed within the wetland and riparian areas; • Limit the footprint area of the construction activities. Construction vehicles must use existing roads where possible;
Changes to Wetland Ecological and Sociocultural Service Provision	<ul style="list-style-type: none"> • During construction all building materials should be kept out of the wetland and riparian areas as well as any active stream channels; • All waste and remaining building materials should be removed from site on completion of the project;
Impacts on Wetland Hydrological Function and Sediment Balance	<ul style="list-style-type: none"> • No vehicles should be allowed to indiscriminately drive through the wetland and riparian areas or within the active stream channels; • The wetland profile should be re-instated to prevent incision and erosion; • Concurrent rehabilitation is to take place as far as possible; • Implement alien vegetation control program; • Monitor all disturbed areas for erosion and incision; • Continually maintain access roads; • Avoid unnecessary site clearing/vegetation clearing.

With the implementation of the relevant mitigation measures proposed by the wetland specialist, it is envisaged that the significance of all impacts on wetland feature can be limited to have a low to very-low significance.

Based on this, it is recommended by the wetland specialist that all watercourse features be managed as a Category B. This is deemed sufficient to enhance and maintain the currently ecology of the feature,

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provided that the mitigation measures set out in this report are adhered to. Specific emphasis is placed on avoiding unnecessary disturbance to wetland and riparian zones, avoiding placement of pylons in wetland and riparian areas and where such actions are absolutely unavoidable, sufficient rehabilitation measures must be implemented.

Please refer to **Figure 17** for the various watercourse features found throughout the study area, depicting the required buffer zone required to maintain the integrity of these features.

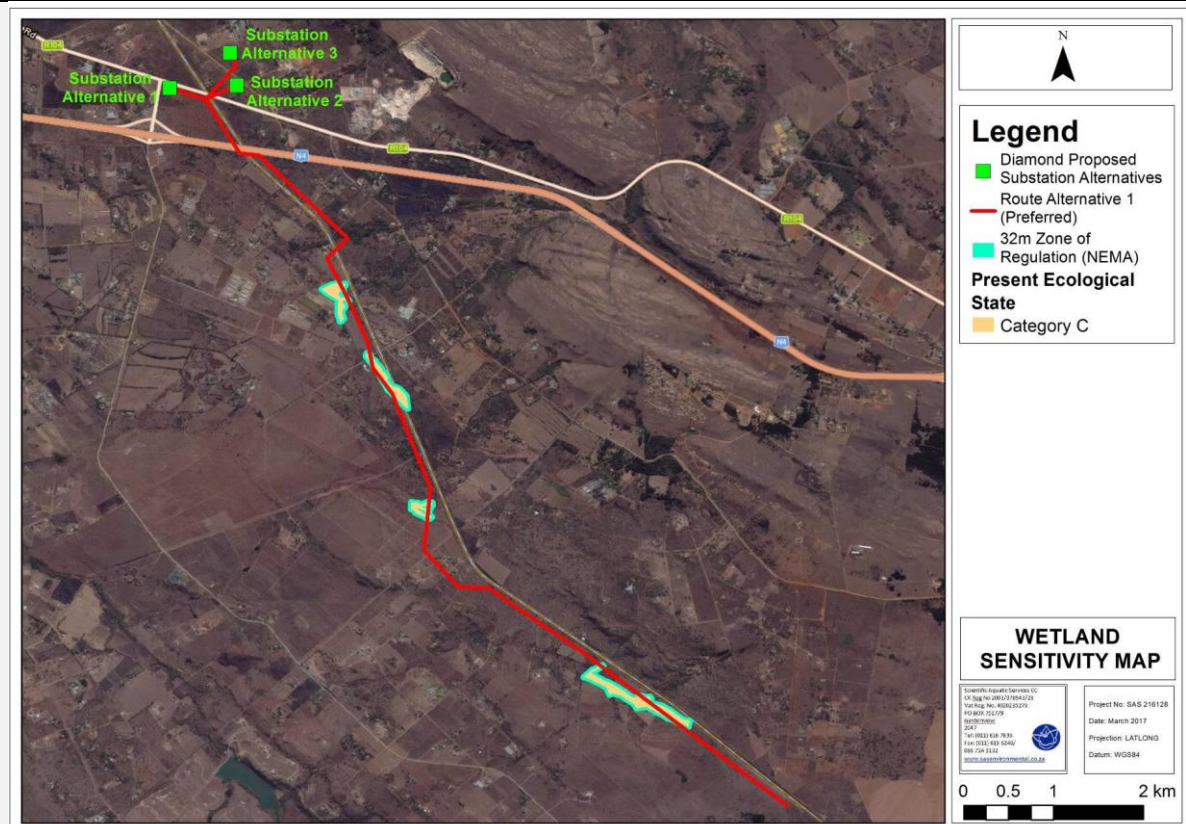


Figure 17: Wetland features located along the proposed powerline alternative and associated buffer zones

A detailed study on the wetlands and drainage lines were undertaken by a wetland specialist (Mr Steven van Staden from Scientific Aquatic Services cc) and the full report is attached in Appendix D).

Either one of the substation site alternatives will be acceptable from a wetland point of view as there are no significant differences between the three and neither one of these will affect any watercourse features. Furthermore, due to the nature of the project and the fact that pylon structures will be micro-sited to be situated outside wetland features, it is the opinion of the specialist that the development be **considered favourable given that the specialist recommendation measures be effectively implemented as part of the EMP.**

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SECTION C: PUBLIC PARTICIPATION

1. ADVERTISEMENT AND NOTICE

Publication name	The <i>Streeknuus</i>		
Date published	17 May 2017		
Site notice position	Description	Latitude	Longitude
	Along the R104 at the starting point of the proposed powerline alignment – T-off from the existing Byres 132kV powerline	25°46'33.73"S	28°29'5.04"E
	Along the proposed powerline route – R104	25°46'33.86"S	28°28'2.60"E
	At an intersection along the R104 – Donkerhoek Toll Plaza	25°46'23.02"S	28°27'7.19"E
	Intersection along dirt road intersecting route alternative 1	25°46'59.08"S	28°27'7.37"E
	Intersection along dirt road in close proximity to Route Alternative 1	25°47'24.60"S	28°27'49.14"E
	On site – Diamond substation alternative 1	25°46'6.09"S	28°26'31.09"E
	On site – Diamond substation 2	25°46'8.02"S	28°26'9.36"E
On site – Diamond substation 3	25°45'53.68"S	28°26'29.03"E	
Date placed	17 May 2017		

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

2. DETERMINATION OF APPROPRIATE MEASURES

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

Table 4: Key stakeholders (other than organs of state) identified in terms of Regulation 54(2) (b) of GN R.543:

SURNAME	FIRST NAME	ORGANISATION / COMPANY	TEL
ENGELBRECHT	NADIA	VFV ATTORNEYS	012 460 8704
		MAG TRUCK SPARES PTY LTD	012 802 0911
MALAN	KERSTIN	PRIVATE PERSON	012 802 0186
VON WELFLING EYBERS	GEORGE	PRIVATE PERSON	012 327 0630
WIXLEY	CRAIG	PRIVATE PERSON	012 802 1313
CHOI	YOUNG	PRIVATE PERSON	

