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, 2014, 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, 2014 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 **08 December 2014**. It is the responsibility of the applicant to ascertain whether subsequent versions of the form have been published or produced by the competent authority
3. The report must be typed within the spaces provided in the form. The size of the spaces provided is not necessarily indicative of the amount of information to be provided. The report is in the form of a table that can extend itself as each space is filled with typing.
4. Where applicable **tick** the boxes that are applicable in the report.
5. An incomplete report may be returned to the applicant for revision.
6. The use of "not applicable" in the report must be done with circumspection because if it is used in respect of material information that is required by the competent authority for assessing the application, it may result in the rejection of the application as provided for in the regulations.
7. This report must be handed in at offices of the relevant competent authority as determined by each authority.
8. No faxed or e-mailed reports will be accepted.
9. The signature of the EAP on the report must be an original signature.
10. The report must be compiled by an independent environmental assessment practitioner.
11. Unless protected by law, all information in the report will become public information on receipt by the competent authority. Any interested and affected party should be provided with the information contained in this report on request, during any stage of the application process.
12. A competent authority may require that for specified types of activities in defined situations only parts of this report need to be completed.
13. Should a specialist report or report on a specialised process be submitted at any stage for any part of this application, the terms of reference for such report must also be submitted.

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

SECTION A: ACTIVITY INFORMATION

Has a specialist been consulted to assist with the completion of this section? YES NO

If YES, please complete the form entitled "Details of specialist and declaration of interest" for the specialist appointed and attach in **Appendix I**.

1 PROJECT DESCRIPTION

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

1.1 Brief Project Description

Eskom Holdings (SoC) Pty Ltd (Eskom Distribution – Mpumalanga Operating Unit) proposes to construct two (2) 7 km 88 kV (Loop in-Loop out) overhead power lines within a 2 km corridor between Grootpan and Brakfontein near Ogies (Figure 1). The existing power lines are located on GlencoreXstrata mining property. The mine has requested that Eskom relocate the lines as they are within the operational footprint of the mine. The project also involves the dismantling of a portion of the existing 88 kV double-circuit mink power line approximately 5.2 km in length (Figure 1). The new power lines will ensure continuity of supply and access to electricity for the surrounding communities.

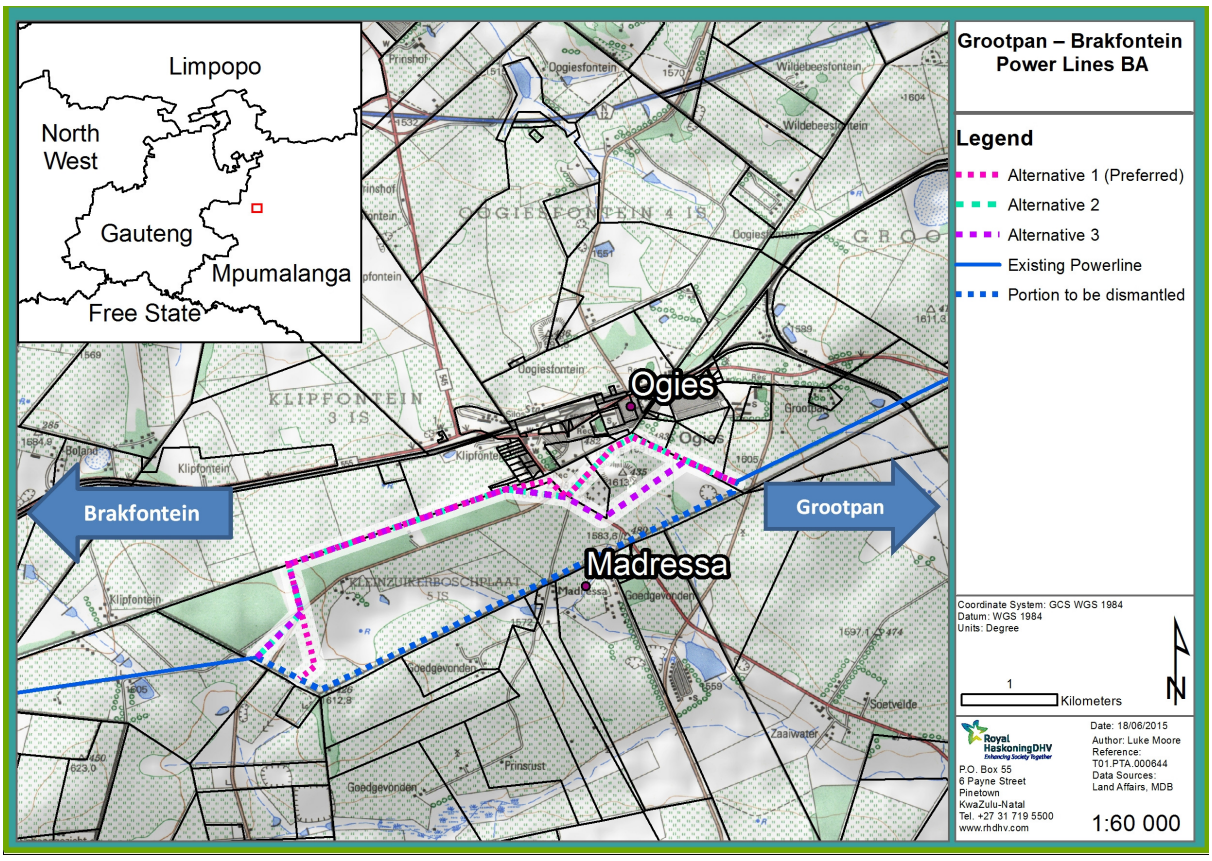

Figure 1: Locality Map

The existing and proposed new power lines are located in the Mpumalanga Province within the Emalahleni Local Municipality with the nearest town/ settlements being Ogies, Phola and Wilge. The major town is Emalahleni which is located 29 km north east from the project area. The major landmark within the area is the Kendal Power Station which is 9 km west of the project area. The area is composed predominantly of agricultural areas and semi-built up areas. One main road provides access to the proposed project, namely the R545. Dirt roads off the R545 provide access to the proposed project.

1.1.1 88 kV Power Line Alternatives- Route Description

There are three alternatives proposed for the project (Figure 1):

Alternative	Distance (Approximate)	Route
Alternative 1 (preferred) – pink in Figure 1	7 km	From the existing line, this alignment runs in a north-westerly direction for approximately 1 km towards Ogies. The alignment heads in a westerly direction for approximately 890 m through transformed and degraded grasslands on the outskirts of Ogies. The alignment continues in a westerly direction for 2.6 km following and existing access road servitude. The alignment heads in a southerly direction for 1.36 km following the existing mine conveyor belt and access road until it links up to the existing Grootpan-Brakfontein power lines.
Alternative 2 – turquoise in Figure 1	7 km	From the existing line, this alternative alignment runs in a north-westerly direction for approximately 1 km towards Ogies. The alignment the heads in a westerly direction for approximately 915 m on the outskirts of Ogies. The alignment then heads in a northerly direction towards Ogies and follows the R545 road reserve. The alignment continues in a westerly direction for 2.6 km following and existing access road servitude. The alignment last section of the alignment heads in a southerly direction for 1.36 km following the existing mine conveyor belt and access road where the proposed power lines will join the existing Grootpan-Brakfontein power lines.
Alternative 3 – purple in Figure 1	7 km	From the existing line the alignment runs in a north-westerly direction for approximately 530 m towards Ogies. The alignment then turns in a south-westerly direction towards the R545 for approximately 980 m. The alignment then heads in a north-westerly direction for 960 m along the R545 road reserve. The alignment then turns towards the west and follows and existing access road and is situated within the outer edge of a *Eucalyptus* plantation for 3.52 km. The last section of this alignment turns in a south-easterly alignment for approximately 970 m to join the existing Grootpan-Brakfontein lines.
Dismantling of existing power line – dotted blue line in Figure 1	5.2 km	The portion of the existing Grootpan-Brakfontein power line that will be dismantled traverses Portion 1 and the remaining extent of the farm Kleinzuikerboschplaat 5IS. The lines that will be dismantled is located south of the proposed alternatives for the new power lines.

1.2 Technical Description - 88 kV Power Lines

In South Africa, thousands of kilometres of high voltage power lines (i.e. 765 kV, 400 kV or 275 kV) transmit electricity generated at power stations to Eskom's major substations. At these major substations, the voltage is reduced, and the electricity is distributed to smaller substations all over the country through sub-transmission lines and power lines (i.e. 132 kV, 88 kV or 66 kV lines). At the substations the voltage is further reduced and the power is distributed to local users via numerous small

power lines (i.e. 22 kV and 11 kV lines) referred to as reticulation lines. The power generated by Eskom can only be utilised from these points of supply, which transform the power into a usable voltage.

1.2.1 Dismantling Process

A portion of the Grootpan-Brakfontein double circuit 88 kV line will be deviated to allow for further mine works as per the mine's request and this will involve the decommissioning and dismantling of a portion of the existing power line. The conductors and structures (Figure 2) will be dismantled however; the foundations will remain so as to minimize the environmental impact.

Figure 2: Transverse and longitudinal views of the existing structures

The structures will be removed from site immediately after dismantling, and the new structures will be delivered to site and installed on arrival; structures will not be stored on site. The material to be installed will be assembled beforehand and the concrete to be used will be mixed off-site such that no concrete mixing occurs on or near any wetland areas. A site camp, including site office and a security guard, will be established for the storage of material. This site will be located in an area that is not sensitive from an environmental point of view (i.e. away from wetlands and riparian areas, heritage sites etc).

1.1.1.1 Dismantling and Removing Conductors

According to the Eskom Dismantling of Overhead Lines Task Manual (2014), the following tasks should be undertaken.

a) Site Preparation

The apparatus will be isolated, earthed and disconnected from the system in accordance to Operating Regulation for High Voltage Systems (ORHVS). The condition of the line as well as the potential impacts on the environment during dismantling will be determined.

b) Dismantling/Removal of Conductors Procedure

The procedure for the dismantling and removing of conductors is as follows (Figure 3):

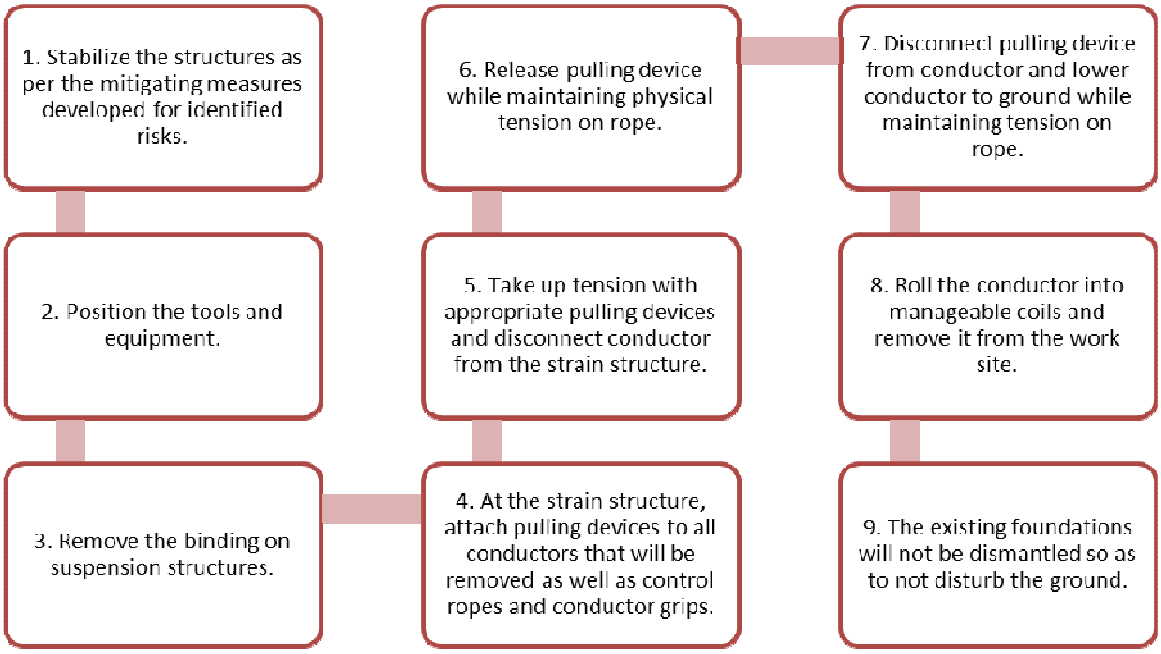

Figure 3: Dismantling procedure

c) Removal of Structures Options:

General Conditions:

- High risk structures shall be properly supported before dismantling them and all additional materials shall be removed i.e. transformers, insulators etc. from structures / poles before this task can commence.
- After removing lattice and big steel structures the plinths shall also be demolished.
- No stumps and or stay rods resulting from structure being cut shall be left in the ground and all excavation shall be backfilled immediately.
- Safe tree-felling method can be adopted to remove wood poles.
- Strict supervision shall be maintained during the task execution.

Option 1: Using a Crane:

1) Support and / or control the structure as follows:

- Apply a chain or nylon sling on the structure / pole, ensure that the sling is positioned at approximately one third of the structure / pole length from the top or two thirds from the ground level.
- For lattice structure the lifting sling could be attached to the cross arm or beam.
- Apply at least two guide ropes at the bottom of the structure / pole, this must be guided in opposite directions.
- Raise the crane to take tension on the sling.

2) In case of lattice and steel mono-pole structures the steps below should be followed:

- The big lattice structures shall be dismantled in sections from the top.
- Remove pole base securing bolts or cut the bolts off with cutting torch if required.
- Lift and remove the structure from plinths.
- Lay the structure on the ground, dismantle and remove the structure parts.
- Demolish the plinths into manageable pieces, remove the debris and backfill the excavations and rehabilitate the soil.

3) In case of wooden, concrete and steel poles which are compacted the steps below should be adhered to:

- For wooden poles, cut the poles a meter high from ground level, lift, lay to ground, cut to manageable pieces if required and remove.
- Excavate the soil around stumps; remove the stumps and backfill the excavation.
- For concrete poles excavate around the structure until it is loose and remove it from the hole.
- For steel poles excavate around the structure until it is loose and remove it from the hole.
- Backfill the excavations and rehabilitate the soil.

4) In case of steel poles which are bolted the steps below should be applied:

- Remove the pole securing bolts and remove it from the base.
- Excavate the concrete base / foundation and remove it from the hole.
- Backfill the excavations and rehabilitate the soil.

Option 2: Tree Felling:

- Ropes used to pull the pole must be longer than the poles being felt to ensure that people pulling the pole down are at safe distance or out of the danger zone.
- Attach a rope to the top end of the pole; pull the rope to guide the pole towards the desired fall direction.
- Cut (V Cut) the pole at the predetermined position and clear the area as the pole starts to break.

d) Rehabilitation:

1) Removal of stays:

- Dismantle and remove the stays.
- Excavate the stay rod and backfill the excavation.
- No stay rod shall be left in the ground after removing stays and all excavation shall be backfilled immediately.
- Roll the stay wire into manageable coils and remove it from the work site.

2) Site clearance:

- Ensure that the work site / environment is left free of debris or contaminants.
- Ensure that all material removed are well secured when they are being transported from site.
- Ensure that the dismantled line material is properly secured while being transported from the site.
- Remove all personnel, equipment and redundant material from site.
- Complete and submit required documentation.

- Clean work area at the completion of the job.

1.2.2 88 kV Transmission Towers

Power line conductors are strung on in-line lattice towers. The structures proposed to be used for the 88 kV power line for this project area is the steel monopole structures (Figure 4). These poles vary in height from approximately 10 m to 25 m. The size of the footprint depends on the type of pole, i.e. whether it is a self supporting, guyed suspension or an angle strain pole structure. The size of the footprint ranges from 0.6 x 0.6 m to 6.6 x 6.6 m, with the larger footprint associated with loose soil and heavier loads. The average span between two poles is 250 m, but can vary to up to 350 m depending on the ground profile (topography) and the terrain to be spanned. The self supporting structure (suspension / intermediate structure) is typically used along the straight sections of the power line, while the guyed intermediate or guyed suspension and angle strain structures are used where there is a bend in the power line alignment or to create a line section.