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		HOEWE 44 FAMILIESTRUST	
		SME BUSINESS DEVELOPMENT CORP	
		MARAN TRUST	
Madoda	Mthembu	SANRAL	012 426 6227
	THELMA	BRIKOR LTD	012 802 1393
VAN ZYL	CAROL	PRIVATE PERSON	012 736 2031
		FRANCOIS VAN ZYL TRUST	
RETIEF	JANETTA & BRAHM	PRIVATE PERSON	012 333 8398
CILLIERS	SEPPIE	MAGNUM ARCHERY BOWHUNTING ACADEMY CC	012 802 0628
DU PLESSIS PRINSLOO	MARTHA	PRIVATE PERSON	
MOSTERT	HERMANUS	PRIVATE PERSON	012 663 7363
MINNAAR	LOUIS	PRIVATE PERSON	012 802 1398
		DONKERHOEK BESIGHEIDSTRUST	
Lund	SUE	TRANSNET LTD	011 308 2340
PRINSLOO	GERHARDT	PRIVATE PERSON	012 348 3790
MOKOENA	MASA	MBOKOTO CONFERENCE TRAINING & GUEST LODGE CC	012 802 0883
DU TOIT	JOAN	CULLINAN CONSERVANCY	012 736 2069
NIZAMI	NBAIDUL		083 464 0165
NYATHI	SYLVIA		061 212 6394
SITHOZE	JOSHUA		061 212 6394
NGUBE	LIDIA		074 335 5547
MOKHUSELA	MORIS		074 335 5547
JOOSTE	HERMAN		012 802 0009
ROHMANN	KALLIE		076 272 4229
BALOYI	JIM		072 488 6089
PRINSLOO	SUNEY		012 802 1515
POWELL	S.		012 492 0112
NOLTE	MARIUS	NBS CAFÉ	082 944 9279
MATTINZU	GEORGE		
MARAIS	MARIUZE		012 736 2086
FERREIRA	JENNIFER		079 931 5839
HOLEN	MANDY		071 378 1943

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NAZ	ISMAIL		084 594 2966
	HELLEN		
REUTENBERG	MAGDA	MONICA VIDEO DEN	082 833 6632
VAN WYK	TALITA	RAYTON PHARMACY	012 734 4800
		RAYTON BICTONY	072 567 1435
HOFFMAN	CINDY		082 054 6137
KRUGER	Y.		082 540 6810
HOFFMAN	SANETTE		012 734 5007
STEYN	D.		012 734 4091
KEKANA	F.		071 578 6657
DE ANDRUDE	M.		012 734 4868/9
MAHMOOD	ALI		074 908 2222
WALLA	AZMAT		074 415 8998
KUTHWANG	JERRY		079 871 6676
		STANZA BOPAPE HEALTH and Community Development Centre	012 801 6740
		BOSHKOP SAPS	012 802 8211
THORPE	JEREMY	TSHWANE FM	012 382 4650
CHANNON	ARTHUR	ARTHUR CHANNON ATTORNEYS	012 997 3747
LEMMER	PETRO	IAP	
		TRANSNET LTD	
		SARGASSO SHIPPING CC	
		PLENTY PROB 231 PTY LTD	
		HUPP PROP PTY LTD	
		IGNA & DENZA TRUST	
		DUST MOON INV 220 PTY LTD	
		ESTOM EIENDOMME CC	
		LITTLE SWIFT INV 360 PTY LTD	
		EZAJIS FAMILY TRUST	
		THESEN ISLAND PROP HOLDINGS PTY LTD	
		HENK VAN DER POEL TRSUT	
		KLEINFONTEIN BOEREBELANGE KOOP	
		EPSIVISON INV PTY LTD	
		ESCOM	
		D M W PROP DEVELOPERS CC	

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		MORETELE PLANT PTY LTD	
		NIEUWKOOP FAMILIE TRUST	
		A J B TRADING CC	
		FONDATRICE PTY LTD	
		TOFNIC BOUKONTRAKTEURS CC	
FERREIRA	CLIFFORD TOLMAY	PRIVATE PERSON	012 842 2352
SMIT	RENE	PRIVATE PERSON	012 997 1245
GOSS	SUZETTE	PROVATE PERSON	012 667 2376
STEYN	GERTRUBDA ELIZABET	PRIVATE PERSON	
STEYN	PETRUS	PRIVATE PERSON	012 736 2159
HOFFMANN	FREDDERICK ALEXNDER	PRIVATE PERSON	012 333 5915
BAILEY	ELIZABETH WHILHELMINA	PRIVATE PERSON	044 850 1270
KRYNAUW	DANIEL JAKOB	PRIVATE PERSON	012 802 1381
MILLER	ELFRIEDA	PRIVATE PERSON	
VILJOEN	HERCULES JOHANNES	PRIVATE PERSON	012 802 1297
GROENEWALD	JOHANNES	PRIVATE PERSON	012 802 0679
ERASMUS	JULIAN MILES	PRIVATE PERSON	012 802 1298
MORRIS	MARC ZIVON	PRIVATE PERSON	079 529 7787
VAN DEN BOSCH	WILLEM	PRIVATE PERSON	012 802 1291
GRABE	RICHARD JOHN	PRIVATE PERSON	012 802 0685
TREADWELL	ANDREW	PRIVATE PERSON	013 650 1416
KOTZE	ADRIANA	PRIVATE PERSON	012 802 1294
KRUGER	LOURENS JACOBUS ERASMUS	PRIVATE PERSON	012 802 1281
HAVENGA	BAREND PETRUS	PRIVATE PERSON	012 333 6021
PRINSLOO	DIRK JACOBUS AND PRINSLOO ANNA FRANCINA CICILIA	PRIVATE PERSON	012 802 0620
ERDELYI	JOHANNA ELENA	PRIVATE PERSON	012 548 0906
SMIT	EVELYN CHARMAINE	PRIVATE PERSON	012 802 1351
VAN DER POEL	JANNA MENSJE	PRIVATE PERSON	012 802 1051
HORN	ALICE AND HAMMAN MATTHYS	PRIVATE PERSON	012 330 0829
THERON	LOURENS JOHANNES	PRIVATE PERSON	012 809 4096

BASIC ASSESSMENT REPORT

		SANRAL	
ROBERTS	P	PRIVATE PERSON	044 850 1270
PIETERSEN	ELIZABETH STORM	PRIVATE PERSON	012 802 0182
BECKER	KENNETH GODFREY	PRIVATE PERSON	012 802 1238
CLARKE	RHONA MACLEOD	PRIVATE PERSON	012 547 6889
VAN TONDER	ANDRIES PETRUS	PRIVATE PERSON	012 428 6386
BURGER	JOHAN	PRIVATE PERSON	011 907 1163
WIESE	PIETER JACOBUS	PRIVATE PERSON	012 635 9066
CHRISTODOULOU	ANDREW	PRIVATE PERSON	012 807 2453
SAMUELS	TREVOR ALLEN	PRIVATE PERSON	012 430 6666
GEYER	LUCAS VISSER	PRIVATE PERSON	012 841 6000
HEMMINGA	YMKE MARIA	PRIVATE PERSON	
DE BRUYNE	THERESA	PRIVATE PERSON	
SCHEEPERS	RIGHARDT JOHANNES	PRIVATE PERSON	011 444 4063
GOSS	SUZETTE	PRIVATE PERSON	012 667 2376
LEE	KI-MYUN	PRIVATE PERSON	012 347 3761
ERASMUS	GIDEON CHRISTOFFEL	PRIVATE PERSON	012 802 0754
POTGIETER	ADRIAAN	PRIVATE PERSON	012 736 2898
FICK	WILLIAM GEORGE	PRIVATE PERSON	012 311 1429
		TRANSNET LTD	
		SARGASSO SHIPPING CC	
		PLENTY PROP 231 PTY LTD	
		HUPP PROP PTY LTD	
		IGNA & DENZA TRUST	
		DUSTY MOON INV 220 PTY LTD	
		ESTOM EIENDOMME CC	
		LITTLE SWIFT INV 360 PTY LTD	
		EZAJIS FAMILY TRUST	
		THESEN ISLAND PROP HOLDINTS PTY LTD	
		HENK VAN DER POEL TRUST	
		TRANSNET LTD	
		KLEINFONTEIN BOEREBELANGE KOOP	
		EPSIVISION INV PTY LTD	
		D M W PROP DEVELOPERS CC	