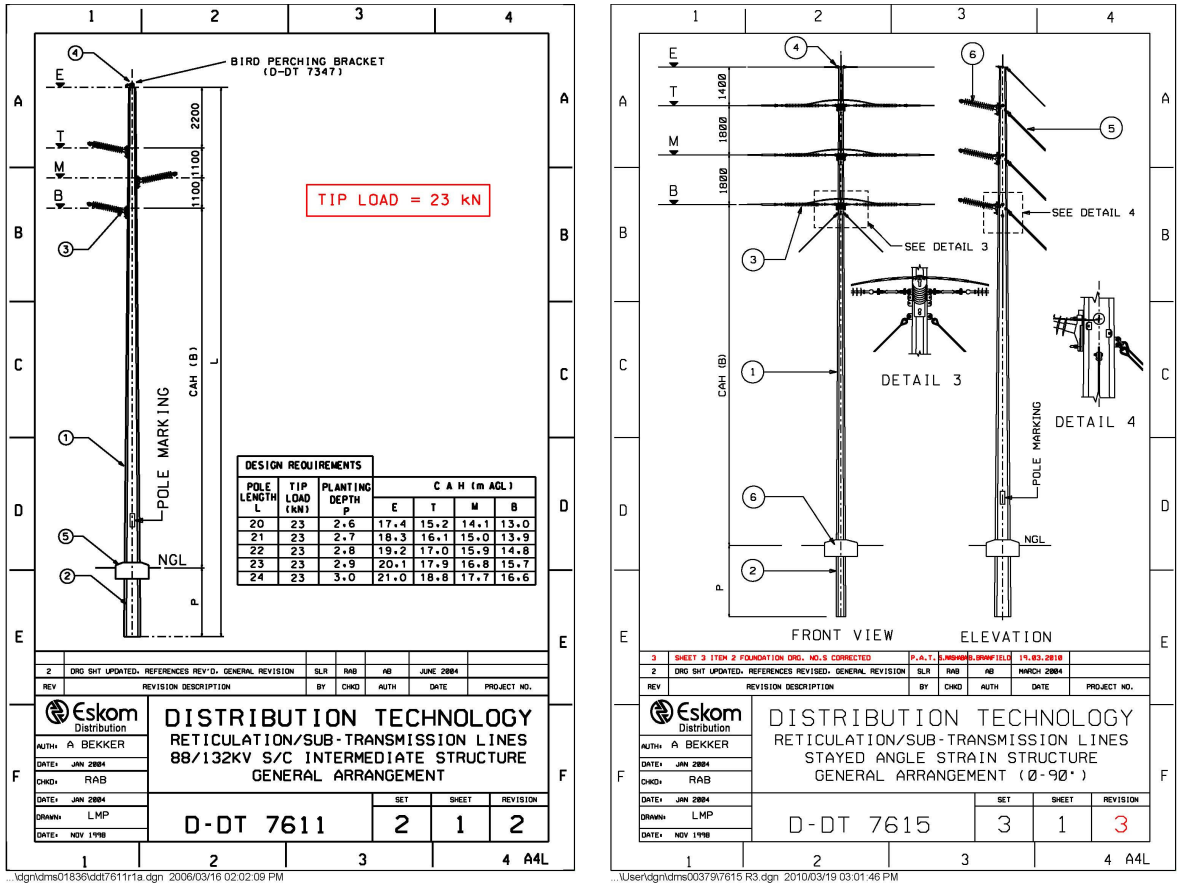

Figure 4: Example of monopoles to be used for the proposed project

1.2.3 Servitude Requirements and Clearance

The standard servitude width for an 88 kV power line is 31 m with 15.5 m on either side from the centre of the line. In addition a 2 km (1 km on either side of the centre line of the power line) servitude corridor is proposed and assessed for this proposed project as there might be minor adjustments during the planning and design process. The minimum vertical clearance to buildings, poles and structures not forming part of the power line must be 3.8 m, while the minimum vertical clearance between the conductors and the ground is 6.7 m. On receipt of an approval of the final corridor by the Competent

Authority (i.e. DEA) and after negotiations with landowners, the final definition of the centre line for the power line and co-ordinates of each bend in the line will be determined. Optimal transmission tower sizes and positions will be identified and verified using a ground survey (in terms of the Environmental Management Programme – EMPr requirements (**Appendix G**).

1.2.4 Foundations

The type of terrain encountered, as well as the underlying geotechnical conditions determines the choice of foundation. The actual size and type of foundation to be installed will depend on the soil bearing capacity (actual sub-soil conditions). Strain structures require more extensive foundations for support than in-line suspension structures, which contribute to the cost of the construction of the line.
The minimum working area required around a structure position is 20 x 20 m. Foundations will be mechanically excavated where access to the pole position is readily available. The same applies to the pouring of concrete required for the setting of the foundations. Prior to erecting the poles and filling of the foundations, the excavated foundations will be covered in order to safeguard unsuspecting animals and people from injury. All foundations are back-filled, stabilised through compaction, and capped with concrete at ground level.

1.2.5 Ongoing Maintenance

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

1.2.6 Construction Process for Power Line

Power lines are constructed in the following simplified sequence:
Step 1: Determination of technically feasible alternatives.
Step 2: EIA input into route selection and obtaining of relevant environmental permits.
Step 3: Negotiation of final route with affected landowners.
Step 4: Survey of the route.
Step 5: Selection of best-suited structures and foundations.
Step 6: Final design of power line and placement of transmission towers.
Step 7: Issuing of tenders and award of contract to construction companies.
Step 8: Vegetation clearance and construction of access roads (where required).
Step 9: Pegging of structures.
Step 10: Construction of foundations.
Step 11: Assembly and erection of structures.
Step 12: Stringing of conductors.
Step 13: Rehabilitation of disturbed area and protection of erosion sensitive areas.
Step 14: Testing and commissioning.
Step 15: Continued maintenance.

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

Detailed description of listed activities associated with the project

Listed activity as described in GN R 983	Description of project activity that triggers listed activity
Activity 11: The development 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 275kV; or Inside urban areas or industrial complexes with a capacity of 275kV or more.	Two new 88 kV power lines will be constructed that will link to the exisitng Grootpan-Brakfontein power line. The existing power lines are located on GlencoreXstrata mining property. The mine has requested that Eskom relocate/deviate the lines as they are within the operational footprint of the mine. The proposed power lines are situated outside the urban edge of Ogies Town in Mpumalanga.
Activity 12: The development of— ~~(i) canals exceeding 100m^2 in size;~~ ~~(ii) channels exceeding 100m^2 in size;~~ ~~(iii) bridges exceeding 100m^2 in size;~~ ~~(iv) dams, where the dam, including infrastructure and water surface area, exceeds 100m^2 in size;~~ ~~(v) weirs, where the weir, including infrastructure and water surface area, exceeds 100m^2 in size;~~ ~~(vi) bulk storm water outlet structures exceeding 100m^2 in size;~~ ~~(vii) marinas exceeding 100m^2 in size;~~ ~~(viii) jetties exceeding 100m^2 in size;~~ ~~(ix) slipways exceeding 100m^2 in size;~~ ~~(x) buildings exceeding 100m^2 in size;~~ ~~(xi) boardwalks exceeding 100 m^2 in size; or~~ (xii) infrastructure or structures with a physical footprint of 100m^2 or more; where such development occurs— (a) within a watercourse; ~~(b) in front of a development setback; or~~ ~~(c) if no development setback exists, within 32m of a watercourse, measured from the edge of a watercourse; —~~ ~~excluding—~~ ~~(aa) the development of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour;~~ ~~(bb) where such development activities are related to the development of a port or harbour, in which case activity 26 in Listing Notice 2 of 2014 applies;~~ ~~(cc) activities listed in activity 14 in Listing Notice 2 of 2014 or activity 14 in Listing Notice 3 of 2014, in which case that~~	The construction of the two proposed power lines and associated infrastructure will occur within 32 m buffer zone of a watercourse (wetland).

Detailed description of listed activities associated with the project	
Listed activity as described in GN R 983	**Description of project activity that triggers listed activity**
~~activity applies;~~ ~~(dd) where such development occurs within an urban area; or~~ ~~(ee) where such development occurs within existing roads or road reserves.~~	
Activity 19: The infilling or depositing of any material of more than 5m^3 into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 5m^3 from (i) a watercourse; ~~(ii) the seashore; or~~ ~~(iii) the littoral active zone, an estuary or a distance of 100m inland of the high-water mark of the sea or an estuary, whichever distance is the greater—~~ ~~but excluding where such infilling, depositing , dredging, excavation, removal or moving—~~ ~~(a) will occur behind a development setback;~~ ~~(b) is for maintenance purposes undertaken in accordance with a maintenance management plan; or~~ ~~falls within the ambit of activity 21 in this Notice, in which case that activity applies.~~	The dismantling activities associated with the existing power line will result in the removal or moving of soils of more than 5m^3. Furthermore, the construction of the two new power lines and associated infrastructure that will occur within 32 m buffer zone of a watercourse (wetland) will trigger this activity.
Activity 31: The decommissioning of existing facilities, structures or infrastructure for— (i) any development and related operation activity or activities listed in this Notice, Listing Notice 2 of 2014 or Listing Notice 3 of 2014; (ii) ~~any expansion and related operation activity or activities listed in this Notice, Listing Notice 2 of 2014 or Listing Notice 3 of 2014;~~ (iii) any development and related operation activity or activities and expansion and related operation activity or activities listed in this Notice, Listing Notice 2 of 2014 or Listing Notice 3 of 2014; (iv) any phased activity or activities for development and related operation activity or expansion or related operation activities listed in this Notice or Listing Notice 3 of 2014; or (v) any activity regardless the time the activity was commenced with, where such activity: (a) is similarly listed to an activity in (i), (ii), (iii), or (iv) above; and (b) is still in operation or development is still in progress; ~~excluding where—~~ ~~(aa) activity 22 of this notice applies; or~~ (bb) ~~the decommissioning is covered by part 8 of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) in which case the National Environmental Management: Waste Act, 2008 applies.~~	The existing power line is situated within GlencoreXstrata's mining operations footprint and will need to be relocated and dismantled as the mine is expanding operations in the area.

Detailed description of listed activities associated with the project	
Listed activity as described in GN R 983	**Description of project activity that triggers listed activity**
Listed activity as described in GN 985	**Description of project activity that triggers listed activity**
Activity 12: The clearance of an area of 300m^2 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. (a) **In Mpumalanga:** i. Within any critically endangered or endangered ecosystem listed in terms of section 52 of the NEMBA or prior to the publication of such a list, within an area that has been identified as critically endangered in the National Spatial Biodiversity Assessment 2004; ii. Within critical biodiversity areas identified in bioregional plans; ~~iii. Within the littoral active zone or 100 m inland from high water mark of the sea or an estuarine functional zone, whichever distance is the greater, excluding where such removal will occur behind the development setback line on erven in urban areas; or~~ ~~On land, where, at the time of the coming into effect of this Notice or thereafter such land was zoned open space, conservation or had an equivalent zoning or proclamation in terms of NEMPAA.~~	Removal of indigenous riparian vegetation for the construction and dismantling activities.

1. 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 Appendix 1 (3)(h), Regulation 2014. Alternatives should include a consideration of all possible means by which the purpose and need of the proposed activity (NOT PROJECT) could be accomplished in the specific instance taking account of the interest of the applicant in the activity. The no-go alternative must in all cases be included in the assessment phase as the baseline against which the impacts of the other alternatives are assessed.

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

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

a) Site alternatives-Not Applicable

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

In the case of linear activities:

Alternative:	**Latitude (S):**	**Longitude (E):**
Alternative S1 (preferred)		
• Starting point of the activity	26° 03' 23.08" S	29° 04' 03.47" E
• Middle/Additional point of the activity	26° 03' 36.45" S	29° 02' 13.83" E
• End point of the activity	26° 04' 29.55" S	29° 01' 35.75" E
Alternative S2 (if any)		
• Starting point of the activity	26° 03' 23.08" S	29° 04' 03.47" E
• Middle/Additional point of the activity	26° 03' 31.50" S	29° 02' 29.42" E
• End point of the activity	26° 04' 22.34" S	29° 01' 21.48" E
Alternative S3 (if any)		
• Starting point of the activity	26° 03' 23.08" S	29° 04' 03.47" E
• Middle/Additional point of the activity	26° 03' 30.00" S	29° 02' 33.66" E
• End point of the activity	26° 04' 22.34" S	29° 01' 21.48" 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. - **Appendix J**

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

b) Lay-out alternatives- Not Applicable

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

c) Technology alternatives- Not Applicable

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

d) Other alternatives (e.g. scheduling, demand, input, scale and design alternatives) - Not Applicable

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

e) No-go alternative

The No-go Alternative would be the status quo however as this will impact on the operation of the GlencoreXstrata Mine. This is option is not feasible.

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

2. PHYSICAL SIZE OF THE ACTIVITY

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

Alternative:	**Size of the activity:**
Alternative A1[1] (preferred activity alternative)	m²

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

Alternative A2 (if any)	m²
Alternative A3 (if any)	m²

or, for linear activities:

Alternative:	Length of the activity:
Alternative A1 (preferred activity alternative)	7000 m
Alternative A2 (if any)	7000 m
Alternative A3 (if any)	7000 m

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

Alternative:	Size of the site/servitude:
Alternative A1 (preferred activity alternative)	217 000 m²
Alternative A2 (if any)	217 000 m²
Alternative A3 (if any)	217 000 m²

3. SITE ACCESS

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

Describe the type of access road planned:

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.

4. 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).

5. 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.

6. 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 DWS);
- 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**.

7. 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.

8. 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.

9. ACTIVITY MOTIVATION

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

1. Is the activity permitted in terms of the property's existing land use rights?	YES	NO	Please explain
The land use is mining and agriculture and the land use rights may need to be altered.			
2. Will the activity be in line with the following?			
(a) Provincial Spatial Development Framework (PSDF)	YES	NO	Please explain
Strategic objective 9 of the Mpumalanga Spatial Development Framework (2012): Infrastructure development in Urban and Rural Priority Areas - this project is strategic as this forward thinking will ensure that there will be no disruption to the electricity supply in the area as well ensuring that the mining operations are not delayed as this is important for the local economy. The Mpumalanga SDF furthermore stipulates that infrastructure investment needs to promote the role and function of rural communities and focus on the development of communities to manage and develop their local economies, become self-sufficient, create livelihoods, add to the economy and reduce their dependency on social grants.			
(b) Urban edge / Edge of Built environment for the area	YES	NO	Please explain
The Urban Edge does not apply as the project is located outside of the Urban Edge.			
(c) Integrated Development Plan (IDP) and Spatial Development Framework (SDF) of the Local Municipality (e.g. would the approval of this application compromise the integrity of the existing approved and credible municipal IDP and SDF?).	YES	NO	Please explain
According to the Emalahleni Local Municipality (LM) Draft IDP (2015/16) and SDF (March 2015), one of the issues within the municipality is the "Inadequate electricity supply to various parts of the municipality", the Ogies area was noted as having inadequate electrical services and there are a number of projects underway to address this issue. One of the key objectives of the Mpumalanga Vision 2030 is Urban Development, one of these interventions mentions the consolidation of the Witbank-Middleburg-Ogies area into a metropolitan and ensuring that these areas become sustainable human settlements, the assured supply of basic services is key in obtaining a sustainable human settlement, therefore this project is in line with the vision for the province.			
(d) Approved Structure Plan of the Municipality	YES	NO	Please explain
There is no Approved Structure Plan but it can be assumed from the plan that is in the documents such as the IDP and SDF's that the project falls within the development plans for the area.			

(e) An Environmental Management Framework (EMF) adopted by the Department (e.g. Would the approval of this application compromise the integrity of the existing environmental management priorities for the area and if so, can it be justified in terms of sustainability considerations?)	YES	NO	Please explain
There is no EMF available for the Emalahleni LM or the Nkangala District Municipality at the moment.			
(f) Any other Plans (e.g. Guide Plan)	YES	NO	Please explain
Not Applicable			
3. Is the land use (associated with the activity being applied for) considered within the timeframe intended by the existing approved SDF agreed to by the relevant environmental authority (i.e. is the proposed development in line with the projects and programmes identified as priorities within the credible IDP)?	YES	NO	Please explain
According to the Emalahleni LM Draft IDP (2015/16) one of the Strategic Objectives is "to ensure efficient infrastructure and energy supply that will contribute to the improvement of quality of life for all citizens within Emalahleni" The IDP states that one of the priority areas is the upgrading and refurbishment of infrastructure.			
4. Does the community/area need the activity and the associated land use concerned (is it a societal priority)? (This refers to the strategic as well as local level (e.g. development is a national priority, but within a specific local context it could be inappropriate.)	YES	NO	Please explain
As stated in the Emalahleni LM Draft IDP it was noted that one of the priority needs from the Community Participation meetings is the regular supply of electricity.			
5. Are the necessary services with adequate capacity currently available (at the time of application), or must additional capacity be created to cater for the development? (Confirmation by the relevant Municipality in this regard must be attached to the final Basic Assessment Report as Appendix I.)	YES	NO	Please explain
The necessary electrical services and adequate capacity are currently available. No additional services are needed. Therefore no confirmation by the relevant Municipality will be necessary.			
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.)	YES	NO	Please explain
The generation of electricity and the supply thereof is intrinsically planned for in the Emalahleni SDF and IDP, therefore no comment for the Municipality is necessary.			

7. Is this project part of a national programme to address an issue of national concern or importance?	YES	NO	Please explain
The proposed project falls within Strategic Infrastructure Projects (SIPs) 10: Electricity Transmission and Distribution for all where it is proposed that the transmission and distribution network is expanded to: address historical imbalances, provide access to electricity for all and support economic development. Electrification of rural areas is of national importance as it stimulates economic growth and enables local communities to meet their every day needs.			
8. Do location factors favour this land use (associated with the activity applied for) at this place? (This relates to the contextualisation of the proposed land use on this site within its broader context.)	YES	NO	Please explain
The location factors are in favour of the new power line development as stated earlier, a portion of Grootpan-Brakfontein alignment is within the operational footprint of the GlencoreXstrata mine and the mine requires the relocation of the power lines due their plans to extend their operations. Eskom in turn have to ensure that power supply to the Ogies area is not disrupted or compromised.			
9. Is the development the best practicable environmental option for this land/site?	YES	NO	Please explain
The preferred power line alternative (Alternative 1) will be constructed in areas with transformed and heavily degraded vegetation units as well as impoverished faunal habitats. Furthermore, Alternative 1 route alignment encroaches into the 32 m buffer zone of a wetland and within the 100 m FEPA buffer zones of two other wetlands (along the western portion). However, the alignment follows existing roads within all areas where encroachment into the buffer zones takes place. The proposed route alignment is therefore unlikely to have a significant impact on wetlands in the area, provided that the wetland areas are not impacted and that suitable mitigation measures to prevent this are implemented. No new wetland crossings will be required should the preferred Alternative 1 route alignment be selected.			
10. Will the benefits of the proposed land use/development outweigh the negative impacts of it?	YES	NO	Please explain
The availability of reliable electricity will stimulate the establishment of economic activities in the area. The area is an important economic hub for the Emalahleni LM as there is the Kendal Power Station in the vicinity and the future expansion of the GlencoreXstrata mine.			
11. Will the proposed land use/development set a precedent for similar activities in the area (local municipality)?	YES	NO	Please explain
Power distribution projects are already on-going in the area as stated in the Emalahleni IDP that there are poor electrical connections within the Ogies area and there are projects in place that are being used to address these issues.			
12. Will any person's rights be negatively affected by the proposed activity/ies?	YES	NO	Please explain
The proposed power line has been aligned as far as possible to avoid traversing through any property which may negatively affect people's rights.			
13. Will the proposed activity/ies compromise the "urban edge" as defined by the local municipality?	YES	NO	Please explain
The proposed project falls outside the urban edge and will not compromise the urban edge.			