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		MORETELE PLANT PTY LTD	
		NIEUWKOOP FAMILIE TRUST	
		A J B TRADING CC	
		FONDATRICE PTY LTD	
		TRANSNET LTD	
		TOFNIC BOUKONTRAKTEURS CC	
Havenga	BAREND PETRUS/ Malania	PRIVATE PERSON	
Bosch	Nieske vd and Joos	PRIVATE PERSON	083 299 7335 / 083 363 9980
Boshoff	Gerhard	PRIVATE PERSON	082 490 0235
YSSEL	Karen	PRIVATE PERSON	082 575 0222
BADENHORST	RELINE	AFRIFORUM RAYTON	082 381 8336
PRINSLOO	DANIE	TRANSNET FREIGHT RAIL PTA	
MASENYA	LEVY	ESKOM	012 421 3026
MOTISWE	HOPE	ESKOM	011 711 2803
BARTE	T	CULLIN CONSERVANCY	082 565 9393
JOUBERT	F.G	SOUTHLAND ARCHITECHS	012 802 1401
BRAAM	C. H	C.H.B Farms	012 960 6630
SMIT	A.B	PRIAVTE PERSON	082 823 8029
BAILEY	CHARLSE	PRIVATE PERSON	012 809 0215
DE BEER	R.W.J	PRIVATE PERSON	083 409 4205
POTGIETER	WIAN & HELENA	PRIAVTE PERSON	012 313 3597
DE BEER	ELBIE	LMT PRODUCTS PTY LTD	012 803 6184
ETSEBETH	JOHAN	LANDOWNER	071 216 8374
HOLLOWAY	ERROL	LANDOWNER	083 635 2283
Roosendaal	Marijke	Attorneys	012 997 3747
LE ROUX	GERHARD	LANDOWNER	082 575 6735
VAN ZYL	Karen	LANDOWNER	082 975 8352
EYBERS	LENOR	LANDOWNER	
Morris	Ferdi	Landowner	073 728 7976
Morris	Gertrude	Landowner	071 564 3541
Bruin	A	Landowner	082 378 1422
De Bruin	D	Landowner	079 502 7480
Hoffmann	M	Landowner	084 602 4018
Fourie	Leon	Landowner	079 872 4172
Van Vuuren	Renier	Landowner	082 604 5836
Nortje	Karen	CSIR	012 841 4354
Barkhuisen	Gordon	IAP	083 300 1593
Humphrey	Mokwala	IAP	

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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
<p><u>Project Public Participation history:</u></p> <p>The Draft BAR was made available for public review from Tuesday, 07 April 2015 to Monday, 18 May 2015 for a period of 40 days. Following the public review period for this project, Eskom added an additional route alternative to the project scope that needed to be assessed and considered in terms of the project. The additional route alternative was added from recommendations made by Interested and / or Affected Parties (I&APs) during the Draft BAR public review period.</p> <p>The Revised Draft BAR including the necessary amendments was made available for public review from Thursday, 11 August 2016 to Tuesday, 20 September 2016 for a period of 40 days. Following (after) the public review period, Eskom received a written confirmation from Transnet Pipelines Ltd (Transnet) on 30 September 2016, indicating that Transnet is currently in the process of registering a hazardous pipeline servitude extending through the Boschkop area, situated between the N4 highway and the R104 provincial roadways.</p> <p>This had a direct implication on the viability of the Route Alternatives 1 & 2 assessed as part of the Revised Draft BAR. The physical area available between the N4 and R104 does not allow for both the proposed 132kV powerline and pipeline servitude to exist while still adhering to the specified clearance requirements. As such, two of the three route alternatives assessed were rendered unfeasible and the reports (BAR and specialist reports) were updated to only reflect the one feasible powerline route alternative, and three substation alternatives accordingly.</p> <p>The Revised Draft BAR Version 2 was made available for public review from 19 May 2017 to 29 June 2017 for a period of 40 days. All comments received during this period formed part of a Comment and Response Report (CRR) that is submitted with the Final BAR to the competent authority (DEA) for decision making.</p> <p>Please refer below for a summary of the main concerns raised and responses during the public review period of the project during 2015 and 2017. Please refer to the CRR attached in Appendix E3 of this report for the detailed concerns along with detailed individual responses.</p>	
<p>Various I&APs requested confirmation of the type of pylon structures that will be erected as part of the powerline.</p>	<p>GIBB responded that the monopole structure and design will be implemented along the proposed powerline alignment. Furthermore, the lattice structure will only be used if the powerline is needed to span over a longer distance to avoid impacts on specifically identified sensitive environmental features such as wetlands and river features etc. This will however only be determined during the detailed specialist walk downs along the approved route alternative, to provide direct input with the exact location of the pylon structures.</p>
<p>Confirmation was requested in terms of how the various route alternatives were identified. Furthermore, the community requested to be</p>	<p>GIBB responded on behalf of Eskom in that they appreciate the robust approach from the affected community on this matter and has considered all</p>

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<p>involved in the technical assessment (from an engineering point of view) of the route selection process.</p>	<p>the input that was given throughout the Public Participation Process of the project. Eskom however is responsible for meeting the current and planned future electricity demands in the area and as such it is critical that the proposed powerline alignment be developed in the Boschkop area.</p> <p>Furthermore, as far as practicably possible / feasible, inputs and suggestions from stakeholders have been taken into consideration as part of the technical process and subsequent identification of Route Alternative 3 (now referred to as Route alternative 1) forming part of the revised Draft Basic Assessment Report made available for public review.</p> <p>The Eskom technical team (constituting of engineers, environmental specialists, land surveyors, quantity surveyors and geotechnical engineers) is responsible for considering all factors in undertaking a holistic approach to identifying viable route and substation alternatives for the proposed development. This approach was followed with the identification of the proposed route and substation alternatives for the Diamond-Bynes 132kV and as such Eskom is of the opinion that effect was given to a holistic route selection process.</p>
<p>Various route alternatives were suggested by I&APs throughout the Public Participation Process of the project.</p> <p>One of the suggestions were that the powerline extend over the ridge and come down along the slope of the mountainous area to connect to the Diamond Substation.</p> <p>Another alternative provided by I&APs was for the proposed powerline to extend along an existing powerline extending through the Kleinfontein / Boschkop area.</p>	<p>The Eskom technical team responded in that the alignment extends along a mountainous and steep area, next to the quarry where access to the powerline during construction and maintenance will not be feasible. The implementation of this alternative will require construction of new access roads for heavy vehicle transport for the delivery of materials and maintenance. This will therefore have a far greater impact on the environment specifically given that the entire alignment will then be located within a Class II Ridge area. With various factors taken into consideration, it was established that this route is not feasible from an environmental, technical and financial perspective. Please refer to Appendix E for the minutes from the public meeting held 15 September 2016 for a detailed explanation to this effect.</p> <p>It was established that the existing powerline referred to, is an 88kV powerline requires the space alongside it for future upgrades and as such the newly proposed powerline cannot be located within the existing 88Kv powerline's servitude.</p>
<p>Various concerns were raised with regards to the sensitive wetland and ridge features found along Route Alternative 3.</p>	<p>GIBB responded that the powerline alignment will be adjusted within the assessed 500m corridor to completely avoid being located within the sensitive wetland and watercourse features. Furthermore, the route will also be adjusted to</p>

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	completely avoid being located within the ridge area identified along Route Alternative 3 (now referred to as Route Alternative 1).
Various concerns were raised with regards to the impact of the powerline on landowner property values.	A qualified independent evaluator will be appointed by Eskom to undertake the evaluation of properties in determining the value of loss to the landowner, determining the consideration value to be paid to the landowner accordingly.
HUPP Properties RF Pty Ltd indicated that they are in the process of applying for a township development in the area which will create an approx. 5,000 housing opportunities and subsequently require adequate electricity supply to the township. Their representative would like to engage with Eskom going forward as the development of the powerline and associated substation will be most beneficial to the success of the township development.	GIBB responded that his interest in the project is appreciated and that their contact details have been provided to GIBB for liaison going forward.
Concerns were raised with regards to the impact on security of landowner properties should the project be authorised and subsequent registration of the Eskom servitude extending through landowner properties.	<p>GIBB responded that should positive environmental authorisation be received for the proposed development, Eskom Land and Rights Division will then embark on their separate landowner negotiation and consideration process. During the landowner negotiation process undertaken by Eskom, private meetings will be arranged with the affected landowners where specific terms and conditions will have to be agreed upon prior to the commencement of the construction phase.</p> <p>In addition, a direct correlation cannot be drawn between a powerline extending over a property and compromising on the safety of the affected landowner. This is due to the fact that the powerline servitude will not result in breaking of property fences. Eskom will access the landowner property either through privately established gates or alternatively through the landowner's own gate, where Eskom alone will have the keys to the Eskom locks placed on the gates.</p>
Concerns were raised with regards to the impact on grazing capacity from the development of the 132kV powerline.	GIBB responded that strip clearing of vegetation will not occur along the powerline servitude (as such will not affect the grazing capacity of the property), however Eskom does have a height restriction of 3m for vegetation growth below the powerline. Therefore, it is not preferred that trees be located underneath the powerline as they will have to be continuously trimmed and maintained in order to comply with the height restriction. With this being said, Eskom will endeavour to extend the powerline servitude alongside the firebreak strip of the property to limit the impact on landowner use of their property. Furthermore, exact conditions will be discussed and agreed upon with the affected landowner during the landowner negotiations process should positive environmental authorisation be received.
Concerns were raised with regards to the impact on the local roads during the	GIBB referred them to Section B.1.1 (a) of the Draft EMPr which specifically states that:

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<p>construction phase of the project – from increased heavy vehicular traffic.</p>	<p><i>‘Existing access roads must be used as far as possible. Please note that all existing access roads utilised will have to be maintained to the satisfaction of the landowners’.</i> As such, even though an increase in activity will be experienced on the local roads extending through the area during the construction phase of the project, Eskom will remain responsible for the maintenance of these roads during construction phase of the project.</p>
<p>Concerns were raised by the landowners directly affected by the location of the Substation Alternatives, as it would directly impact on their properties. They suggested that Substation Alternative 2 or 3 be chosen as the preferred alternative as it would have a smaller to no impact on their property.</p>	<p>GIBB confirmed that all three Substation Alternatives have similar environmental impact severities. Due to this fact, Eskom proposes that Substation Alternative 3 be preferred, given that the potential environmental impact significance cannot be used to motivate for or against any of the substation alternatives as the potential impacts are very similar.</p>
<p>A Focus Group Meeting (FGM) was held on 20 July 2017 at the Eskom Menlyn Offices between Eskom and IAPs (landowners situated along the proposed route alignment) to discuss the proposed route alternatives that IAPs had put forward during the Public Participation Meeting held in June 2017.</p>	<p>The IAPs who attended the FGM were not really interested in the alternative routes that were suggested in the public meeting held in June 2017 at Nguni lodge, but rather interested in where Eskom was planning to place the pylon structures and powerline within the 500m corridor for the Diamond-Bynes project. This information could not be confirmed at the time, due to the fact that the specific pylon locations will only be finalised should positive EA be granted and following detailed specialist walk downs prior to construction.</p> <p>Some of the requests that were put forward by the IAPs who attended the meeting, was that the powerline structures be located either in the servitude of the Transnet railway line extending through the area, or as close to property boundaries as possible, thus avoiding the bend (as depicting the centreline of the assessed 500m corridor) which extends through the middle of numerous properties. It was furthermore confirmed by the I&APs who attended this meeting, that they will be willing to negotiate with Eskom regarding the route alignment extending through their property (and exact pylon placement) should positive EA be received.</p>

4. COMMENTS AND RESPONSE REPORT

The practitioner must record all comments received from I&APs and respond to each comment before the Final 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**.

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5. AUTHORITY PARTICIPATION

Authorities and organs of state identified as key stakeholders:

AUTHORITY/OR GAN OF STATE	CONTACT PERSON (TITLE, NAME AND SURNAME)	TEL NO	E-MAIL	ADDRESS
Gauteng Department of Agriculture and Rural Development (GDARD)	Justine Chan	011 240 2500	Justine.Chan@gauteng.gov.za	Umnotho House, Ground Floor, 56 Eloff street, Marshaltown, Johannesburg
Provincial Heritage Resources Authority Gauteng (PHRAG)	Maphata Ramphele	011 355 2572	maphata.ramphele@gauteng.gov.za	Surrey House, Cnr. Fox & Rissik Street, Johannesburg
Department of Water Affairs (DWA)	Lillian Siwelane	012 392 1454	siwelanel@dw a.gov.za	185 Francis Baard Street, Pretoria 0001
City of Tshwane Metropolitan Municipality	Rudzani Mukheli	012 358 8731	RudzaniM@ts hwane.gov.za	Isivuno Building, Cnr. Madiba & Lilian Ngoyi Street, Pretoria
Ward 100 Councillor	Christopher Mahlatse	083 744 9139	--	1270 Ext 1 Masina Street, Refilwe, Cullinan, 1000

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.

Activity	Impact summary	Significance	Proposed mitigation
Alternative 1			
Construction Phase			
<i>Increased soil erosion due to the removal of vegetation along the servitude route</i>	Direct Impact <i>Soil erosion and degradation</i>	Very Low	<ul style="list-style-type: none"> Undertake vegetation clearing during the dry season; Only clear vegetation where absolutely necessary; and Stockpile areas will be decided and approved by the Project Manager and appointed ECO before construction commences on site and should not be located within drainage lines.
<i>Degradation of watercourses (wetlands situated along route alternative 1 – refer to Figure 16) due to the construction of the proposed powerline and associated infrastructure</i>	Direct Impact <i>Degradation of the watercourse due to the erection of the pylons and 132kV cable</i>	Very Low	<ul style="list-style-type: none"> Ensure that pylon structures are kept a minimum of 50m outside of the outer edge of any watercourse or drainage lines; Use existing access roads as far as possible; Construction impacts must be contained within the servitude of the powerline; No mixing of cement/concrete should take place within 30m of aquatic features; All wetlands and drainage lines should generally be treated as “no-go” areas and appropriately demarcated as such. No vehicles, machinery, personnel, construction materials, cement, fuel, oil or waste should be allowed into these areas without the express permission of and supervision by the ECO; Construction activities associated with the establishment access roads through wetlands or drainage lines (if unavoidable) should be restricted to a