14. Will the proposed activity/ies contribute to any of the 17 Strategic Integrated Projects (SIPS)?	YES	NO	Please explain
The proposed power line will contribute to SIP10 (refer to **Appendix J** for Letter of Confirmation) which will expand the transmission and distribution network to address historical imbalances, provide access to electricity for all and support economic development.			
15. What will the benefits be to society in general and to the local communities?			Please explain
The electrification of the Emalahleni LM will lead to economic growth and development. It will also provide necessary electricity to rural communities who previously had no or limited access to electricity. This will enable community members to meet their needs for every day survival.			
16. Any other need and desirability considerations related to the proposed activity?			Please explain
The local communities will benefit from the accessible source of power and the growth of economic activities will be stimulated. In addition, local people could potentially be employed during construction to undertake tasks such as clearing bushes and digging foundations.			
17. How does the project fit into the National Development Plan for 2030?			Please explain
The National Development Plan for 2030 seeks to promote economic growth and development through the provision of quality energy services that are competitively priced, reliable and efficient. The National Development Plan also seeks to promote social equity through the expansion of access to energy services. These objectives for the energy sector of South Africa are being met by Eskom through the development of the proposed power lines.			
18. Please describe how the general objectives of Integrated Environmental Management as set out in section 23 of NEMA have been taken into account.			
The impacts associated with the proposed new power lines as well as the dismantling of a portion of the existing line will be identified, predicted and evaluated to minimise negative impacts, maximise benefits and promote compliance with the principles of environmental management set out in Section 2 of NEMA (refer to Section D). Mitigation and management measures to minimize negative impacts and maximize benefits from the proposed new power lines and dismantling of a portion of the existing Grootpan-Brakfontein power line have been included in the EMPr attached as **Appendix G** to this Report.			
19. Please describe how the principles of environmental management as set out in section 2 of NEMA have been taken into account.			
The proposed new power line will be sustainable in terms of the following: ▪ Social: Local communities will benefit from the project in terms of receiving adequate electrical supply that server to meet basic human needs. The local community and society in general will also benefit from the project in terms of direct and indirect job creation; ▪ Economic: Provision of adequate electrical supply is a major contributor to the economic development within the Emalahleni LM. Society in general will benefit from the project in terms of indirect job creation as it will contribute to improving service delivery; and ▪ Environmentally: the proposed power line (Alternative 1) will avoid and bypass any environmentally and socially sensitive areas such as critical biodiversity areas and human settlements and where this is not possible, mitigation measures have been proposed to minimise the impact. Dismantling of a portion of the existing power line will be done according an approved method statement and the approved EMPr. ▪ A draft EMPr (**Appendix G)** has been compiled that provides the actions for the management of identified environmental impacts emanating from the project and a detailed outline of the implementation programme to minimise and /or eliminate the anticipated negative environmental impacts.			

10. 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
The Constitution (No. 108 of 1996)	Ensuring basic human needs are met through the electrification of rural areas	National and Provincial	18 December 1996
National Environmental Management Act No. 107 of 1998 (as amended) – EIA Regulations 2014 (as amended)	The proposed project triggers activities from GN R983 and GN 985	National and Provincial	8 December 2014
Occupational Health and Safety Act No. 85 of 1993	Occupational Health and Safety may be at risk during the dismantling of a portion of the existing line and construction of the new power lines	National and Provincial	23 June 1993
The Conservation of Agriculture Resource Act No. 43 of 1983	Agricultural land may be impacted upon during the dismantling of a portion of the existing line and construction of the new power lines	National and Provincial	21 April 1983
National Heritage Resources Act No. 25 of 1999	Heritage resources may be impacted during the life cycle of the project	National and Provincial	14 April 1999
National Environmental Management: Waste Act No. 59 of 2008 and GN 921	Waste will be generated during the dismantling of a portion of the existing line and construction of the new power lines	National and Provincial	10 March 2009 29 November 2013
National Environmental Management: Biodiversity Act No. 10 of 2004 and Regulations. ▪ Threatened or protected species (GN 388); ▪ Lists of species that are threatened or protected (GN 389); ▪ Alien and invasive species regulations (GNR 506);	Biodiversity (fauna & flora) may be impacted throughout the life cycle of the project	National and Provincial	7 June 2004 19 July 2013

Title of legislation, policy or guideline	Applicability to the project	Administering authority	Date
▪ Publication of exempted alien species (GNR 509); ▪ Publication of National list of invasive species (GNR ▪ 507); and ▪ Publication of prohibited alien species (GNR 508).			
National Water Act No. 36 of 1998	Water resources impacted upon during the dismantling of a portion of the existing power line and the construction of the new power lines	National and Provincial	26 August 1998
Mpumalanga Biodiversity Sector Plan	CBAs and other natural areas affected by the dismantling of a portion of the existing line and construction of the new power lines	Provincial	2013
Mpumalanga Nature Conservation Act (Act No. 10 of 1998)	The removal of endangered or rare species for the dismantling of a portion of the existing line and construction of the new power line will require a permit.	Provincial	1998
Guidelines for Dealing with Bird Problems of Transmission Lines and Transmission towers	Certain areas of the new power line will require marking with anti-collision marking devices. Furthermore the steel monopole design must be used to mitigate against electrocutions.	National and Provincial	1983
Emalahleni Local Municipality Draft IDP	It provides basic key service delivery challenges in areas that have been prioritised for 2015/2016 financial years	Local Municipality	2015/2016
Emalahleni Local Municipality Draft SDF	Set out objectives that reflects the desired spatial form of the Emalahleni LM, containing strategies and policies regarding the manner in which the objectives (especially with regards to desirable land use patterns, spatial reconstruction of the Municipality and the location and nature of development within the Emalahleni LM) will be achieved	Local Municipality	2015

Title of legislation, policy or guideline	Applicability to the project	Administering authority	Date
Nkangala District Municipality 2012/2013 IDP	Process through which municipalities prepare strategic development plans for a five year period. An IDP is a principal for Local Government used to guide the developmental agenda and Municipal budgets, land use development, and management, promotion of local economic development, and institutional transformation in a consultative and systematic manner to ensure that the District meets the needs of its residents	District Municipality	2012/2013
Eskom Guidelines: ▪ Standards for Bush Clearing. ▪ Oil Spill Clean-Up and Rehabilitation Standards. ▪ Dismantling of overhead lines.			
Other Local Municipality Bylaws			

11. WASTE, EFFLUENT, EMISSION AND NOISE MANAGEMENT

a) Solid waste management

Will the activity produce solid construction waste during the construction/initiation phase? **NO**

If YES, what estimated quantity will be produced per month? Unknown at this stage m^3

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

Solid waste will be removed and temporarily stored off site. Waste will then be disposed of at the nearest registered landfill site in the Emalahleni Local Municipal area.

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

Waste will be disposed of at the nearest registered landfill site in the Emalahleni Local Municipal area.

Will the activity produce solid waste during its operational phase? **NO**

If YES, what estimated quantity will be produced per month? m^3

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

N/A

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

N/A

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

N/A

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

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

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

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

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

b) Liquid effluent

Will the activity produce effluent, other than normal sewage, that will be disposed of in a municipal sewage system? YES NO

If YES, what estimated quantity will be produced per month? m^3

Will the activity produce any effluent that will be treated and/or disposed of on site? YES NO

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

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

If YES, provide the particulars of the facility:

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

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

N/A

c) Emissions into the atmosphere

Will the activity release emissions into the atmosphere other that exhaust emissions and dust associated with construction phase activities? YES NO

If YES, is it controlled by any legislation of any sphere of government? YES NO

If YES, the applicant must consult with the competent authority to determine whether it is necessary to

change to an application for scoping and EIA.
If NO, describe the emissions in terms of type and concentration:

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

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

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

The above impacts are negligible and therefore not considered significant.

d) Waste permit

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

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

e) Generation of noise

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

Describe the noise in terms of type and level:

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

12. WATER USE

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

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

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

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

The applicant is in the process of applying for a Water Use Licence for Section 21 c and i water uses.

13. ENERGY EFFICIENCY

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

None

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

None

SECTION B: SITE/AREA/PROPERTY DESCRIPTION

Important notes:

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

Section B Copy No. (e.g. A): A	**Dismantling of a Portion of the Existing Line**

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

3. Has a specialist been consulted to assist with the completion of this section? YES **NO**

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

Property description/physical address:

Province	Mpumalanga
District Municipality	Nkangala District Municipality
Local Municipality	Emalahleni Local Municipality
Ward Number(s)	28 and 30
Farm name and number	Kleinzuikerboschplaat 5 IS
Portion number	Kleinzuikerboschplaat 5 IS: 0, 1
SG Code	T0IS00000000000500000 T0IS00000000000500001

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

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

1. GRADIENT OF THE SITE

Indicate the general gradient of the site.

Dismantling of a Portion of the Existing Line:

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

Alternative 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

Alternative S2 (if any):

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

Alternative S3 (if any):

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

2. LOCATION IN LANDSCAPE

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

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

3. GROUNDWATER, SOIL AND GEOLOGICAL STABILITY OF THE SITE

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

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

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

4. GROUNDCOVER

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

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

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

5. SURFACE WATER

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

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

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

Wetlands: (Appendix D1)

Figure 5A below indicates all wetland features and associated buffer zones identified within a 2 km corridor surrounding the existing power line to be dismantled and the proposed power line alignment alternatives, while Figure 5B below indicates all wetland features (Wetlands 2 – 6) and associated buffer zones traversing or located adjacent to the existing power line or proposed power line alignment. Of all wetland features indicated in Figure 5A, only Wetlands 2 – 6 as indicated in Figure 5B may potentially be impacted by the proposed project. Should additional route alignment alternatives not indicated in this report be considered, all wetland features not discussed in detail in the Wetland Report should be assessed and verified.

Within all the wetland features identified within the study area, two predominant Hydro-geomorphic (HGM) Units were identified, namely unchannelled valley bottom HGM Units and seep HGM Units, comprising of connected valleyhead seeps and hillslope seeps adjoining the unchannelled valley bottom HGM Units.

Table 1: Wetland types in the study area

Wetland	HGM Type
Wetland 1	(Valleyhead) Seep
Wetland 2	Unchannelled valley bottom (Valleyhead) Seep
Wetland 3	Unchannelled valley bottom (Valleyhead) Seep
Wetland 4	(Isolated) Seep
Wetland 5	Seep
Wetland 6	(Isolated) Seep
Wetland 7	Unchannelled valley bottom
Wetland 8	Seep
Wetland 9	Channelled valley bottom
Wetland 10	Depression

The dismantling of a portion of the existing line will encroach into the 32 m buffer zone of Wetland 4 and also requires the direct crossing of Wetland 2, 3 and 6. Wetlands 2 and 3 are FEPAs. The 100 m FEPA buffer zone of Wetland 5 will also be encroached.

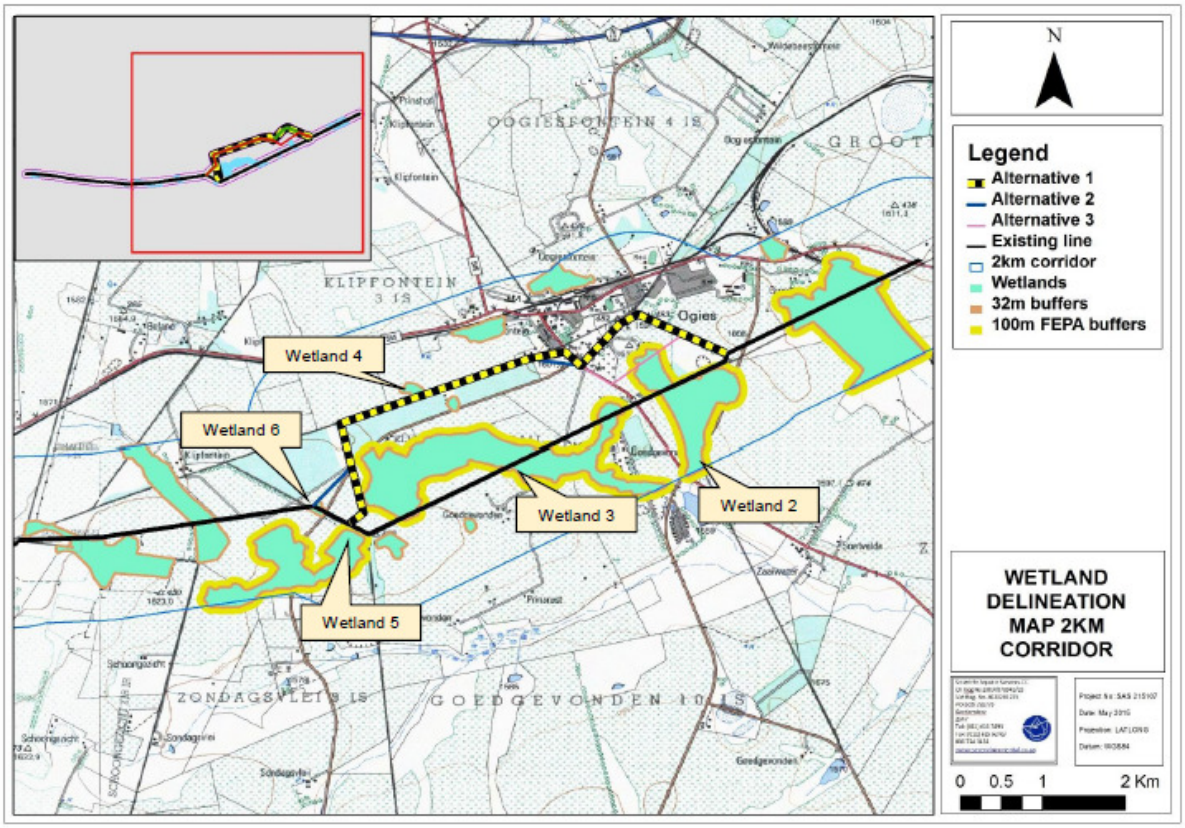

Figure 5A: Wetland and wetland buffers located within a 2km corridor of the existing power line to be dismantled and the proposed new power line alignment alternatives. Wetlands 2 – 6 are indicated for ease of reference.

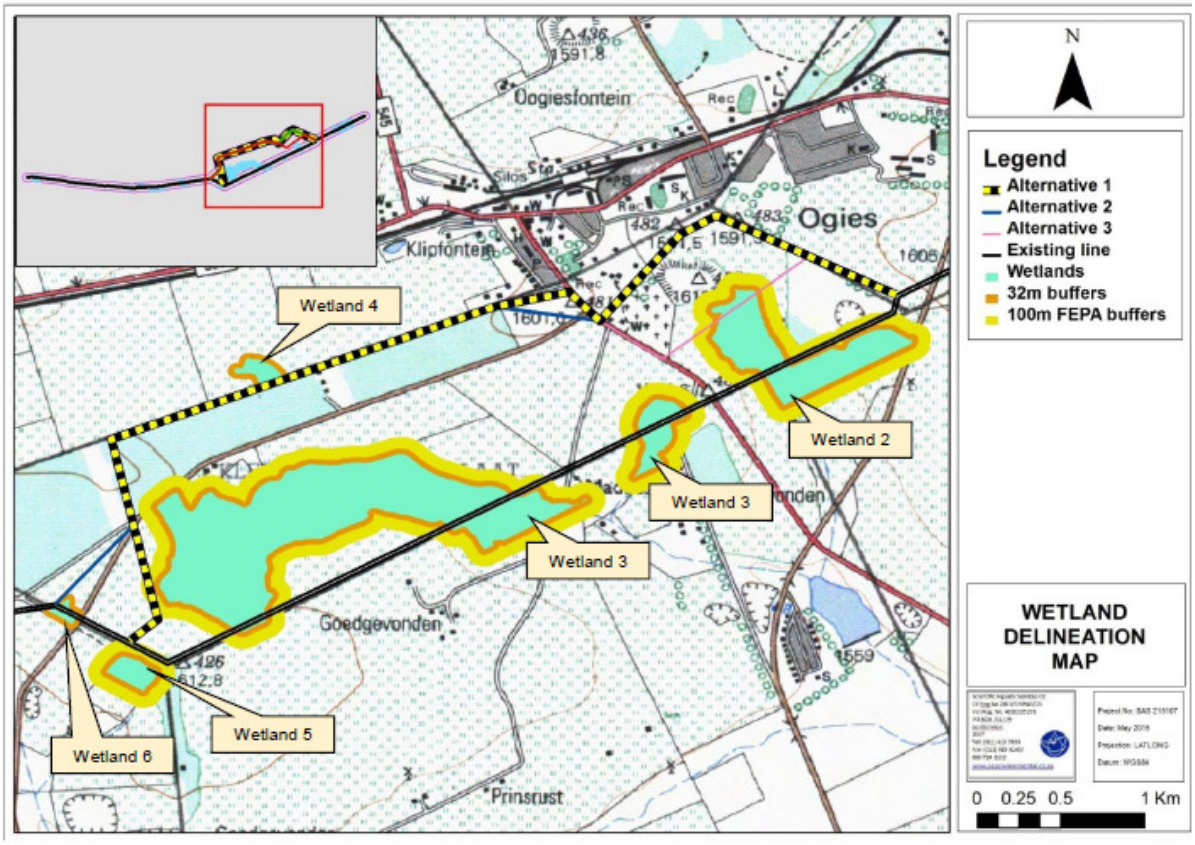

Figure 5B: Wetland and wetland buffer areas traversing the existing power line to be dismantled and the proposed new power line alignment alternatives, which may potentially be impacted by the proposed project. Wetlands 2 – 6 are indicated.

6. LAND USE CHARACTER OF SURROUNDING AREA

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

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

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

N/A

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

The GlencoreXstrata Mine is located within the 500 m radius but will not be impacted by the removal of the existing power lines. The removal of the existing line is to ensure that the future mining operations are not impacted as the power line is in the mining operational footprint, this removal and re-routing of the power lines is a strategic decision so as to ensure that the power supply to the area is not disrupted.

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**.

7. CULTURAL/HISTORICAL FEATURES

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

YES | NO | Uncertain

The following sites were documented near the existing portion of the line that will be dismantled:

Site No.	Description	Location
Site OG1 S26°03'29.53" E29°03'55.35"	The ruined remains (concrete, bricks) of a dwelling or dwellings.	The site is located within 50-80 m of the existing power line.
Site OG2 S26°03'26.55" E29°03'52.80"	The ruined remains (concrete, bricks) of a dwelling or dwellings probably farm workers housing and associated with Site OG1.	The site is located within 80-100 m of the existing power line.
Site OG3 S26°03'25.74" E29°03'51.92"	Dry-packed gabion structure associated with a water canal. Probably used as stormwater diversion and collection.	Not near the route.
Site OG8 S26°03'51.93" E29°03'22.73"	The location of the local Mosque. It is not older than 60 years but has social and religious significance.	The building will not be impacted upon during the proposed development or dismantling activity as it is already fenced.
Site OG9 S26°03'53.99" E29°03'22.09"	The ruined remains of what used to be Madrassa Village, associated with the Mosque and identified in 2007 by a heritage study conducted by de Jongh, *et al* as historically significant.	The site is located well to the south of the existing power line and will probably not be impacted upon.
Site OG11 S26°04'39.69" E29°01'38.53"	The ruined remains of a farmstead.	The ruin is located some distance (150-200 m) south-east of the existing power line and will not be affected by the proposed dismantling.
Site OG12 S26°04'37.22" E29°01'41.80"	According to the reports of van Schalkwyk (2002) and de Jongh *et. al* (2007) three graves are located here. They could not be located however it is possible that they were relocated as recommended by the 2007 report. The graveyard is associated with the ruin at site OG 11.	The site is located some distance (150 m) south-west of the existing power line and will not be affected by the proposed dismantling.

Refer to **Appendix D2** for the Heritage Report.

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:

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

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

8. SOCIO-ECONOMIC CHARACTER

a) Local Municipality

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

Level of unemployment:

The unemployment rate for Emalahleni is 27.3% which has decreased by 11.1% since 2001 (38.4%) (Emalahleni LM Draft IDP 2012/2013). Unemployment rate for females was 37.1% and males, 20.8% with a youth unemployment rate of 36.0% in 2011.

Economic profile of local municipality:

The municipality is expected to record a GDP growth of 3.3% per annum over the period 2011-2016. The historic growth rate is 2.8% per annum for the period 1996-2011. Emalahleni contributed 17.9% to the provincial economy in 2011. The leading industry in terms of employment is trade with 21.1%, followed by mining 20.6% and manufacturing 14.2%. Since 2001 there has been an increasing role/share of mining, construction, community services & finance as employer and a decrease in the role/share of trade, manufacturing, transport, agriculture, private households and utility.

Level of education:

EDUCATION INDICATORS	Census 2001	Census 2011	Better (+) or worse (-) than Nkangala	Better (+) or worse (-) than province	Ranking: best (1) – worst (18)
Number of people 20+ with no schooling	24 908	14 993			11
Population 20+ with no schooling (%)	14.5%	5.8%	(+) (11.5%)	(+) (14.1%)	1
Population 20+ with matric & higher (%)	31.9%	45.3%	(+) (39.7%)	(+) (38.7%)	3
Functional literacy rate (%)	73.9%	86.0%	(+) (79.0%)	(+) (76.9%)	1

Source: Statistics South Africa, Census 2011

Table and description taken from the Emalahleni LM Draft IDP 2012/2013.
Best ranking of population 20+ with no schooling, 5.8% - 14 993 people (16.3% of Nkangala's number). Population 20+ with matric & higher 45.3% - third best of the 18 municipal areas. Functional literacy rate (15+ with grade 7+) - improving and highest in province. Matric pass rate in 2012 at 72.0% - 7th highest in province – declined the last year and university/degree admission rate low at only 19.0% in 2012.

b) Socio-economic value of the activity

What is the expected capital value of the activity on completion?	R55000000	
What is the expected yearly income that will be generated by or as a result of the activity?	Unknown at this stage	
Will the activity contribute to service infrastructure?	YES	NO
Is the activity a public amenity?	YES	NO
How many new employment opportunities will be created in the development and construction phase of the activity/ies?	Unknown at this stage	
What is the expected value of the employment opportunities during the development and construction phase?	Unknown at this stage	
What percentage of this will accrue to previously disadvantaged individuals?	Unknown at this stage	
How many permanent new employment opportunities will be created during the operational phase of the activity?	Unknown at this stage	
What is the expected current value of the employment opportunities during the first 10 years?	Unknown at this stage	
What percentage of this will accrue to previously disadvantaged individuals?	Unknown at this stage	

9. BIODIVERSITY

Please note: The Department may request specialist input/studies depending on the nature of the biodiversity occurring on the site and potential impact(s) of the proposed activity/ies. To assist with the identification of the biodiversity occurring on site and the ecosystem status consult http://bgis.sanbi.org or BGIShelp@sanbi.org. Information is also available on compact disc (cd) from the Biodiversity-GIS Unit, Ph (021) 799 8698. This information may be updated from time to time and it is the applicant/

EAP's responsibility to ensure that the latest version is used. A map of the relevant biodiversity information (including an indication of the habitat conditions as per (b) below) and must be provided as an overlay map to the property/site plan as **Appendix A**[2] to this report.

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

Systematic Biodiversity Planning Category				**If CBA or ESA, indicate the reason(s) for its selection in biodiversity plan**
Critical Biodiversity Area (CBA)	Ecological Support Area (ESA)	Other Natural Area (ONA)	No Natural Area Remaining (NNR)	The portion of the Grootpan-Brakfontein that will be dismantled, traverses modified, modified – old lands and other natural areas according to the MBSP (2013) – Figure 6. CBA wetlands are also traversed by the existing power line that will be dismantled (refer to Figure 7). No ESA wetlands are traversed by the portion of the exiting line that will be dismantled (Figure 8).

[2] Appendix D contains specialist reports, therefore maps relevant to Biodiversity is attached as Appendix A.

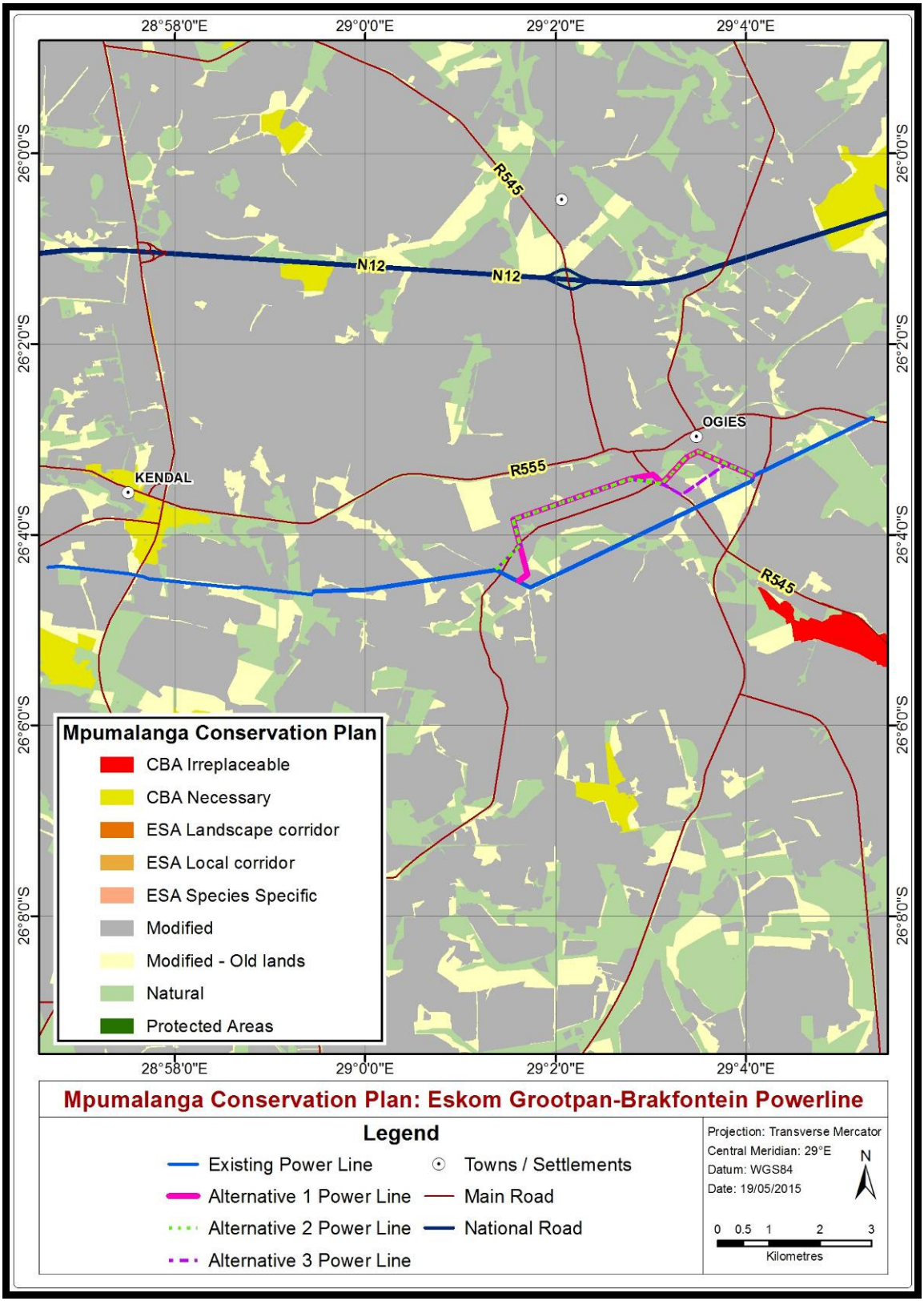

Figure 6: Mpumalanga Biodiversity Sector Plan (MBSP) for the proposed project

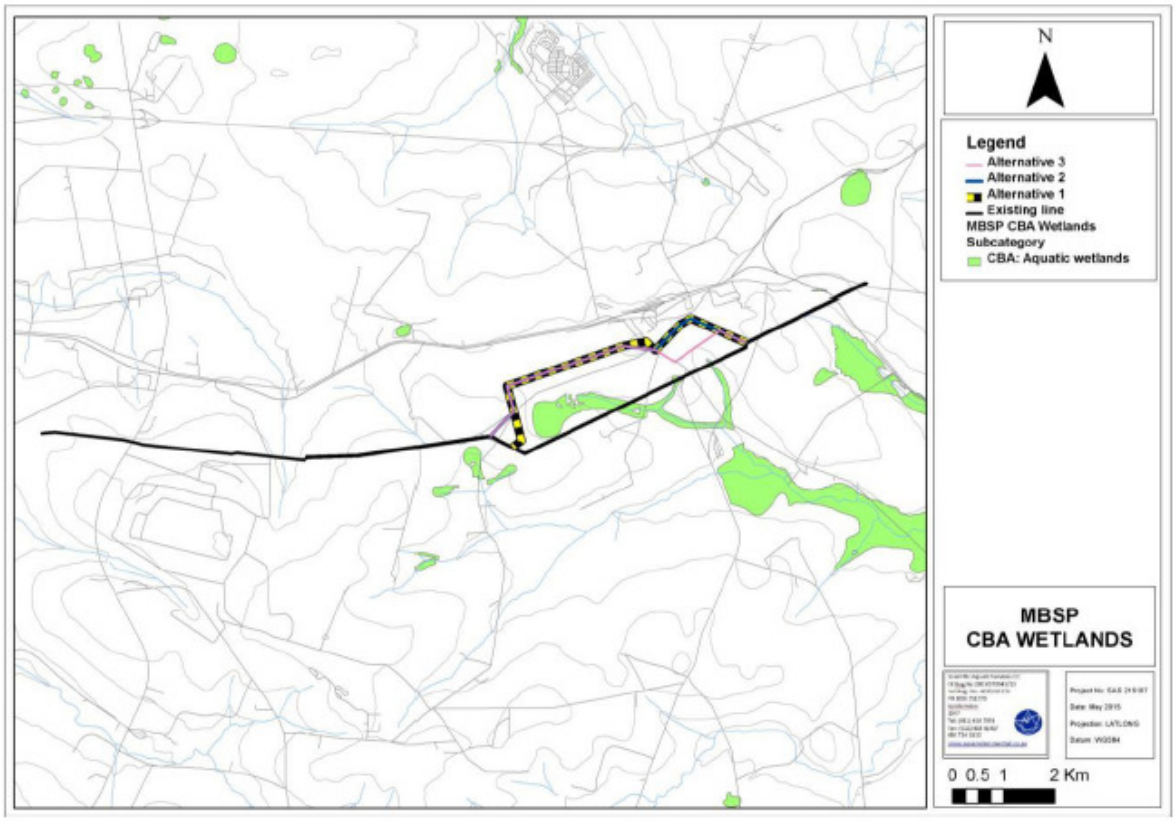

Figure 7: Mpumalanga Biodiversity Sector Plan (MBSP) CBA Wetlands

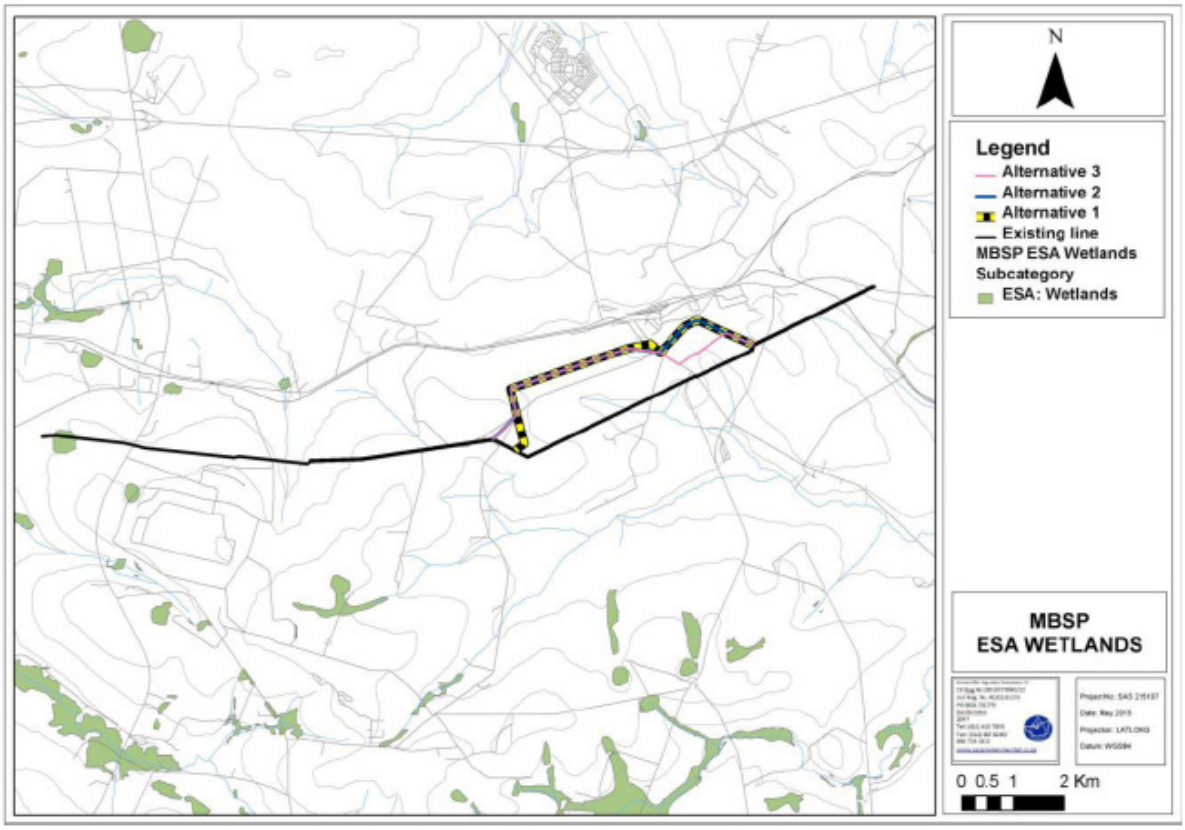

Figure 8: Mpumalanga Biodiversity Sector Plan (MBSP) ESA Wetlands

b) Indicate and describe the habitat condition on site

Habitat Condition	Percentage of habitat condition class (adding up to 100%)	Description and additional Comments and Observations (including additional insight into condition, e.g. poor land management practises, presence of quarries, grazing, harvesting regimes etc).
Natural	0%	
Near Natural (includes areas with low to moderate level of alien invasive plants)	<5%	Remnant patches of moist grassland within the broad un-channelled valley bottom wetlands. Used for livestock grazing activities. Thatch and traditional medicinal plant harvesting. Medium-low levels of alien invasive vegetation.
Degraded (includes areas heavily invaded by alien plants)	<5%	Heavily overgrazed or degraded grassland patches dominated by *Imperata cylindrica*. Occur within current Eskom servitude.
Transformed (includes cultivation, dams, urban, plantation, roads, etc)	90%	Large sections of the alignment are situated within transformed or secondary succession *Hyparrhenia hirta* grasslands. The grasslands adjacent to the mining and intensive agricultural areas are heavily transformed and degraded and dominate by pioneer weedy plant species. Large areas transformed by extensive agricultural (maze, soya beans) and current and old coal mining activities. Extensive alien invasive vegetation as well as alien plantations or woodlots.