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Activity	Impact summary	Significance	Proposed mitigation
			<p>working area 10m in width either side of the road, and these working areas should be clearly demarcated. No vehicles, machinery, personnel, construction material, cement, fuel, oil or waste should be allowed outside of the demarcated working areas;</p> <ul style="list-style-type: none"> • Construction camps, toilets and temporary laydown areas should be located at least 30m from the edge of any wetlands and drainage lines; • No fuel storage, refuelling, vehicle maintenance or vehicle depots should be allowed within 30m of the edge of any wetlands or drainage lines; • Vehicles and machinery should not be washed within 30m of the edge of any wetland or drainage line; • No effluents or polluted water should be allowed to discharge into any drainage lines or wetland areas; • If construction areas are to be pumped of water (e.g. after rains), this water should be pumped into an appropriate settlement area, and not allowed to flow straight into any drainage lines or wetland areas; • Freshwater ecosystems located in close proximity to construction areas (i.e. within ~30 m) should be inspected on a regular basis by the ECO for signs of disturbance from construction activities, and for signs of sedimentation or pollution. If signs of disturbance, sedimentation or pollution are noted, immediate action should be taken to remedy the situation and, if necessary, a freshwater ecologist should be consulted for advice on the most suitable remediation measures; • Workers should be made aware of the importance of not destroying or damaging the vegetation along drainage lines and in wetland areas, of not undertaking activities that could result in the pollution of drainage lines or wetlands, and of not killing or harming any animals that they encounter. This awareness should be promoted

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Activity	Impact summary	Significance	Proposed mitigation
			<p>throughout the construction phase (and decommissioning phase, if this takes place);</p> <ul style="list-style-type: none"> • Ensure that unnecessary impacts on watercourse do not occur; and • Proper erosion control structures must be constructed.
<p><i>Floral destruction and faunal displacement due to vegetation clearance activities taking place along the proposed powerline alignments and servitude routes</i></p>	<p>Direct impact <i>Loss of flora and fauna due to construction activities</i></p>	<p>Very low</p>	<ul style="list-style-type: none"> • Construction impacts must be contained within the footprint of the pylon structures and / or the servitude routes of the powerline; • Use existing access roads as far as possible; • Vegetation clearance should be conducted systematically from the start to the end of the route to allow fauna to move away; • Avoid strip clearing; • Vegetation should be removed only where construction is to take place; • Sequential construction should occur in order to allow faunal species to move away from the area of disturbance; • Construction activities should be restricted to daylight hours when the majority of faunal species are inactive; • No animals may be snared, captured or wilfully damaged or killed; • Species such as tortoises and porcupines should be removed to surrounding areas if encountered on site and not collected as this is illegal; • During construction phase, existing access roads should be used where possible especially in the wooded habitats where a lot of vegetation will have to be removed if there is no access; • Clearing of the servitude should be as narrow as possible to prevent major destruction of habitats; • No trees may be affected in the grassland habitats where sufficient space is available for the tweaking of pylon positions; • A road management plan should be compiled, showing allocated access

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Activity	Impact summary	Significance	Proposed mitigation
			<p>points and roads, to prevent tracks all over the landscape; and</p> <ul style="list-style-type: none"> The removal of large sections of woodland in densely wooded areas should be avoided.
<p><i>Increased noise generation due to construction activities and the movement of construction vehicles</i></p>	<p>Direct impact <i>The construction activities will cause an increase in the ambient noise levels</i></p>	Very Low	<ul style="list-style-type: none"> Construction time must be restricted to working hours (07:00-18:00) Monday to Friday excluding public holidays (unless prior permission is obtained from the landowners); All noise and sounds generated during the proposed activity must comply with the relevant SANS codes and standards; All construction equipment or machinery should be switched off when not in use; Construction equipment must be kept in good working condition; Plant and vehicles must be in good working order and inspected daily; and Use silencers on all equipment, where appropriate.
<p><i>Increased dust generation due to the clearing of vegetation, construction activities and earthworks</i></p>	<p>Direct impact <i>Construction activities will cause an increase in ambient dust levels for a short period of time</i></p>	Very Low	<ul style="list-style-type: none"> No potable water may be used for dust suppression (as far as is practically possible). Alternative dust suppression methods (such as shade cloths or dusticide) must be used instead; Water to be used sparingly and only where no water restrictions are in effect; Water to be sourced from an approved supplier; The option to use grey water should be investigated prior to construction; The soil must be dampened with water during/ after vegetation removal (where practical); The clearing of vegetation must be kept to the minimal; and Avoid unnecessary movement of construction vehicles on site.
<p><i>Increased occurrence of fires due to unmanaged fires and its increased severity due to human interference</i></p>	<p>Direct impact <i>Increased risk of damage due to unmanaged fires</i></p>	Very Low	<ul style="list-style-type: none"> The safety officer should control on-site fires; Firefighting equipment to be kept on site and serviced regularly; and No fires to be lit on site and smoking to occur in designated areas only.

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Activity	Impact summary	Significance	Proposed mitigation
<i>Increased damage to farm roads due to the continued travelling of vehicles on minor and gravel roads during the construction phase</i>	Direct impact <i>Increased damage to local roads due to increased traffic volumes</i>	Very Low	<ul style="list-style-type: none"> • Limit construction vehicles to 20km/h on access roads and keep to the speed limit on public roads; and • Regular monitoring of roads for damage must be undertaken, followed by immediate repair of any damage resulting from use of heavy machinery.
<i>Increase in traffic volumes and associated congestion due to the transportation and construction vehicles travelling to and from the construction site</i>	Direct impact <i>Increase in traffic congestion due to the construction vehicles</i>	Very Low	<ul style="list-style-type: none"> • Limit construction vehicle movement during peak periods.
<i>Change in visual aesthetics due to construction activities, placement of construction equipment and disposal of construction waste material</i>	Direct impact <i>Adjacent residents may be visually impacted on the unsightliness of the construction camp (depending on the location of the camp).</i>	Very Low	<ul style="list-style-type: none"> • Construction vehicles should be kept in demarcated areas only so as to reduce the visual intrusion of the construction activities; • During construction, all materials and stockpiles will be covered with tarps to prevent erosion, as well as dust arising from it, and to mitigate the visibility thereof (where required and as directed by the ECO); • Construction workers must ensure and implement good housekeeping practises to minimise the visual impact of waste and discarded materials; and • Construction activities to be kept to normal daytime working hours as far as possible to prevent the impact of floodlights and other sights during resting hours.
<i>Soil contamination due to spillage of hazardous substances, oil and fuel leaks at the construction site from the transportation and construction vehicles as well as accidental spillages</i>	Direct impact <i>Degradation of the soil due to spillages</i>	Very Low	<ul style="list-style-type: none"> • Store fuels and chemicals in an impermeable bunded area; • Provide staff with hazardous materials training; • Chemical toilets to be used on site, grey water should be disposed of off-site at a licensed waste treatment works; • No storage of fuel on site, vehicles to be fuelled off-site; • No mixing of cement/concrete should take place within 30m of aquatic features or in natural vegetation; • No servicing or repair of vehicles on site (unless absolutely necessary);

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Activity	Impact summary	Significance	Proposed mitigation
			<ul style="list-style-type: none"> No concrete mixing on site unless on a mortar board; Water used to clean concrete off of machinery should be treated as grey water and disposed of at a licensed water treatment works; Construction vehicles should be maintained on a regular basis so as to prevent oil spills/leaks; Drip trays should be placed under vehicles when not in use; and If a hydrocarbon spillage occurs, it must be cleaned up immediately and disposed of at an appropriate registered landfill site.
<i>Increased domestic waste generation (solid waste) and left unmanaged on site to attract vermin</i>	Direct impact <i>Unsightly litter on site</i>	Very Low	<ul style="list-style-type: none"> Keep waste in vermin proof bins with lids (as needed); and Waste to be removed from site on a regular basis.
<i>Loss of Riparian vegetation along watercourse crossings and drainage lines due to the construction of the powerline</i>	Direct impact <i>Loss of riparian vegetation due to construction vehicles</i>	Very Low	<ul style="list-style-type: none"> No access roads should be constructed within 32m of a hill slope seepage wetland and/or seasonal pan, unless no alternative is possible; and If access roads/ tracks must pass through drainage lines, the footprint should be as small as possible.
<i>Increased risk of alien invasion for vegetation species due to unmanaged vegetation clearing activities taking place on site</i>	Direct impact <i>Increase in alien invasive species due to vegetation clearing activities</i>	Very Low	<ul style="list-style-type: none"> An alien management plan must be implemented as directed by the ECO. The plan should limit vegetation clearing to the servitude of the powerline and no more. This plan must be developed prior to construction.
<i>Loss of avifauna and roosting sites due to the clearance of vegetation for the powerline servitude</i>	Direct impact <i>Loss of avifaunal species and roosting sites</i>	Very Low	<ul style="list-style-type: none"> The construction corridor of the selected alignment should be closely inspected before the start of construction in order to locate any active nests; Reduce the construction time where possible and schedule construction activities around avian breeding schedules where practical; Lower the levels of associated noise; and Restrict the construction activities to the footprint area. Do not allow any access to the remainder of the properties. Make maximum use of existing roads.