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 Endangered Vulnerable Least Threatened	Wetland (including rivers, depressions, channelled and unchanneled wetlands, flats, seeps, pans, and artificial wetlands)			Estuary		Coastline	
		YES	NO	UNSURE	YES	NO	YES	NO

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

Vegetation Type:

Eastern Highveld Grasslands (Gm12):

The majority of Eastern Highveld Grassland along and surrounding the alignments has been completely

transformed due to the adjacent agricultural and mining activities in the area and are dominated by Black Jacks (*Bidens pilosa*), Khaki Bush (*Tagetes minuta*) and Cosmos (*Cosmos bipinnatus*). Large portions adjacent to the alignments have been historically and currently utilised for intensive irrigated agricultural activities. Large mono-cultured maze lands, soya beans and planted grass pastures were observed. The remnant patches of open grassland round the Grootpan-Brakfontein alignments are dominated by *Aristida congetsta* and *Aristida juncifromis subsp. galpinii, Cynodon dactylon, Eragrostis curvula* as well as *Hyparrhenia hirta* and *Heteropogon contortus*. No low-lying rocky outcrops were observed along the alignments during the brief field survey. The majority of tree species found along the alignments are exotics (Oaks, *Quercus sp*.) as well as alien invasive species such as *Eucalyptus grandis*, *Eucalyptus camaldulensis*, *Acacia mearnsii*, *Acacia dealbata*, *Salyx babylonica, Populus alba, Populus x casnescens*). While disturbed grasslands have evidently been impacted on my various anthropogenic disturbances, these areas are still considered to have some ecological value, albeit limited. This is mostly due to the role of these areas providing habitat for remaining faunal species.

The majority of the existing Grootpan-Brakfontein power line is situated within Eastern Highveld Grasslands in various stages of transformation and degradation. Large sections of the alignment are situated within transformed or secondary succession *Hyparrhenia hirta* grasslands. The grasslands adjacent to the mining and intensive agricultural areas are heavily transformed and degraded and dominated by pioneer weedy plant species.

A single orange listed 'Declining' African Potato (*Hypoxis hemerocallidea*) was observed under the existing Grootpan-Brakfontein servitude. Low numbers are expected due to high levels of medicinal plant harvesting within the remaining open grasslands. Suitable habitat occurs within the existing power line servitude for *Crinum bulbispermum*, *Crinum macowanii* and *Eucomis autumnalis*. None were observed during the brief site visit and this section of the power line is remaining and not been removed; so no further impact should occur within this sensitive wetland habitat.

The avifaunal specialist consulted with the Endangered Wildlife Trust (EWT) regarding the presence of the African Grass Owl on or around this site. The African Grass Owl is listed as Vulnerable by Taylor (2014) but is not recorded by SABAP 1 or 2. There is one record of occurrence reported by the EWT occurring 2 km south east of Ogies town centre. This is within 1 km of the proposed new line and within 600 m of the existing line. A single Lesser Flamingo was observed at Grootpan as well as several Red-Knobbed Coots.

No sensitive or endangered mammals were recorded within the study area during the field survey. No threatened reptile species have been recorded for the 2629 AA QDGC (SARCA, 2014) or are likely to occur within the existing alignment.

One threatened amphibian species namely the Giant Bullfrog (*Pyxicephalus adspersus*) has been recorded in the 2629AA QDGC according to FrogMAP. No major Giant Bullfrogs populations are expected from the existing power line servitude or immediate surrounding areas due to extensive habitat transformation (mining and agricultural activities; major road networks bisecting foraging and breeding habitats) as well as degradation (massive deterioration in surface and groundwater quality).

Palustrine Wetland Habitat:
The current Grootpan-Brakfontein alignments bisect and run adjacent to seasonally inundated broad un-channelled and channelled valley bottom wetlands. The existing towers are situated within the seasonal wet zones of the valley bottom wetlands as well as the temporary wet zones of the adjacent moist grassland or seepage wetlands. Artificially created dams have been constructed within the valley bottom wetlands. The majority of the dams are seasonally inundated. The wetlands within the study

area are heavily impacted on by livestock grazing and drinking activities. Extensive overgrazing and trampling of the hygrophilous grass and sedge vegetation within the valley bottom wetlands as well as adjacent moist grassland results in the dominance of the dwarf shrub *Seriphium plumosum*. It has been shown that heavy grazing has a detrimental effect on the hydrological state of wetlands, these include: disruption of flow patterns by paths, gully erosion, silting up of pools, encroachment of marginal vegetation into the wetland area, etc. Large portions of the valley bottom wetlands have become heavily degraded due to adjacent agricultural activities and invaded by *Pennisetum clandestinum* as well as Pom Pom Weed (*Campuloclinium macrocephalum*). The adjacent coal mining activities adjacent to the existing lines have resulted in severe degradation and transformation of the valley bottom wetlands and adjacent moist grasslands or seepage wetlands.

Aquatic Ecosystems:

1. WET-Ecoservices:

The channelled valley bottom HGM Units (Wetlands 2 and 3) play the most important role in terms of sediment control, phosphate, nitrate and toxicant accumulation, as well as biodiversity maintenance. Both features have the potential to provide habitat for the threatened species *Tyto capensis* (Grass owl) and *Metisella meninx* (Marsh sylph) known to occur in the region, as well as for floral species of conservation concern, particularly *Crinum* spp. These features are less important in terms of socio-economic functioning, mainly due to their location and overall inaccessibility. The unchannelled valley bottom HGM Units for Wetlands 2 and 3 obtained overall ecosystem services scores of 1.7 and 1.9 respectively, indicating that the features provide intermediate levels of importance in terms of ecosystem services and function provision.

Wetlands 4 and 6 are isolated seep features, restricted in size, with no surface connections to larger drainage networks and surrounded by agricultural activities. These factor somewhat limits the ecological functioning and services provision of these features. As a result these features obtained an overall score of 1, indicating that this HGM Unit provide a moderately low level of ecoservices. As with the unchannelled valley bottom HGM Unit, the most important services provided by these features are toxicant, nitrate and sediment runoff, due to the location of these wetlands within fertilised agricultural areas. The isolated seep HGM Unit also play a role in erosion and sediment control.

In addition to nutrient assimilation, the seep HGM Unit associated with Wetland 5, is most important in providing habitat for floral and faunal species and in flood attenuation. This HGM Unit achieved an overall score of 1.7, indicating that the feature provide intermediate levels of importance in terms of ecosystem services and function provision.

2. WET-Health:

Level 1 Wet-Health assessments of the unchannelled valley bottom wetland and seep HGM Units was undertaken. Three modules, namely hydrology, geomorphology and vegetation, were assessed as a single unit for the unchannelled and valleyhead seep HGM Units, associated with both Wetlands 2 and 3, Wetland 4 and 6 and Wetland 5 respectively.

The overall score for Wetlands 2 and 3 which aggregates the scores for the three modules, namely hydrology, geomorphology and vegetation, was calculated using the formula as provided by the Wet-Health methodology. The overall score calculated to fall within Category C, which refers to a moderate change in ecosystem processes and with natural habitat remaining predominantly intact, although some loss have occurred.

Wetland 4 and 6 received overall low scores for both the hydrology and vegetation modules, placing both modules within Category D. This is largely due to encroaching agricultural activities surrounding these features and a high incidence of alien vegetation, which has replaced high levels of natural vegetation in the wetland.

The cumulative score achieved for Wetland 5 indicate the HGM Unit to fall within Category C, with all three modules assessed, also falling within Category C. Impacts on the hydrology of the HGM Unit include increased water inputs to the wetland system due to altered land uses within the catchment as well as excess runoff from surrounding access roads. The vegetation within the feature is relatively intact, however some alien floral species are present and vegetation structure has been altered through cutting and baling of grass, which decreases surface roughness. As with the wetland features within the region, sediment loads have been altered due to the presence of surrounding agricultural fields and mining activities.

3. Ecological Importance and Sensitivity (EIS)
EIS scores obtained for the wetland features show that Wetlands 2, 3 and 5 are all considered to fall within Category B (high), are considered to be ecologically important and sensitive and may be sensitive to flow and habitat modifications, while Wetlands 4 and 6 fall within Category C (moderate), indicating that despite historical and current disturbances to the wetland, the feature may nonetheless be of some ecologically importance on a localised scale.

4. Recommended Ecological Category (REC)
The REC for the wetland HGM Units within the study area was determined, taking into consideration the results of the wetland function and service provision, Wet-Health and EIS assessments. Although the wetland features have undergone some levels of transformation, overall Wetland 2, 3 and 5 are considered to provide intermediate levels of important ecosystem services and have high EIS scores. A REC Category C (moderately modified) was considered appropriate and assigned to these wetland features in order to ensure that present levels of ecological services and functioning of the features are maintained, while Wetlands 4 and 6 have been assigned REC Category D (largely modified). None of the wetland features present within the study area should therefore be permitted to deteriorate any further from their Present State and any development within the catchment of these features should be very strictly managed in order to prevent impacts on the wetland resources which will lead to a change in class of the wetland features.

5. Wetland Delineation
A 32 m buffer is considered adequate to conserve the integrity of wetlands identified during the field assessment and are indicated for all wetlands.

In the absence of a national protocol, a generic 100 m buffer, measured from the outside edge of the wetland, should be established around wetland FEPAs. This 100 m buffer is considered adequate from a water quality perspective in providing functional filtering capacity to the river or wetland, but may be refined based on biodiversity observations made during the field assessment. For the purposes of this assessment, a 100 m buffer is recommended and is indicated for the wetland FEPAs (Wetlands 1, 2, 3 and 5) – see Figures 9 and 10).

The dismantling of a portion of the existing line will require the direct crossing of Wetland 2, 3 and 6. Wetlands 2 and 3 are FEPAs. The 100 m FEPA buffer zone of Wetland 5 will also be encroached.

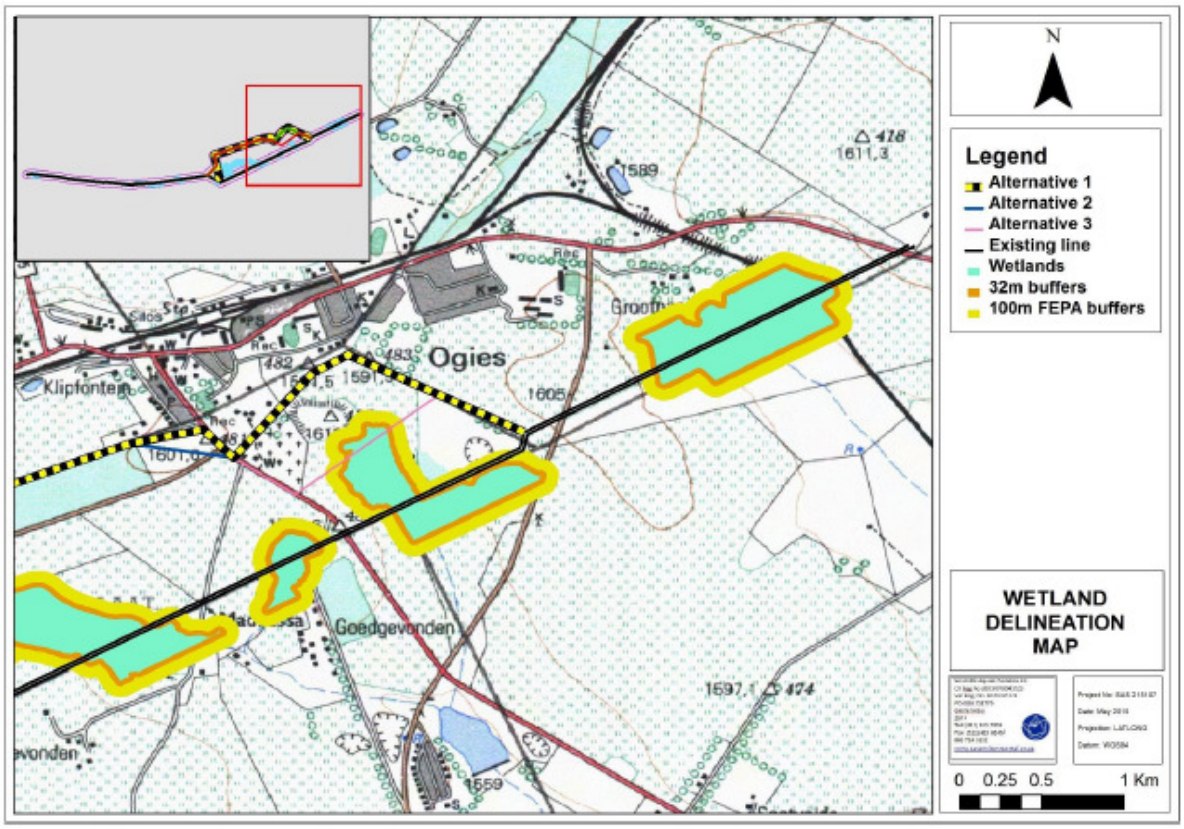

Figure 9: Eastern portion of the study area and the associated buffer zones

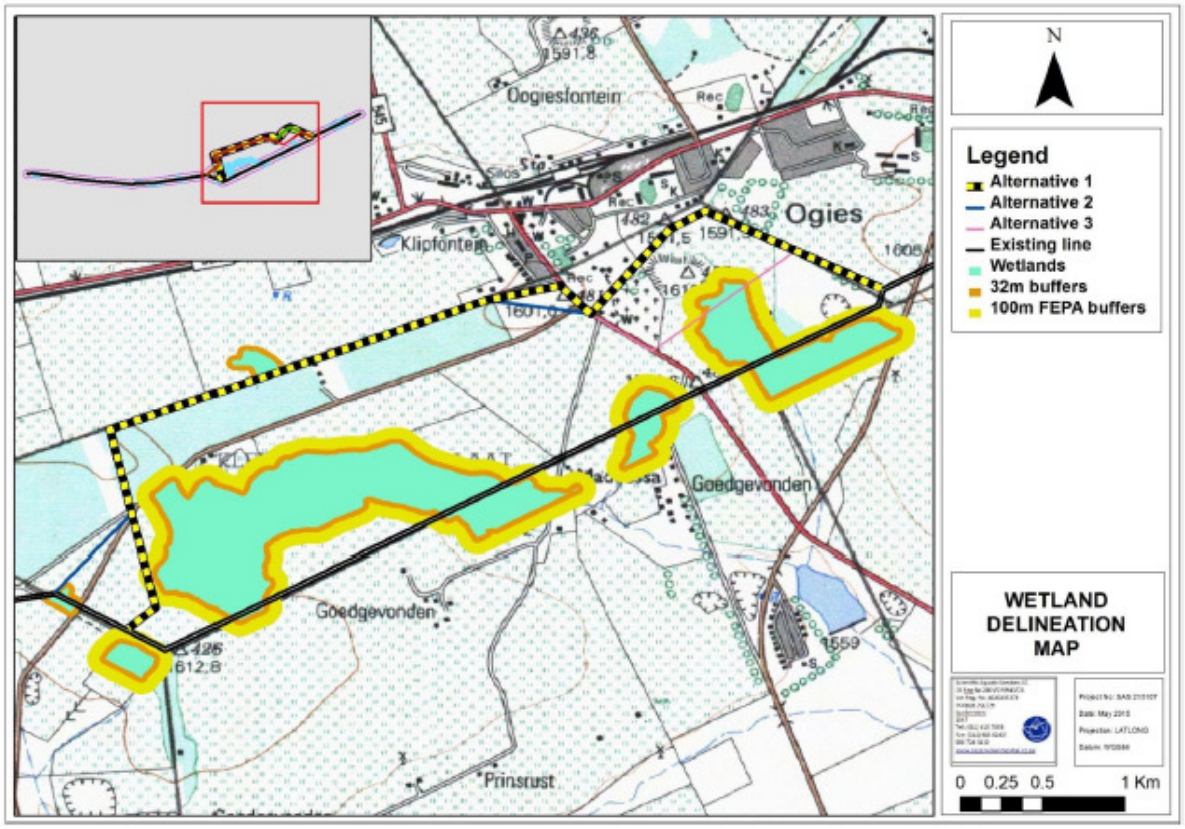

Figure 10: Central portion of the study area and the associated buffer zones

SECTION B: SITE/AREA/PROPERTY DESCRIPTION

Important notes:

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

Section B Copy No. (e.g. A): B	**New 88 kV Power Line Alternative 1 (preferred)**

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

6. Has a specialist been consulted to assist with the completion of this section? YES / **NO**

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

Property description/physical address:

Province	Mpumalanga
District Municipality	Nkangala District Municipality
Local Municipality	Emalahleni Local Municipality
Ward Number(s)	28 and 30
Farm name and number	Kleinzuikerboschplaat 5 IS
Portion number	Kleinzuikerboschplaat 5 IS: 0, 1
SG Code	T0IS00000000000500000 T0IS00000000000500001

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

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

10. GRADIENT OF THE SITE

Indicate the general gradient of the site.

Alternative S1:

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

Alternative S2 (if any):

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

Alternative S3 (if any):

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

11. LOCATION IN LANDSCAPE

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

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

12. GROUNDWATER, SOIL AND GEOLOGICAL STABILITY OF THE SITE

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

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

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

13. GROUNDCOVER

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

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

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

14. SURFACE WATER

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

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

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

Wetlands: (Appendix D1)

Figure 5A indicates all wetland features and associated buffer zones identified within a 2 km corridor surrounding the existing power line to be dismantled and the proposed power line alignment alternatives, while Figure 5B indicates all wetland features (Wetlands 2 – 6) and associated buffer zones traversing or located adjacent to the existing power line or proposed power line alignment. Of all wetland features indicated in Figure 5A, only Wetlands 2 – 6 as indicated in Figure 5B may potentially be impacted by the proposed project. Should additional route alignment alternatives not indicated in this report be considered, all wetland features not discussed in detail in the Wetland Report should be assessed and verified.

Within all the wetland features identified within the study area, two predominant HGM Units were identified, namely unchannelled valley bottom HGM Units and seep HGM Units, comprising of connected valleyhead seeps and hillslope seeps adjoining the unchannelled valley bottom HGM Units (refer to Table 1).

Alternative 1 encroaches into the 32 m buffer zone of Wetland 4 and within the 100 m FEPA buffer zones of Wetland 3 (along the western portion) and Wetland 5 (refer to Figure 5).

15. LAND USE CHARACTER OF SURROUNDING AREA

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

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

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

N/A

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

The GlencoreXstrata Mine is located within the 500 m radius but will not be impacted by the removal of the existing power lines. The removal of the existing line is to ensure that the future mining operations are not impacted as the power line is in the mining operational footprint, this removal and re-routing of the power lines is a strategic decision so as to ensure that the power supply to the area is not disrupted.