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Activity	Impact summary	Significance	Proposed mitigation
<i>Increase in crime due to the creation of additional access roads and or thoroughfares to surrounding areas during the construction phase</i>	Direct impact <i>Increase in crime due to increase in workers within the town</i>	Very Low	<ul style="list-style-type: none"> Workers will not be allowed to stay overnight at the crew camps unless authorised by the ECO (as applicable).
<i>Temporary job creation during the construction of the proposed powerline and associated infrastructure</i>	Direct impact <i>Unskilled labour force may be required for construction activities</i>	Low Positive	<ul style="list-style-type: none"> The development should proceed and should employ local labour as far as possible.
<i>Potential increase in HIV/ AIDS in the area due to construction workers (migrant labour) associated with the proposed development</i>	Indirect impact <i>Due to the increase in workforce within the town, there may potentially be an increase in sexually transmitted diseases</i>	Very Low	<ul style="list-style-type: none"> HIV & AIDS awareness talks should be given to the workers on a regular basis by the relevant personnel.
<i>Impacts on agriculture potential and expansion due to the placement of the pylon structures in existing potential farm lands resulting in the minor loss of arable land or potential expansion of farming activities</i>	Indirect impact <i>Due to the location of pylon structures and the servitude restrictions, farming activities may be compromised</i>	Very Low	<ul style="list-style-type: none"> Locate pylon structures within natural fire breaks within the currently farmed areas (where possible). Compensate farmers for the loss of arable land / servitude restrictions.
Operational Phase			
<i>Economic growth and development in the surrounding area due to the strengthening of the existing electricity network to a point where it is stable and reliable and allowing future development and expansion of operations in the area</i>	Direct impact <i>Due to the powerline stabling the electricity grid and allowing for future development-economic benefits will be realised</i>	Medium Positive	<ul style="list-style-type: none"> Continue with the proposed development and ensure that the line is maintained.
<i>Increased theft and vandalism of the distribution line and associated</i>	Direct impact <i>Increase in theft of electrical cables</i>	Very low	<ul style="list-style-type: none"> Install anti-climb pylons; and Access control at the substation needs to be implemented.

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Activity	Impact summary	Significance	Proposed mitigation
<i>infrastructure resulting in the occurrence of potential deaths, interruption in electricity supply and the increased maintenance intervals</i>			
<i>Increased risk of alien invasion for vegetation species due to the disturbance in the landscape during operational and maintenance activities</i>	Direct impact <i>Increase in alien invasive species</i>	Very low	<ul style="list-style-type: none"> • Areas disturbed due to maintenance activities should be rehabilitated as quickly as possible; • Soil stockpiles should not be translocated from areas with alien plants into the site; • Within the site, alien plants on stockpiles must be controlled so as to avoid the development of a solid seed bank of alien plants within the stock-piled soil; • Any alien plants must be immediately controlled to avoid establishment of a soil seed bank; and • Create an integrated alien invasive management programme to be implemented during maintenance activities.
<i>Increased collision and electrocution of avifauna and resulting mortality of these large terrestrial bird species due to building nests on pylon structures</i>	Direct impact <i>Loss of avifauna due to electrocution and collisions</i>	Very low	<ul style="list-style-type: none"> • Informed selection of low impact alignments for new powerlines relative to movements and concentrations of high risk species; • Use of either static or dynamic marking devices to make the lines and the earthwires more conspicuous; • Ensure that all new lines are marked with bird flight diverters along their entire length using industry standard markers and marker fitting protocols; • Identified high risk sections of the powerline needs to be installed with a suitable anti-bird collision marking device approved by Eskom, and as per the Eskom standards; • Fit bird perching bracket to the top of the pole; • Due to the potential for nocturnal collisions it is recommended that the experimental LED bird flapper is used.
<i>Increased alteration of hydrology of drainage lines and</i>	Direct impact <i>Alteration of watercourses due</i>	Very low	<ul style="list-style-type: none"> • Use existing access roads where possible;

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Activity	Impact summary	Significance	Proposed mitigation
wetlands due to the establishment of distribution line pylons within or immediately adjacent to freshwater ecosystems	to the establishment of the pylons within the watercourse due to maintenance activities		<ul style="list-style-type: none"> Do not establish new access roads within drainage lines; and Limit maintenance footprint within drainage lines.
Floral destruction and faunal displacement due to clearing or trimming of natural vegetation located within the servitude of the powerline as part of routine maintenance operations	Direct impact Maintenance activities resulting in the loss of flora and fauna	Very low	<ul style="list-style-type: none"> Maintenance impacts must be contained within the footprint of the pylon structures and / or the servitude routes of the powerline; Ensure that unnecessary impacts on natural vegetation do not occur; Vegetation clearance should be conducted systematically from the start to the end of the route to allow fauna to move away; Avoid strip clearing; Maintenance activities should be restricted to daylight hours when the majority of faunal species are inactive; and No animals may be snared, captured or wilfully damaged or killed.
Degradation of the cultural landscape and scenic qualities of the environment due to the proposed powerline extending across such landscape	Direct impact Visual intrusion of the powerline	Very low	<ul style="list-style-type: none"> Align the power line as close as possible to existing powerlines so as to keep visual impacts clustered.
Increased soil erosion due to the deterioration of access roads to the powerline servitude for operation and routine maintenance activities	Indirect impact Soil erosion due to maintenance activities	Very low	<ul style="list-style-type: none"> Apply the appropriate erosion protection measures where erosion is identified; Regular maintenance of the identified access roads as and when required; Improve the access of the identified access roads to ensure suitable passage for equipment, erosion control and maintenance of proper drainage; and Maintenance staff to stay on the designated access roads at all times.
Stimulation and growth of the local economy due to the provision of a stable electricity supply	Cumulative impact Taking into consideration the future	High Positive	<ul style="list-style-type: none"> Infrastructure maintenance should be prioritised to ensure that the provision of stable electricity is not interrupted

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Activity	Impact summary	Significance	Proposed mitigation
<i>which will lead to the steady growth and economic development of the surrounding regions</i>	<i>infrastructural upgrades that will occur, the local economy will increase</i>		and future upgrades along this corridor should be encouraged.