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:

There is a Caltex filling Station that is found along the R545 that is within the 500 m radius, but the project does not have any impact on the filling station.

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

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

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

16. CULTURAL/HISTORICAL FEATURES

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

The following sites were documented near Alternative 1:

Site No.	Description	Location
Site OG3 S26°03'25.74" E29°03'51.92"	Dry-packed gabion structure associated with a water canal. Probably used as stormwater diversion and collection.	Not near the route.
Site OG5 S26°03'25.41" E29°03'09.81"	The foundation remains of a rectangular building.	The ruin is located a few approximately 30 m from Alternative 1.
Site OG6 S26°03'27.33" E29°03'09.45"	The ruined remains of a rectangular structure possibly a house or shop.	The ruin will probably not be impacted upon during the proposed development activity as it is located in a radius of approximately 80 m of the junction of the planned new power lines (Alternative 1 – 3).
Site OG7 S26°03'30.32" E29°03'11.37"	Historic building probably a house, located on the eastern side of the R545 road to Bethal, now used as a car repair centre and amenities shop.	The building is probably older than 60 years but regarded as being of low to medium heritage significance. It will however not be impacted upon by the power line alignments (Alternatives 1 - 3).
Site OG10 S26°04'08.16" E29°01'33.20"	At least 8 individual graves are located here. Most of them are not marked by headstones but three of them do have marked headstones albeit most of the written text is weathered and unclear.	They are located some 150 m west of the proposed Alternative 1. Impact on the grave site is not envisaged as they are located far from the planned construction route.
Site OG13 S26°03'19.29" E29°03'07.20"	This is a historic building in the form of a house The house is currently occupied. It is possible that the house was part of a previous farmstead complex.	The house will probably not be impacted upon during the proposed development activity as it is located approximately 200 m north and north east of the junction of the planned new power lines (Alternatives 1 - 3).
Site OG15 S26°03'17.23" E29°02'11.22"	The ruined remains of a farmstead and outbuildings.	The site will not be impacted upon by the proposed construction activity as it is located approximately 550 m to the north of the new proposed power line.

Refer to **Appendix D2** for the Heritage Report.

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:

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

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

17. SOCIO-ECONOMIC CHARACTER

a) Local Municipality

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

Level of unemployment:

The unemployment rate for Emalahleni is 27.3% which has decreased by 11.1% since 2001 (38.4%) (Emalahleni LM Draft IDP 2012/2013). Unemployment rate for females was 37.1% and males, 20.8% with a youth unemployment rate of 36.0% in 2011.

Economic profile of local municipality:

The municipality is expected to record a GDP growth of 3.3% per annum over the period 2011-2016. The historic growth rate is 2.8% per annum for the period 1996-2011. Emalahleni contributed 17.9% to the provincial economy in 2011. The leading industry in terms of employment is trade with 21.1%, followed by mining 20.6% and manufacturing 14.2%. Since 2001 there has been an increasing role/share of mining, construction, community services & finance as employer and a decrease in the role/share of trade, manufacturing, transport, agriculture, private households and utility.

Level of education:

EDUCATION INDICATORS	Census 2001	Census 2011	Better (+) or worse (-) than Nkangala	Better (+) or worse (-) than province	Ranking: best (1) – worst (18)
Number of people 20+ with no schooling	24 908	14 993			11
Population 20+ with no schooling (%)	14.5%	5.8%	(+) (11.5%)	(+) (14.1%)	1
Population 20+ with matric & higher (%)	31.9%	45.3%	(+) (39.7%)	(+) (38.7%)	3
Functional literacy rate (%)	73.9%	86.0%	(+) (79.0%)	(+) (76.9%)	1

Source: Statistics South Africa, Census 2011

Table and description taken from the Emalahleni LM Draft IDP 2012/2013.
Best ranking of population 20+ with no schooling, 5.8% - 14 993 people (16.3% of Nkangala's number). Population 20+ with matric & higher 45.3% - third best of the 18 municipal areas. Functional literacy rate (15+ with grade 7+) - improving and highest in province. Matric pass rate in 2012 at 72.0% - 7th highest in province – declined the last year and university/degree admission rate low at only 19.0% in 2012.

b) Socio-economic value of the activity

What is the expected capital value of the activity on completion?	R55000000	
What is the expected yearly income that will be generated by or as a result of the activity?	Unknown at this stage	
Will the activity contribute to service infrastructure?	YES	NO
Is the activity a public amenity?	YES	NO
How many new employment opportunities will be created in the development and construction phase of the activity/ies?	Unknown at this stage	
What is the expected value of the employment opportunities during the development and construction phase?	Unknown at this stage	
What percentage of this will accrue to previously disadvantaged individuals?	Unknown at this stage	
How many permanent new employment opportunities will be created during the operational phase of the activity?	Unknown at this stage	
What is the expected current value of the employment opportunities during the first 10 years?	Unknown at this stage	
What percentage of this will accrue to previously disadvantaged individuals?	Unknown at this stage	

18. BIODIVERSITY

Please note: The Department may request specialist input/studies depending on the nature of the biodiversity occurring on the site and potential impact(s) of the proposed activity/ies. To assist with the identification of the biodiversity occurring on site and the ecosystem status consult http://bgis.sanbi.org or BGIShelp@sanbi.org. Information is also available on compact disc (cd) from the Biodiversity-GIS Unit, Ph (021) 799 8698. This information may be updated from time to time and it is the applicant/ EAP's responsibility to ensure that the latest version is used. A map of the relevant biodiversity information (including an indication of the habitat conditions as per (b) below) and must be provided as an overlay map to the property/site plan as **Appendix A**[3] to this report.

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

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

[3] Appendix D contains specialist reports, therefore maps relevant to Biodiversity is attached as Appendix A.

Critical Biodiversity Area (CBA)	Ecological Support Area (ESA)	Other Natural Area (ONA)	No Natural Area Remaining (NNR)	Alternative 1 traverses modified, modified – old lands and other natural areas according to the MBSP (2013) – Figure 6. No CBA or ESA wetlands are traversed by Alternative 1 (refer to Figure 7 and 8).

b) Indicate and describe the habitat condition on site

Habitat Condition	Percentage of habitat condition class (adding up to 100%)	Description and additional Comments and Observations (including additional insight into condition, e.g. poor land management practises, presence of quarries, grazing, harvesting regimes etc).
Natural	0%	
Near Natural (includes areas with low to moderate level of alien invasive plants)	0%	
Degraded (includes areas heavily invaded by alien plants)	5%	Heavily degraded patches of Eastern Highveld Grassland occur adjacent to the proposed new power line alignment.
Transformed (includes cultivation, dams, urban, plantation, roads, etc)	95%	The majority of the proposed alignment bisects transformed secondary succession grasslands dominated by anthropogenic weedy grass species such as *Hyparrhenia hirta, Heteropogon contortus, Aristida congetsa, Cynodon dactylon* and the exotic invasive *Pennisetum clandestinum.*

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:	Critical Endangered Vulnerable Least	Wetland (including rivers, depressions, channelled and unchanneled wetlands, flats, seeps pans, and artificial wetlands)	Estuary	Coastline

Terrestrial Ecosystems		Aquatic Ecosystems						
Biodiversity Act (Act No. 10 of 2004)	Threatened	YES	NO*	UNSURE	YES	NO	YES	NO

***** valley bottom wetlands occur adjacent to the proposed alignment.

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)

Vegetation Type:

Eastern Highveld Grasslands (Gm12):

The majority of Eastern Highveld Grassland along and surrounding the Alignment 1 have been completely transformed due to the adjacent agricultural and mining activities in the area and are dominated by Black Jacks (*Bidens pilosa*), Khaki Bush (*Tagetes minuta*) and Cosmos (*Cosmos bipinnatus*). The majority of tree species found along the alignments are exotics (Oaks, *Quercus sp.*) as well as alien invasive species such as *Eucalyptus grandis*, *Eucalyptus camaldulensis*, *Acacia mearnsii*, *Acacia dealbata*, *Salyx babylonica, Populus alba, Populus x casnescens*). Patches of secondary grasslands (old agricultural lands) are situated along the proposed new 7km 88kV alignment. While disturbed grasslands have evidently been impacted on my various anthropogenic disturbances, these areas are still considered to have some ecological value, albeit limited. This is mostly due to the role of these areas providing habitat for remaining faunal species.

No Red Listed, rare or threatened plant species were observed within the transformed grasslands within were recorded or likely to occur within these transformed vegetation units along and adjacent to Alternative 1. Afforested plantations of Blue-gum (*Eucalyptus* spp.) trees were observed in the study area, particularly near the human settlements of Ogies. All Alternatives (1 – 3) run adjacent to a *Eucalyptus* plantation to the west of Ogies.

In terms of micro-habitats available for birds on site, the agricultural fields and *Eucalyptus* plantations are the only attractive micro-habitat, and will attract primarily non-Red List species. The extent to which Red List species will frequent this area is relatively unknown, but in the avifaunal specialist's opinion, the likelihood of either large numbers or frequent visits to the site by Red List species is low.

No sensitive or endangered mammals were recorded within the study area during the field survey. No threatened reptile species have been recorded for the 2629 AA QDGC (SARCA, 2014) or are likely to occur within the existing alignment.

One threatened amphibian species namely the Giant Bullfrog (*Pyxicephalus adspersus*) has been recorded in the 2629AA QDGC according to FrogMAP. No major Giant Bullfrogs populations are expected from the existing power line servitude or immediate surrounding areas due to extensive habitat transformation (mining and agricultural activities; major road networks bisecting foraging and breeding habitats) as well as degradation (massive deterioration in surface and groundwater quality).

Riparian Vegetation:

The vegetation component associated with wetland features, has undergone some transformation over a number of years, as a result of historical agricultural practices which have disturbed the soil profile, resulting in a proliferation of alien vegetation species along the wetland boundaries. Large portions of the valley bottom wetlands have become heavily degraded due to adjacent agricultural activities and

invaded by *Pennisetum clandestinum as* well as Pom Pom Weed (*Campuloclinium macrocephalum*).

Aquatic Ecosystems:

1. WET-Ecoservices:

The channelled valley bottom HGM Units (Wetlands 2 and 3) play the most important role in terms of sediment control, phosphate, nitrate and toxicant accumulation, as well as biodiversity maintenance. Both features have the potential to provide habitat for the threatened species *Tyto capensis* (Grass owl) and *Metisella meninx* (Marsh sylph) known to occur in the region, as well as for floral species of conservation concern, particularly *Crinum* spp. These features are less important in terms of socio-economic functioning, mainly due to their location and overall inaccessibility. The unchannelled valley bottom HGM Units for Wetlands 2 and 3 obtained overall ecosystem services scores of 1.7 and 1.9 respectively, indicating that the features provide intermediate levels of importance in terms of ecosystem services and function provision.

Wetlands 4 and 6 are isolated seep features, restricted in size, with no surface connections to larger drainage networks and surrounded by agricultural activities. These factor somewhat limits the ecological functioning and services provision of these features. As a result these features obtained an overall score of 1, indicating that this HGM Unit provide moderately low level of ecoservices. As with the unchannelled valley bottom HGM Unit, the most important services provided by these features are toxicant, nitrate and sediment runoff, due to the location of these wetlands within fertilised agricultural areas. The isolated seep HGM Unit also play a role in erosion and sediment control.

In addition to nutrient assimilation, the seep HGM Unit associated with Wetland 5, is most important in providing habitat for floral and faunal species and in flood attenuation. This HGM Unit achieved an overall score of 1.7, indicating that the feature provide intermediate levels of importance in terms of ecosystem services and function provision.

WET-Health:

Level 1 Wet-Health assessments of the unchannelled valley bottom wetland and seep HGM Units was undertaken. Three modules, namely hydrology, geomorphology and vegetation, were assessed as a single unit for the unchannelled and valleyhead seep HGM Units, associated with both Wetlands 2 and 3, Wetland 4 and 6 and Wetland 5 respectively.

The overall score for Wetlands 2 and 3 which aggregates the scores for the three modules, namely hydrology, geomorphology and vegetation, was calculated using the formula as provided by the Wet-Health methodology. The overall score calculated to fall within Category C, which refers to a moderate change in ecosystem processes and with natural habitat remaining predominantly intact, although some loss have occurred.

Wetland 4 and 6 received overall low scores for both the hydrology and vegetation modules, placing both modules within Category D. This is largely due to encroaching agricultural activities surrounding these features and a high incidence of alien vegetation, which has replaced high levels of natural vegetation in the wetland.

The cumulative score achieved for Wetland 5 indicate the HGM Unit to fall within Category C, with all three modules assessed, also falling within Category C. Impacts on the hydrology of the HGM Unit include increased water inputs to the wetland system due to altered land uses within the catchment as

well as excess runoff from surrounding access roads.

The vegetation within the feature is relatively intact, however some alien floral species are present and vegetation structure has been altered through cutting and baling of grass, which decreases surface roughness. As with the wetland features within the region, sediment loads have been altered due to the presence of surrounding agricultural fields and mining activities.

3. Ecological Importance and Sensitivity (EIS)
EIS scores obtained for the wetland features show that Wetlands 2, 3 and 5 are all considered to fall within Category B (high), are considered to be ecologically important and sensitive and may be sensitive to flow and habitat modifications, while Wetlands 4 and 6 fall within Category C (moderate), indicating that despite historical and current disturbances to the wetland, the feature may nonetheless be of some ecologically importance on a localised scale.

4. Recommended Ecological Category (REC)
The REC for the wetland HGM Units within the study area was determined, taking into consideration the results of the wetland function and service provision, Wet-Health and EIS assessments. Although the wetland features have undergone some levels of transformation, overall Wetland 2, 3 and 5 are considered to provide intermediate levels of important ecosystem services and have high EIS scores. A REC Category C (moderately modified) was considered appropriate and assigned to these wetland features in order to ensure that present levels of ecological services and functioning of the features are maintained, while Wetlands 4 and 6 have been assigned REC Category D (largely modified). None of the wetland features present within the study area should therefore be permitted to deteriorate any further from their Present State and any development within the catchment of these features should be very strictly managed in order to prevent impacts on the wetland resources which will lead to a change in class of the wetland features.

5. Wetland Delineation
A 32 m buffer is considered adequate to conserve the integrity of wetlands identified during the field assessment and are indicated for all wetlands.

In the absence of a national protocol, a generic 100 m buffer, measured from the outside edge of the wetland, should be established around wetland FEPAs. This 100 m buffer is considered adequate from a water quality perspective in providing functional filtering capacity to the river or wetland, but may be refined based on biodiversity observations made during the field assessment. For the purposes of this assessment, a 100 m buffer is recommended and is indicated for the wetland FEPAs (Wetlands 1, 2, 3 and 5) – see Figures 7 and 8).

Alternative 1 encroaches into the 32 m buffer zone of Wetland 4 and within the 100 m FEPA buffer zones of Wetland 3 (along the western portion) and Wetland 5 (refer to Figure 5).

SECTION B: SITE/AREA/PROPERTY DESCRIPTION

Important notes:

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

Section B Copy No. (e.g. A): C	**New 88 kV Power Line Alternative 2**

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

9. Has a specialist been consulted to assist with the completion of this section? YES / **NO**

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

Property description/physical address:

Province	Mpumalanga
District Municipality	Nkangala District Municipality
Local Municipality	Emalahleni Local Municipality
Ward Number(s)	28 and 30
Farm name and number	Kleinzuikerboschplaat 5 IS
Portion number	Kleinzuikerboschplaat 5 IS: 0, 1
SG Code	T0IS00000000000500000 T0IS00000000000500001

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

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

19. 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

Alternative S2 (if any):

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

Alternative S3 (if any):

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

20. LOCATION IN LANDSCAPE

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

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

21. GROUNDWATER, SOIL AND GEOLOGICAL STABILITY OF THE SITE

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

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

If you are unsure about any of the above or if you are concerned that any of the above aspects may be an issue of concern in the application, an appropriate specialist should be appointed to assist in the completion of this section. Information in respect of the above will often be available as part of the

project information or at the planning sections of local authorities. Where it exists, the 1:50 000 scale Regional Geotechnical Maps prepared by the Council for Geo Science may also be consulted.

22. GROUNDCOVER

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

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

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

23. SURFACE WATER

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

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

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

Wetlands: (Appendix D1)

Figure 5A indicates all wetland features and associated buffer zones identified within a 2 km corridor surrounding the existing power line to be dismantled and the proposed power line alignment alternatives, while Figure 5B indicates all wetland features (Wetlands 2 – 6) and associated buffer zones traversing or located adjacent to the existing power line or proposed power line alignment. Of all wetland features indicated in Figure 5A, only Wetlands 2 – 6 as indicated in Figure 5B may potentially be impacted by the proposed project. Should additional route alignment alternatives not indicated in this report be considered, all wetland features not discussed in detail in the Wetland Report should be assessed and verified.

Within all the wetland features identified within the study area, two predominant HGM Units were identified, namely unchannelled valley bottom HGM Units and seep HGM Units, comprising of connected valleyhead seeps and hillslope seeps adjoining the unchannelled valley bottom HGM Units (refer to Table 1).

Alternative 2 encroaches into the 32 m buffer zones of Wetland 4 and Wetland 6, also in the vicinity of existing roads.

24. LAND USE CHARACTER OF SURROUNDING AREA

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

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

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

N/A

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

The GlencoreXstrata Mine is located within the 500 m radius but will not be impacted by the removal of the existing power lines. The removal of the existing line is to ensure that the future mining operations are not impacted as the power line is in the mining operational footprint, this removal and re-routing of the power lines is a strategic decision so as to ensure that the power supply to the area is not disrupted.

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:

There is a Caltex filling Station that is found along the R545 that is within the 500 m radius, but the project does not have any impact on the filling station.

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

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

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

25. CULTURAL/HISTORICAL FEATURES

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

The following sites were documented near Alternative 2:

Site No.	Description	Location
Site OG3 S26°03'25.74" E29°03'51.92"	Dry-packed gabion structure associated with a water canal. Probably used as stormwater diversion and collection.	Not near the route.
Site OG5 S26°03'25.41" E29°03'09.81"	The foundation remains of a rectangular building.	The ruin is located a few approximately 30 m from the proposed new power line route.
Site OG6 S26°03'27.33" E29°03'09.45"	The ruined remains of a rectangular structure possibly a house or shop.	The ruin will probably not be impacted upon during the proposed development activity as it is located in a radius of approximately 80 m of the junction of the planned new power lines (Alternative 1 – 3).
Site OG10 S26°04'08.16" E29°01'33.20"	At least 8 individual graves are located here. Most of them are not marked by headstones but three of them do have marked headstones albeit most of the written text is weathered and unclear.	They are located approximately 70 m north of planned Alternative 2. Impact on the grave site is not envisaged as they are located far from the planned construction routes.
Site OG13 S26°03'19.29" E29°03'07.20"	This is a historic building in the form of a house The house is currently occupied. It is possible that the house was part of a previous farmstead complex.	The house will probably not be impacted upon during the proposed development activity as it is located approximately 200 m north and north east of the junction of the planned new power lines (Alternatives 1 - 3).
Site OG15 S26°03'17.23" E29°02'11.22"	The ruined remains of a farmstead and outbuildings.	The site will not be impacted upon by the proposed construction activity as it is located approximately 550 m to the north of the new proposed power line.

Refer to **Appendix D2** for the Heritage Report.

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:

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

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

26. SOCIO-ECONOMIC CHARACTER

a) Local Municipality

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

Level of unemployment:

The unemployment rate for Emalahleni is 27.3% which has decreased by 11.1% since 2001 (38.4%) (Emalahleni LM Draft IDP 2012/2013). Unemployment rate for females was 37.1% and males, 20.8% with a youth unemployment rate of 36.0% in 2011.

Economic profile of local municipality:

The municipality is expected to record a GDP growth of 3.3% per annum over the period 2011-2016. The historic growth rate is 2.8% per annum for the period 1996-2011. Emalahleni contributed 17.9% to the provincial economy in 2011. The leading industry in terms of employment is trade with 21.1%, followed by mining 20.6% and manufacturing 14.2%. Since 2001 there has been an increasing role/share of mining, construction, community services & finance as employer and a decrease in the role/share of trade, manufacturing, transport, agriculture, private households and utility.

Level of education:

EDUCATION INDICATORS	Census 2001	Census 2011	Better (+) or worse (-) than Nkangala	Better (+) or worse (-) than province	Ranking: best (1) – worst (18)
Number of people 20+ with no schooling	24 908	14 993			11
Population 20+ with no schooling (%)	14.5%	5.8%	(+) (11.5%)	(+) (14.1%)	1
Population 20+ with matric & higher (%)	31.9%	45.3%	(+) (39.7%)	(+) (38.7%)	3
Functional literacy rate (%)	73.9%	86.0%	(+) (79.0%)	(+) (76.9%)	1

Source: Statistics South Africa, Census 2011

Table and description taken from the Emalahleni LM Draft IDP 2012/2013.
Best ranking of population 20+ with no schooling, 5.8% - 14 993 people (16.3% of Nkangala's number). Population 20+ with matric & higher 45.3% - third best of the 18 municipal areas. Functional literacy rate (15+ with grade 7+) - improving and highest in province. Matric pass rate in 2012 at 72.0% - 7th highest in province – declined the last year and university/degree admission rate low at only 19.0% in 2012.

b) Socio-economic value of the activity

What is the expected capital value of the activity on completion?	R55000000
What is the expected yearly income that will be generated by or as a result of the activity?	Unknown at this stage
Will the activity contribute to service infrastructure?	YES / NO

	YES	NO
Is the activity a public amenity?		
How many new employment opportunities will be created in the development and construction phase of the activity/ies?	Unknown at this stage	
What is the expected value of the employment opportunities during the development and construction phase?	Unknown at this stage	
What percentage of this will accrue to previously disadvantaged individuals?	Unknown at this stage	
How many permanent new employment opportunities will be created during the operational phase of the activity?	Unknown at this stage	
What is the expected current value of the employment opportunities during the first 10 years?	Unknown at this stage	
What percentage of this will accrue to previously disadvantaged individuals?	Unknown at this stage	

27. BIODIVERSITY

Please note: The Department may request specialist input/studies depending on the nature of the biodiversity occurring on the site and potential impact(s) of the proposed activity/ies. To assist with the identification of the biodiversity occurring on site and the ecosystem status consult http://bgis.sanbi.org or BGIShelp@sanbi.org. Information is also available on compact disc (cd) from the Biodiversity-GIS Unit, Ph (021) 799 8698. This information may be updated from time to time and it is the applicant/ EAP's responsibility to ensure that the latest version is used. A map of the relevant biodiversity information (including an indication of the habitat conditions as per (b) below) and must be provided as an overlay map to the property/site plan as **Appendix A**[4] to this report.

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

Systematic Biodiversity Planning Category				**If CBA or ESA, indicate the reason(s) for its selection in biodiversity plan**
Critical Biodiversity Area (CBA)	Ecological Support Area (ESA)	Other Natural Area (ONA)	No Natural Area Remaining (NNR)	Alternative 2 traverses modified, modified – old lands and other natural areas according to the MBSP (2013) – Figure 6. No CBA or ESA wetlands are traversed by Alternative 2 (refer to Figure 7 and 8).

[4] Appendix D contains specialist reports, therefore maps relevant to Biodiversity is attached as Appendix A.

b) Indicate and describe the habitat condition on site

Habitat Condition	Percentage of habitat condition class (adding up to 100%)	Description and additional Comments and Observations (including additional insight into condition, e.g. poor land management practises, presence of quarries, grazing, harvesting regimes etc).
Natural	0%	[redacted]
Near Natural (includes areas with low to moderate level of alien invasive plants)	0%	[redacted]
Degraded (includes areas heavily invaded by alien plants)	5%	Heavily degraded patches of Eastern Highveld Grassland occur adjacent to the proposed new power line alignment.
Transformed (includes cultivation, dams, urban, plantation, roads, etc)	95%	The majority of the proposed alignment bisects transformed secondary succession grasslands dominated by anthropogenic weedy grass species such as *Hyparrhenia hirta, Heteropogon contortus, Aristida congetsa, Cynodon dactylon* and the exotic invasive *Pennisetum clandestinum.*

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 Endangered Vulnerable Least Threatened	Wetland (including rivers, depressions, channelled and unchanneled wetlands, flats, seeps pans, and artificial wetlands)			Estuary		Coastline	
		YES	NO	UNSURE	YES	NO	YES	NO

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

Vegetation Type:

Eastern Highveld Grasslands (Gm12):

The majority of Eastern Highveld Grassland along and surrounding alignment have been completely transformed due to the adjacent agricultural and mining activities in the area and are dominated by Black Jacks (*Bidens pilosa*), Khaki Bush (*Tagetes minuta*) and Cosmos (*Cosmos bipinnatus*). The majority of tree species found along the alignments are exotics (Oaks, *Quercus sp.*) as well as alien

invasive species such as *Eucalyptus grandis*, *Eucalyptus camaldulensis*, *Acacia mearnsii*, *Acacia dealbata*, *Salyx babylonica, Populus alba, Populus x casnescens*). Patches of secondary grasslands (old agricultural lands) are situated along the proposed new 7km 88kV alignment. While disturbed grasslands have evidently been impacted on my various anthropogenic disturbances, these areas are still considered to have some ecological value, albeit limited. This is mostly due to the role of these areas providing habitat for remaining faunal species. No major wetland system occurs within the proposed alignments but a degraded valley bottom wetland occurs adjacent to the alignment. The remnant patches of open grassland around Alternative 2 are dominated by *Aristida congesta* and *Aristida juncifromis* subsp*. galpinii*, *Cynodon dactylon*, *Eragrostis curvula, Hyparrhenia hirta*, *Heteropogon contortus* and the exotic invasive *Pennisetum clandestinum.*

No Red Listed, rare or threatened plant species were observed within the transformed grasslands within were recorded or likely to occur within these transformed vegetation units along and adjacent to Alternative 2. Afforested plantations of Blue-gum (*Eucalyptus* spp.) trees were observed in the study area, particularly near the human settlements of Ogies. All Alternatives (1 – 3) run adjacent to a *Eucalyptus* plantation to the west of Ogies.

In terms of micro-habitats available for birds on site, the agricultural fields and *Eucalyptus* plantations are the only attractive micro-habitat, and will attract primarily non-Red List species. The extent to which Red List species will frequent this area is relatively unknown, but in the avifaunal specialist's opinion, the likelihood of either large numbers or frequent visits to the site by Red List species is low.

No sensitive or endangered mammals were recorded within the study area during the field survey. No threatened reptile species have been recorded for the 2629 AA QDGC (SARCA, 2014) or are likely to occur within the existing alignment.

One threatened amphibian species namely the Giant Bullfrog (*Pyxicephalus adspersus*) has been recorded in the 2629AA QDGC according to FrogMAP. No major Giant Bullfrogs populations are expected from the existing power line servitude or immediate surrounding areas due to extensive habitat transformation (mining and agricultural activities; major road networks bisecting foraging and breeding habitats) as well as degradation (massive deterioration in surface and groundwater quality).

Riparian Vegetation:

The vegetation component associated with wetland features, has undergone some transformation over a number of years, as a result of historical agricultural practices which have disturbed the soil profile, resulting in a proliferation of alien vegetation species along the wetland boundaries. Large portions of the valley bottom wetlands have become heavily degraded due to adjacent agricultural activities and invaded by *Pennisetum clandestinum as* well as Pom Pom Weed (*Campuloclinium macrocephalum*).

Aquatic Ecosystems:

1. WET-Ecoservices:

The channelled valley bottom HGM Units (Wetlands 2 and 3) play the most important role in terms of sediment control, phosphate, nitrate and toxicant accumulation, as well as biodiversity maintenance. Both features have the potential to provide habitat for the threatened species *Tyto capensis* (Grass owl) and *Metisella meninx* (Marsh sylph) known to occur in the region, as well as for floral species of conservation concern, particularly *Crinum* spp. These features are less important in terms of socio-economic functioning, mainly due to their location and overall inaccessibility. The unchannelled valley

bottom HGM Units for Wetlands 2 and 3 obtained overall ecosystem services scores of 1.7 and 1.9 respectively, indicating that the features provide intermediate levels of importance in terms of ecosystem services and function provision.

Wetlands 4 and 6 are isolated seep features, restricted in size, with no surface connections to larger drainage networks and surrounded by agricultural activities. These factor somewhat limits the ecological functioning and services provision of these features. As a result these features obtained an overall score of 1, indicating that this HGM Unit provide moderately low level of ecoservices. As with the unchannelled valley bottom HGM Unit, the most important services provided by these features are toxicant, nitrate and sediment runoff, due to the location of these wetlands within fertilised agricultural areas. The isolated seep HGM Unit also play a role in erosion and sediment control.

In addition to nutrient assimilation, the seep HGM Unit associated with Wetland 5, is most important in providing habitat for floral and faunal species and in flood attenuation. This HGM Unit achieved an overall score of 1.7, indicating that the feature provide intermediate levels of importance in terms of ecosystem services and function provision.

2. WET-Health:

Level 1 Wet-Health assessments of the unchannelled valley bottom wetland and seep HGM Units was undertaken. Three modules, namely hydrology, geomorphology and vegetation, were assessed as a single unit for the unchannelled and valleyhead seep HGM Units, associated with both Wetlands 2 and 3, Wetland 4 and 6 and Wetland 5 respectively.

The overall score for Wetlands 2 and 3 which aggregates the scores for the three modules, namely hydrology, geomorphology and vegetation, was calculated using the formula as provided by the Wet-Health methodology. The overall score calculated to fall within Category C, which refers to a moderate change in ecosystem processes and with natural habitat remaining predominantly intact, although some loss have occurred.

Wetland 4 and 6 received overall low scores for both the hydrology and vegetation modules, placing both modules within Category D. This is largely due to encroaching agricultural activities surrounding these features and a high incidence of alien vegetation, which has replaced high levels of natural vegetation in the wetland.

The cumulative score achieved for Wetland 5 indicate the HGM Unit to fall within Category C, with all three modules assessed, also falling within Category C. Impacts on the hydrology of the HGM Unit include increased water inputs to the wetland system due to altered land uses within the catchment as well as excess runoff from surrounding access roads. The vegetation within the feature is relatively intact, however some alien floral species are present and vegetation structure has been altered through cutting and baling of grass, which decreases surface roughness. As with the wetland features within the region, sediment loads have been altered due to the presence of surrounding agricultural fields and mining activities.

3. Ecological Importance and Sensitivity (EIS)

EIS scores obtained for the wetland features show that Wetlands 2, 3 and 5 are all considered to fall within Category B (high), are considered to be ecologically important and sensitive and may be sensitive to flow and habitat modifications, while Wetlands 4 and 6 fall within Category C (moderate), indicating that despite historical and current disturbances to the wetland, the feature may nonetheless be of some ecologically importance on a localised scale.

4. Recommended Ecological Category (REC)

The REC for the wetland HGM Units within the study area was determined, taking into consideration the results of the wetland function and service provision, Wet-Health and EIS assessments. Although the wetland features have undergone some levels of transformation, overall Wetland 2, 3 and 5 are considered to provide intermediate levels of important ecosystem services and have high EIS scores. A REC Category C (moderately modified) was considered appropriate and assigned to these wetland features in order to ensure that present levels of ecological services and functioning of the features are maintained, while Wetlands 4 and 6 have been assigned REC Category D (largely modified). None of the wetland features present within the study area should therefore be permitted to deteriorate any further from their Present State and any development within the catchment of these features should be very strictly managed in order to prevent impacts on the wetland resources which will lead to a change in class of the wetland features.

5. Wetland Delineation

A 32 m buffer is considered adequate to conserve the integrity of wetlands identified during the field assessment and are indicated for all wetlands.

In the absence of a national protocol, a generic 100 m buffer, measured from the outside edge of the wetland, should be established around wetland FEPAs. This 100 m buffer is considered adequate from a water quality perspective in providing functional filtering capacity to the river or wetland, but may be refined based on biodiversity observations made during the field assessment. For the purposes of this assessment, a 100 m buffer is recommended and is indicated for the wetland FEPAs (Wetlands 1, 2, 3 and 5) – see Figures 7 and 8).

Alternative 2 encroaches into the 32 m buffer zones of Wetland 4 and Wetland 6, also in the vicinity of existing roads.

SECTION B: SITE/AREA/PROPERTY DESCRIPTION

Important notes:

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

Section B Copy No. (e.g. A): D	New 88 kV Power Line Alternative 3

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

12. Has a specialist been consulted to assist with the completion of this section? YES NO

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

Property description/physical address:

Province	Mpumalanga
District Municipality	Nkangala District Municipality
Local Municipality	Emalahleni Local Municipality
Ward Number(s)	28 and 30
Farm name and number	Kleinzuikerboschplaat 5 IS
Portion number	Kleinzuikerboschplaat 5 IS: 0, 1
SG Code	T0IS00000000000500000 T0IS00000000000500001

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

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

Mining and 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

28. GRADIENT OF THE SITE

Indicate the general gradient of the site.

Alternative S1:

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

Alternative S2 (if any):

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

Alternative S3 (if any):

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

29. LOCATION IN LANDSCAPE

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

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

30. GROUNDWATER, SOIL AND GEOLOGICAL STABILITY OF THE SITE

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

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

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

31. GROUNDCOVER

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

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

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

32. SURFACE WATER

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

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

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

Wetlands: (Appendix D1)

Figure 5A indicates all wetland features and associated buffer zones identified within a 2 km corridor surrounding the existing power line to be dismantled and the proposed power line alignment alternatives, while Figure 5B indicates all wetland features (Wetlands 2 – 6) and associated buffer zones traversing or located adjacent to the existing power line or proposed power line alignment. Of all wetland features indicated in Figure 5A, only Wetlands 2 – 6 as indicated in Figure 5B may potentially be impacted by the proposed project. Should additional route alignment alternatives not indicated in this report be considered, all wetland features not discussed in detail in the Wetland Report should be assessed and verified.

Within all the wetland features identified within the study area, two predominant HGM Units were identified, namely unchannelled valley bottom HGM Units and seep HGM Units, comprising of connected valleyhead seeps and hillslope seeps adjoining the unchannelled valley bottom HGM Units (refer to Table 1).

Alternative 3 encroaches into the 32 m buffer zones of Wetlands 4 and 6 along existing roads, and also requires the direct crossing of Wetland 2, a wetland FEPA.

33. LAND USE CHARACTER OF SURROUNDING AREA

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

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

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

N/A

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

The GlencoreXstrata Mine is located within the 500m radius but will not be impacted by the removal of the existing power lines. The removal of the existing line is to ensure that the future mining operations are not impacted as the power line is in the mining operational footprint, this removal and re-routing of the power lines is a strategic decision so as to ensure that the power supply to the area is not disrupted.

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:

There is a Caltex filling Station that is found along the R545 that is within the 500m radius, but the project does not have any impact on the filling station

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

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

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

34. CULTURAL/HISTORICAL FEATURES

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

The following sites were documented near Alternative 3:

Site No.	Description	Location
Site OG4 S26°03'32.35" E29°03'18.50"	A large historic graveyard. There are more than 200 graves located here, some have headstones with the particulars of the deceased on them and others do not. The graves range from those who are under 60 years old and those who are older than 60 years. Names and surnames on the headstones suggest that this was the community graveyard of local mine and farm workers.	The graveyard will probably not be directly affected by the construction and dismantling activities associated with the proposed power line project, secondary impact however, is possible. The new planned Alternative 3, is located approximately 100 m south of the graveyard and across the road R545 to the west of the graveyard (west of the road). To minimise possible impact on the graves it is recommended that the graveyard be fenced and any surviving relatives be allowed access.
Site OG6 S26°03'27.33" E29°03'09.45"	The ruined remains of a rectangular structure possibly a house or shop.	The ruin will probably not be impacted upon during the proposed development activity as it is located in a radius of approximately 80 m of the junction of the planned new power line.
Site OG7 S26°03'30.32" E29°03'11.37"	Historic building probably a house, located on the eastern side of the R545 road to Bethal, now used as a car repair centre and amenities shop.	The building is probably older than 60 years but regarded as being of low to medium heritage significance. It will however not be impacted upon by the power line alignments (Alternatives 1 - 3).
Site OG15 S26°03'17.23" E29°02'11.22"	The ruined remains of a farmstead and outbuildings.	The site will not be impacted upon by the proposed construction activity as it is located approximately 550 m to the north of the new proposed power line.