Decommissioning Phase

Please note that due to the nature of the project and the fact that the project is an infrastructural project, decommissioning is not envisaged. However should decommissioning occur, the following impacts may be applicable:

<i>Waste generation in the forms of generating metal and concrete waste during decommissioning activities</i>	Direct impact <i>Solid waste generation due to decommissioning activities.</i>	Very low	<ul style="list-style-type: none"> Waste generation must be managed according to Eskom's guidelines and standards; and All materials that can be recycled must be recycled where possible. The rest of the rubble must be disposed of at an appropriate landfill site.
<i>Watercourse and Soil contamination due to hydrocarbon spills which may occur from vehicles to be used to carry out various decommissioning activities</i>	Direct impact <i>Soil and watercourse degradation due to decommissioning activities</i>	Very low	<ul style="list-style-type: none"> Contaminated soil must be removed and disposed of at an appropriate registered landfill site; Heavy vehicles must be service and maintained regularly; No fuel storage, refuelling, vehicle maintenance or vehicle depots should be allowed within 30m of the edge of any wetlands or drainage lines; No effluents or polluted water should be allowed to discharge into any drainage lines or wetland areas; and The construction footprint along the watercourse must be limited to as small a footprint as possible.

No-go option

No additional job creation	Direct impacts: No additional jobs will be created if the construction of the powerline does not commence	High negative	<ul style="list-style-type: none"> Commence with the proposed powerline construction
Inhibition of economic growth and development	Direct impacts: If the powerline is not constructed, inhibition of the economic growth and development of the surrounding regions will occur.	High negative	<ul style="list-style-type: none"> Commence with the proposed powerline construction

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

COMPARATIVE SUMMARY OF THE FINDINGS FOR THE ALTERNATIVE 1, 2 AND 3 SUBSTATION SITES:

**Please note that the impacts associated with Substation site Alternative 1, 2 and 3 are very similar and as such no significant difference in terms of impact significance can be used as motivation in selecting one of them as the preferred option. Comments received from affected landowners have resulted in a request that Substation Alternative 2 or 3 be chosen as the preferred Substation Alternative as it would have a smaller impact on their properties. Based on this information, the EAP proposes Substation Alternative 3 be chosen as the Preferred Substation Alternative for the development.

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.

Impact	Pre-mitigation: Significance	Post-mitigation: Significance
ALTERNATIVE 1 - PREFERRED		
CONSTRUCTION PHASE		
Direct Impacts		
Increased soil erosion due to the removal of vegetation along servitude route	Low-negative	Very low-negative
Surface water contamination and degradation due to soil and fuel leaks from construction vehicles	Low-negative	Very low-negative
Degradation of watercourses due to the construction of the proposed powerline and associated infrastructure	Low-negative	Very low-negative
Floral destruction and faunal displacement due to vegetation clearance activities taking place along the proposed powerline alignments and servitude routes	Low-negative	Very low-negative
Increased noise generation due to construction activities and the movement of construction vehicles	Very low-negative	Very low-negative
Increased dust generation due to the clearing of vegetation, construction activities and earthworks	Low-negative	Very low-negative
Increased occurrence of fires due to unmanaged occurrence of fires and its increased severity due to human interference	Low-negative	Very low-negative
Increased damage to farm roads due to the continued travelling of vehicles on minor and gravel roads by land surveyors, engineers and Eskom staff during route and site investigations as well as during landowner negotiations	Very low-negative	Very low-negative
Increase in traffic volumes and associated congestion due to the transportation and construction vehicles travelling to and from the construction site	Very low-negative	Very low-negative

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Change in visual aesthetics due to construction activities, placement of construction equipment and disposal of construction waste material	Low-negative	Very low-negative
Soil contamination due to spillage of hazardous substances, oil and fuel leaks at the construction site from the transportation and construction vehicles as well as accidental spillages	Low-negative	Very low-negative
Increased domestic waste generation (solid waste) and left unmanaged on site to attract vermin and resulting in environmental contamination	Low-negative	Very low-negative
Loss of Riparian vegetaiton along watercourses crossings and drainage lines due to to the conststruction of the servitude routes	Low-negative	Very low-negative
Increased risk of alien invasion for vegetation species due to unmanaged vegetation clearing activities taking place on site	Low-negative	Very low-negative
Loss of avifauna and roosting sites due to the clearance of vegetation for the powerline servitude	low-negative	Very low-negative
Increase in crime due to the creation of additional access roads and or thoroughfares to surrounding areas durin gthe construction phase	Low-negative	Very low-negative
Temporary job creation during the construction of the proposed powerline and associated infrastructure	Very low-positive	Low-positive
Indirect Impacts		
Potential increase in HIV/ AIDS in the area due to construction workders (migrant labour) associated with the proposed development	Moderate-negative	Very low-negative
Impacts on agriculture potential and expansion due to the placement of the pylon structures in existing potential farm lands resulting in the minor loss of arable land or poetential expansion of farming activities	Low-negative	Very low-negative
OPERATIONAL PHASE		
Direct Impacts		
Economic growth and development in the surrounding area due to the strengthening of the existing electricity network to a point where it is stable and reliable and allowing future development and expansion of operations in the area	Low-positive	Moderate-positive
Increased theft and vandalism of the distribution line and associated infrastructure resulting in the occurrence of potential deaths, interruption in electricity supply and the increased maintenance intervals	Low-negative	Very low-negative
Increased risk of alien invasion for vegetation species due to the disturbance in the landscape during operational and maintenance activities	Moderate-negative	Very low-negative
Increased electrocution of avifauna and resulting motality of these large terrestrial bird species due to building nests on pylon structures	High-negative	Very low-negative
Increased risk for collisions of Avifaunal species causing harm, injury and death to the avifaunal bird species found in the area	High-negative	Very low-negative

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Increased alteration of hydrology of drainage lines and wetlands due to the establishment of access roads and distribution line towers within or immediately adjacent to freshwater ecosystems	High-negative	Very low-negative
Floral destruction and faunal displacement due to clearing or trimming of natural vegetation located within the servitude of the powerline as part of routine maintenance operations	Low-negative	Very low-negative
Degradation of the cultural landscape and scenic qualities of the environment due to the proposed powerline extending across such landscape	Low-negative	Very low-negative
Indirect Impacts		
Increased soil erosion due to the deterioration of access roads to the powerline servitude for operation and routine maintenance activities	Very low-negative	Very low-negative
Cumulative Impacts		
Stimulation and growth of the local economy due to the provision of a stable electricity supply which will lead to the steady growth and economic development of the surrounding regions	Low-positive	High-positive
Increased visual impact of additional powerlines due to the existence of other powerlines in the vicinity of the proposed Diamond-Bynes powerline	Low-negative	Very low-negative
DECOMMISSIONING PHASE		
Direct Impacts		
Waste generation in the forms of generating metal and concrete waste during decommissioning activities	Low-negative	Very low-negative
Soil contamination due to hydrocarbon spills which may occur from vehicles to be used to carry out various decommissioning activities	Low-negative	Very low-negative
Increased alteration of hydrology of drainage lines and wetlands from vehicles to be used to carry out various decommissioning activities	Low-negative	Very low-negative

A composite environmental sensitivity map has been compiled to outline all the environmental sensitivities from the respective specialists on this project, overlain on one another. Please refer to Figure 18 below for the composite sensitivity map.

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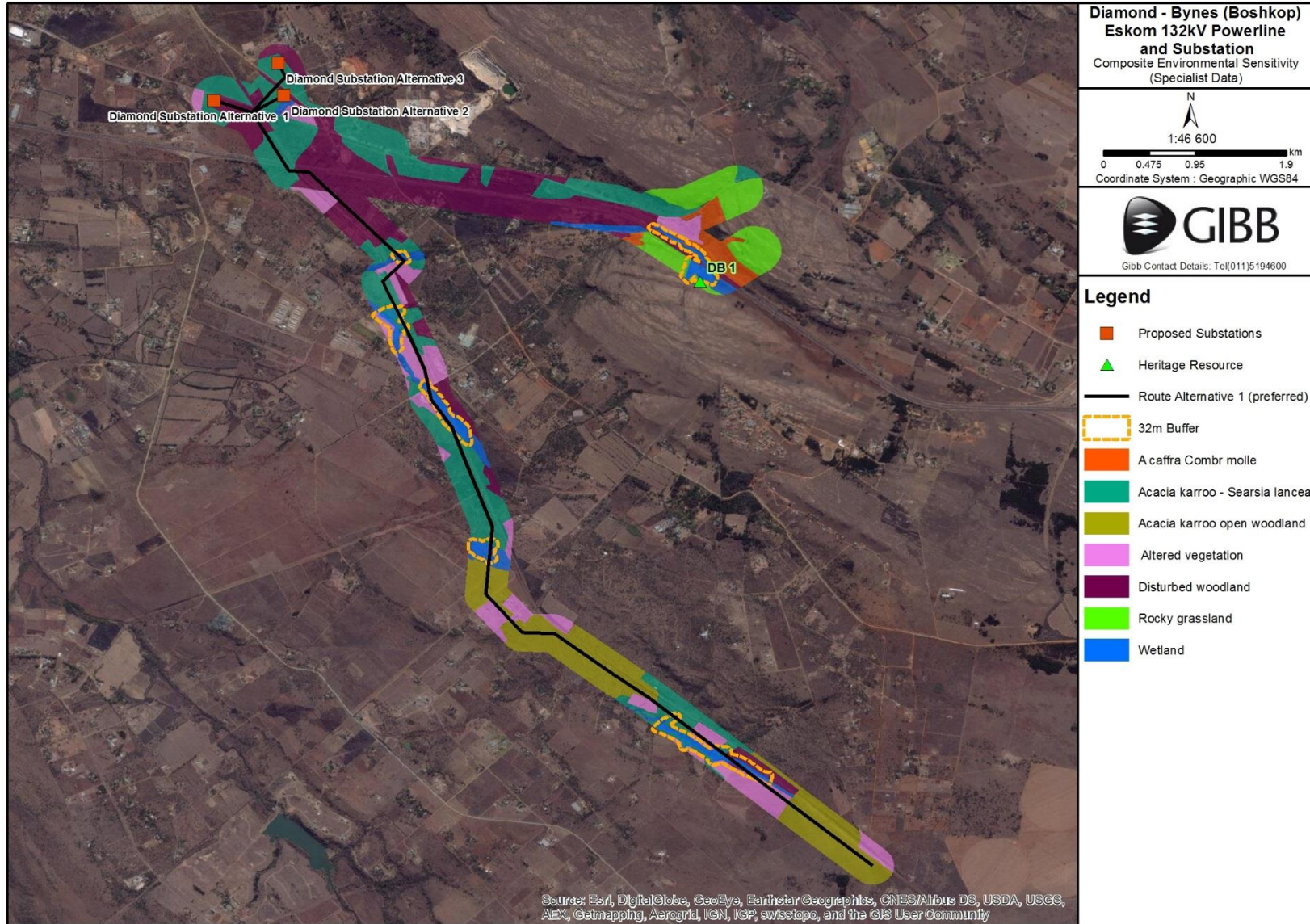


Figure 18: Composite environmental sensitivity map of the study area and proposed powerline

Substation Site Alternative 1

It has been illustrated that with the implementation of the above mitigation measures and Environmental Management Programme, all the identified impacts can be mitigated to acceptable levels, thus allowing the proposed development to proceed.

Impacts associated with Substation site Alternative 1 can all be mitigated to have an overall significance of low to very low. Impacts associated with the proposed substation sites are very similar and as such no significant difference in terms of impact significance can be used as motivation in selecting one of them as the preferred option.

However, some of the affected landowners have commented that this alternative will adversely impact on their property. Based on the information above, **the EAP does not recommend this alternative as the preferred.**

Substation Site Alternative 2

It has been illustrated that with the implementation of the above mitigation measures and Environmental Management Programme, all the identified impacts can be mitigated to acceptable levels, thus allowing the proposed development to proceed.

Impacts associated with Substation site Alternative 2 can all be mitigated to have an overall significance of low to very-low. Impacts associated with the proposed substation sites are very similar and as such no significant difference in terms of impact significance can be used as motivation in selecting one of them as the preferred option from an environmental impact point of view.

Due to the fact that substation 3 is the client's preferred alternative, and the fact that all three substation alternatives constitute similar environmental impacts, **he EAP does not recommend this alternative as the preferred. However from an environmental point of view this alternative may be approved for development with the implementation of mitigation measures in accordance with the EMPr.**

Substation Site Alternative 3

It has been illustrated that with the implementation of the above mitigation measures and Environmental Management Programme, all the identified impacts can be mitigated to acceptable levels, thus allowing the proposed development to proceed.

Impacts associated with Substation site Alternative 3 can all be mitigated to have an overall significance of low to very-low. Impacts associated with the three substation sites are very similar and as such no significant difference in terms of impact significance can be used as motivation in selecting one of them as the preferred option.

Due to the fact that substation 3 is the client's preferred alternative, and the fact that all three substation alternatives constitute similar environmental impacts, **the EAP recommends this site alternative as being the preferred.**

Route Alternative 1 (Preferred)

It has been illustrated that with the implementation of the above mitigation measures and Environmental Management Programme, all the identified impacts can be mitigated to acceptable levels, thus allowing the proposed development to proceed.

Route Alternative 1 (Preferred) extends through four (4) unchannelled valley bottom wetland features. The pylon structures will however adjusted within the assessed 500m corridor, to be placed outside any watercourse feature, and to furthermore span over sensitive environmental features. All impacts associated with Route Alternative 1 are mainly of a short – medium term, with a significance of medium-low to low (with the implementation of mitigation measures). It important to note that no fatal flaws were identified with the proposed implementation of Route Alternative 1.

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Based on the above information, it is the EAP's recommendation that the proposed development be authorised by the Department with the implementation of Route Alternative 1 and associated mitigation measures forming part of the EMPr.

No-go alternative (compulsory)

This option in the context of this project implies that the powerline and associated substation is not to be constructed and therefore assumes that a conservative approach is followed. This would ensure that the environment is not impacted upon any more than is currently the case. It is important to state that this assessment is informed by the current condition of the area. Should the authorities decline the application, the 'No-Go' option will be followed and the status quo of the site will remain.

With the No-Go alternative being followed, no additional jobs will be created during the construction and possibly during the operational phase. The current unstable supply of electricity throughout the study area is likely to inhibit or slow down the economic growth and development of the surrounding regions in the Medium - Long term. The need for stable and reliable power supply to meet current and future demand will outweigh the potential impacts to the surrounding environment. The Impacts to the surrounding environment is expected to be of low to medium significance, at best, and can be proactively mitigated to acceptable levels. Therefore the no-go alternative is not preferred.

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 X	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).

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

- The EMPr is a legally bounding document and must be implemented;
- No pylon structures should be placed outside any identified watercourse features (rivers, wetlands etc.);
- Bird diverters should be installed along the proposed powerline route;
- Wetland and ecological specialist walk downs need to be undertaken along the approved route and substation alternatives, with the provision of the exact location of pylon structures to be placed;
- An independent ECO must be appointed to ensure compliance with the EMPr; and
- A Water Use License (WUL) or General Authorisation (GA) must be obtained from the Department of Water and Sanitation prior to any construction activities taking place.

Is an EMPr attached?

YES X	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**.

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

Umeshree Naicker _____
NAME OF EAP



SIGNATURE OF EAP

31 June 2017 _____
DATE

SECTION F: APPENDIXES

The following appendixes must be attached:

Appendix A: Maps

Appendix B: Photographs

Appendix C: Facility illustration(s)

Appendix D: Specialist reports (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