Refer to **Appendix D2** for the Heritage Report.

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:

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

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

35. SOCIO-ECONOMIC CHARACTER

a) Local Municipality

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

Level of unemployment:

The unemployment rate for Emalahleni is 27.3% which has decreased by 11.1% since 2001 (38.4%) (Emalahleni LM Draft IDP 2012/2013). Unemployment rate for females was 37.1% and males, 20.8% with a youth unemployment rate of 36.0% in 2011.

Economic profile of local municipality:

The municipality is expected to record a GDP growth of 3.3% per annum over the period 2011-2016. The historic growth rate is 2.8% per annum for the period 1996-2011. Emalahleni contributed 17.9% to the provincial economy in 2011. The leading industry in terms of employment is trade with 21.1%, followed by mining 20.6% and manufacturing 14.2%. Since 2001 there has been an increasing role/share of mining, construction, community services & finance as employer and a decrease in the role/share of trade, manufacturing, transport, agriculture, private households and utility.

Level of education:

EDUCATION INDICATORS	Census 2001	Census 2011	Better (+) or worse (-) than Nkangala	Better (+) or worse (-) than province	Ranking: best (1) – worst (18)
Number of people 20+ with no schooling	24 908	14 993			11
Population 20+ with no schooling (%)	14.5%	5.8%	(+) (11.5%)	(+) (14.1%)	1
Population 20+ with matric & higher (%)	31.9%	45.3%	(+) (39.7%)	(+) (38.7%)	3
Functional literacy rate (%)	73.9%	86.0%	(+) (79.0%)	(+) (76.9%)	1

Source: Statistics South Africa, Census 2011

Table and description taken from the Emalahleni LM Draft IDP 2012/2013.
Best ranking of population 20+ with no schooling, 5.8% - 14 993 people (16.3% of Nkangala's number). Population 20+ with matric & higher 45.3% - third best of the 18 municipal areas. Functional literacy rate (15+ with grade 7+) - improving and highest in province. Matric pass rate in 2012 at 72.0% - 7th highest in province – declined the last year and university/degree admission rate low at only 19.0% in 2012.

b) Socio-economic value of the activity

What is the expected capital value of the activity on completion?	R55000000
What is the expected yearly income that will be generated by or as a result of the activity?	Unknown at this stage

Will the activity contribute to service infrastructure?	YES / **NO**
Is the activity a public amenity?	**YES** / NO
How many new employment opportunities will be created in the development and construction phase of the activity/ies?	Unknown at this stage
What is the expected value of the employment opportunities during the development and construction phase?	Unknown at this stage
What percentage of this will accrue to previously disadvantaged individuals?	Unknown at this stage
How many permanent new employment opportunities will be created during the operational phase of the activity?	Unknown at this stage
What is the expected current value of the employment opportunities during the first 10 years?	Unknown at this stage
What percentage of this will accrue to previously disadvantaged individuals?	Unknown at this stage

36. BIODIVERSITY

Please note: The Department may request specialist input/studies depending on the nature of the biodiversity occurring on the site and potential impact(s) of the proposed activity/ies. To assist with the identification of the biodiversity occurring on site and the ecosystem status consult http://bgis.sanbi.org or BGIShelp@sanbi.org. Information is also available on compact disc (cd) from the Biodiversity-GIS Unit, Ph (021) 799 8698. This information may be updated from time to time and it is the applicant/ EAP's responsibility to ensure that the latest version is used. A map of the relevant biodiversity information (including an indication of the habitat conditions as per (b) below) and must be provided as an overlay map to the property/site plan as **Appendix A**[5] to this report.

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

Systematic Biodiversity Planning Category				**If CBA or ESA, indicate the reason(s) for its selection in biodiversity plan**
Critical Biodiversity Area (CBA)	Ecological Support Area (ESA)	Other Natural Area (ONA)	No Natural Area Remaining (NNR)	Alternative 3 traverses modified, modified – old lands and other natural areas according to the MBSP (2013) – Figure 6. No CBA or ESA wetlands are traversed by Alternative 3 (refer to Figure 7 and 8).

[5] Appendix D contains specialist reports, therefore maps relevant to Biodiversity is attached as Appendix A.

b) Indicate and describe the habitat condition on site

Habitat Condition	Percentage of habitat condition class (adding up to 100%)	Description and additional Comments and Observations (including additional insight into condition, e.g. poor land management practises, presence of quarries, grazing, harvesting regimes etc).
Natural	0%	[redacted]
Near Natural (includes areas with low to moderate level of alien invasive plants)	0%	[redacted]
Degraded (includes areas heavily invaded by alien plants)	5%	Heavily degraded patches of Eastern Highveld Grassland occur adjacent to the proposed new power line alignment.
Transformed (includes cultivation, dams, urban, plantation, roads, etc)	95%	The majority of the proposed alignment bisects transformed secondary succession grasslands dominated by anthropogenic weedy grass species such as *Hyparrhenia hirta, Heteropogon contortus, Aristida congetsa, Cynodon dactylon* and the exotic invasive *Pennisetum clandestinum.*

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 Endangered Vulnerable Least Threatened	Wetland (including rivers, depressions, channelled and unchanneled wetlands, flats, seeps pans, and artificial wetlands)			Estuary		Coastline	
		YES	NO	UNSURE	YES	NO	YES	NO

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

Vegetation Type:

Eastern Highveld Grasslands (Gm12):

The majority of Eastern Highveld Grassland along and surrounding the alignment (Alternativ3) have been completely transformed due to the adjacent agricultural and mining activities in the area and are dominated by Black Jacks (*Bidens pilosa*), Khaki Bush (*Tagetes minuta*) and Cosmos (*Cosmos bipinnatus*). The majority of tree species found along the alignments are exotics (Oaks, *Quercus sp.*) as well as alien invasive species such as *Eucalyptus grandis*, *Eucalyptus camaldulensis*, *Acacia mearnsii*,

Acacia dealbata, *Salyx babylonica, Populus alba, Populus x casnescens*). Patches of secondary grasslands (old agricultural lands) are situated along the proposed new 7km 88kV alignment. While disturbed grasslands have evidently been impacted on my various anthropogenic disturbances, these areas are still considered to have some ecological value, albeit limited. This is mostly due to the role of these areas providing habitat for remaining faunal species. No major wetland system occurs within the proposed alignments but a degraded valley bottom wetland occurs adjacent to the alignment. The remnant patches of open grassland around Alternative 3 are dominated by *Aristida congesta* and *Aristida juncifromis* subsp*. galpinii*, *Cynodon dactylon*, *Eragrostis curvula, Hyparrhenia hirta*, *Heteropogon contortus* and the exotic invasive *Pennisetum clandestinum.*

No Red Listed, rare or threatened plant species were observed within the transformed grasslands within were recorded or likely to occur within these transformed vegetation units along and adjacent to Alternative 3. Afforested plantations of Blue-gum (*Eucalyptus* spp.) trees were observed in the study area, particularly near the human settlements of Ogies. All Alternatives (1 – 3) run adjacent to a *Eucalyptus* plantation to the west of Ogies.

In terms of micro-habitats available for birds on site, the agricultural fields and *Eucalyptus* plantations are the only attractive micro-habitat, and will attract primarily non-Red List species. The extent to which Red List species will frequent this area is relatively unknown, but in the avifaunal specialist's opinion, the likelihood of either large numbers or frequent visits to the site by Red List species is low.

No sensitive or endangered mammals were recorded within the study area during the field survey. No threatened reptile species have been recorded for the 2629 AA QDGC (SARCA, 2014) or are likely to occur within the existing alignment.

One threatened amphibian species namely the Giant Bullfrog (*Pyxicephalus adspersus*) has been recorded in the 2629AA QDGC according to FrogMAP. No major Giant Bullfrogs populations are expected from the existing power line servitude or immediate surrounding areas due to extensive habitat transformation (mining and agricultural activities; major road networks bisecting foraging and breeding habitats) as well as degradation (massive deterioration in surface and groundwater quality).

Riparian Vegetation:

The vegetation component associated with wetland features, has undergone some transformation over a number of years, as a result of historical agricultural practices which have disturbed the soil profile, resulting in a proliferation of alien vegetation species along the wetland boundaries. Large portions of the valley bottom wetlands have become heavily degraded due to adjacent agricultural activities and invaded by *Pennisetum clandestinum as* well as Pom Pom Weed (*Campuloclinium macrocephalum*).

Aquatic Ecosystems:

1. WET-Ecoservices:
The channelled valley bottom HGM Units (Wetlands 2 and 3) play the most important role in terms of sediment control, phosphate, nitrate and toxicant accumulation, as well as biodiversity maintenance. Both features have the potential to provide habitat for the threatened species *Tyto capensis* (Grass owl) and *Metisella meninx* (Marsh sylph) known to occur in the region, as well as for floral species of conservation concern, particularly *Crinum* spp. These features are less important in terms of socio-economic functioning, mainly due to their location and overall inaccessibility. The unchannelled valley bottom HGM Units for Wetlands 2 and 3 obtained overall ecosystem services scores of 1.7 and 1.9 respectively, indicating that the features provide intermediate levels of importance in terms of

ecosystem services and function provision.

Wetlands 4 and 6 are isolated seep features, restricted in size, with no surface connections to larger drainage networks and surrounded by agricultural activities. These factor somewhat limits the ecological functioning and services provision of these features. As a result these features obtained an overall score of 1, indicating that this HGM Unit provide moderately low level of ecoservices. As with the unchannelled valley bottom HGM Unit, the most important services provided by these features are toxicant, nitrate and sediment runoff, due to the location of these wetlands within fertilised agricultural areas. The isolated seep HGM Unit also play a role in erosion and sediment control.

In addition to nutrient assimilation, the seep HGM Unit associated with Wetland 5, is most important in providing habitat for floral and faunal species and in flood attenuation. This HGM Unit achieved an overall score of 1.7, indicating that the feature provide intermediate levels of importance in terms of ecosystem services and function provision.

2. WET-Health:

Level 1 Wet-Health assessments of the unchannelled valley bottom wetland and seep HGM Units was undertaken. Three modules, namely hydrology, geomorphology and vegetation, were assessed as a single unit for the unchannelled and valleyhead seep HGM Units, associated with both Wetlands 2 and 3, Wetland 4 and 6 and Wetland 5 respectively.

The overall score for Wetlands 2 and 3 which aggregates the scores for the three modules, namely hydrology, geomorphology and vegetation, was calculated using the formula as provided by the Wet-Health methodology. The overall score calculated to fall within Category C, which refers to a moderate change in ecosystem processes and with natural habitat remaining predominantly intact, although some loss have occurred.

Wetland 4 and 6 received overall low scores for both the hydrology and vegetation modules, placing both modules within Category D. This is largely due to encroaching agricultural activities surrounding these features and a high incidence of alien vegetation, which has replaced high levels of natural vegetation in the wetland.

The cumulative score achieved for Wetland 5 indicate the HGM Unit to fall within Category C, with all three modules assessed, also falling within Category C. Impacts on the hydrology of the HGM Unit include increased water inputs to the wetland system due to altered land uses within the catchment as well as excess runoff from surrounding access roads. The vegetation within the feature is relatively intact, however some alien floral species are present and vegetation structure has been altered through cutting and baling of grass, which decreases surface roughness. As with the wetland features within the region, sediment loads have been altered due to the presence of surrounding agricultural fields and mining activities.

3. Ecological Importance and Sensitivity (EIS)

EIS scores obtained for the wetland features show that Wetlands 2, 3 and 5 are all considered to fall within Category B (high), are considered to be ecologically important and sensitive and may be sensitive to flow and habitat modifications, while Wetlands 4 and 6 fall within Category C (moderate), indicating that despite historical and current disturbances to the wetland, the feature may nonetheless be of some ecologically importance on a localised scale.

4. Recommended Ecological Category (REC)

The REC for the wetland HGM Units within the study area was determined, taking into consideration the results of the wetland function and service provision, Wet-Health and EIS assessments. Although the wetland features have undergone some levels of transformation, overall Wetland 2, 3 and 5 are considered to provide intermediate levels of important ecosystem services and have high EIS scores. A REC Category C (moderately modified) was considered appropriate and assigned to these wetland features in order to ensure that present levels of ecological services and functioning of the features are maintained, while Wetlands 4 and 6 have been assigned REC Category D (largely modified). None of the wetland features present within the study area should therefore be permitted to deteriorate any further from their Present State and any development within the catchment of these features should be very strictly managed in order to prevent impacts on the wetland resources which will lead to a change in class of the wetland features.

5. Wetland Delineation

A 32 m buffer is considered adequate to conserve the integrity of wetlands identified during the field assessment and are indicated for all wetlands.

In the absence of a national protocol, a generic 100 m buffer, measured from the outside edge of the wetland, should be established around wetland FEPAs. This 100 m buffer is considered adequate from a water quality perspective in providing functional filtering capacity to the river or wetland, but may be refined based on biodiversity observations made during the field assessment. For the purposes of this assessment, a 100 m buffer is recommended and is indicated for the wetland FEPAs (Wetlands 1, 2, 3 and 5) – see Figures 7 and 8).

Alternative 3 encroaches into the 32 m buffer zones of Wetlands 4 and 6 along existing roads, and also requires the direct crossing of Wetland 2, a wetland FEPA.

SECTION C: PUBLIC PARTICIPATION

Please note that the Public Participation portion of the report will be updated in the Final Consultation Basic Assessment Report that will be submitted to the Competent Authority.

1. ADVERTISEMENT AND NOTICE

Publication name		
Date published		
Site notice position	**Latitude**	**Longitude**
	26° 3' 21.32" S	29° 3' 0.72" E
	26° 3' 25.89" S	29° 2' 44.37" E
	26° 3' 26.13" S	29° 2' 41.83" E
Date placed	11 June 2015	

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

2. DETERMINATION OF APPROPRIATE MEASURES

Provide details of the measures taken to include all potential I&APs as required by Regulation 41(2)(e) and 41(6) of GN 733.

Key stakeholders (other than organs of state) identified in terms of Regulation 41(2)(b) of GN 733

Title, Name and Surname	Affiliation/ key stakeholder status	Contact details (tel number or e-mail address)
J. Eksteen	Mpumalanga Tourism & Parks Agency	johan@mtpa.co.za (013) 759 5300
Mduduzi Nkuna	Inkomati-Usuthu Catchment Management Agency(IUCMA)	nkunam@iucma.co.za
Ricky Potts	WESSA Lowveld	rpotts@mweb.co.za wessa@ibomax.co.za (013) 750 0808
Frans Krige	Mpumalanga Tourism and Parks Agency	franskrige@telkomsa.net
Armand La Grange	Glencore Operations South Africa PTY (Ltd)	Armand.LaGrange@glencore.co.za (013) 643 4338 0829237988
Mr. Nhlanhla Mkhonto	Glencore Operations South Africa PTY (Ltd)	nhlanhla.mkhonto@glencore.co.za (013) 643 4363

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

4. COMMENTS AND RESPONSE REPORT

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

5. AUTHORITY PARTICIPATION

Authorities and organs of state identified as key stakeholders:

Authority/Organ of State	Contact person (Title, Name and Surname)	Tel No	Fax No	e-mail	Postal address
Mpumalanga Department of Agriculture, Rural Development, Land, and Environmental Affairs	Ms Dineo Tswai	(013) 6926300		dtsawi@mpg.gov.za	Pavilion Centre, Cnr Botha and Northey streets, Witbank, 1035
Emalahleni local Municipality	Mr Theo van Vuuren	(013) 6906911	(013) 6906207		Civic Centre, Cnr Mandela & Arras Streets, eMalahleni, 1035
Department Mineral Resources	Aubrey Tshivhandekano	(013) 6530500		Aubrey.Tshibandekano@dmr.gov.za	
Deparment of Water and Sanitation	Sampie Shabangu	013 759 7300/7363		ShabanguS2@dwa.gov.za	Prorom Building, 5th Floor c/o Paul Kruger and

					Brown Nelspruit 35 Brown Street, Prorom Bld, 1200

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, 2014 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.

Low impact (4 - 6 points)	A low impact has no permanent impact of significance. Mitigation measures are feasible and are readily instituted as part of a standing design, construction or operating procedure.
Medium impact (7 - 9 points)	Mitigation is possible with additional design and construction inputs.
High impact (10 - 12 points)	The design of the site may be affected. Mitigation and possible remediation are needed during the construction and/or operational phases. The effects of the impact may affect the broader environment.
Very High impact (13 - 16 points)	Permanent and important impacts. The design of the site may be affected. Intensive remediation is needed during construction and/or operational phases. Any activity which results in a "very high impact" is likely to be a fatal flaw.
Status	Denotes the perceived effect of the impact on the affected area.
Positive (+)	Beneficial impact.
Negative (-)	Deleterious or adverse impact.
Neutral (/)	Impact is neither beneficial nor adverse.

Dismantling of portion of the existing line

Activity	Impact summary	Significance	Proposed mitigation
Dismantling of a portion of the existing line			
Planning and Design	***Direct impacts:*** Fauna and Flora - Disruption to sensitive habitats and species within the vicinity of the existing line.	**(-8)**	• Prior to construction and vegetation clearance a suitably qualified Environmental Control Officer (ECO) should closely examine the proposed construction areas (tower supports) for the presence of any animal burrows (including spiders and scorpions), rocky outcrops, logs, stumps and other debris and relocate any affected animals to appropriate habitat away from the servitude or tower. Special care should be taken not to damage or remove any such species unless absolutely necessary. • It is recommended that the developer and construction contractor as well as an independent environmental control officer (ECO) should be made aware of the possible presence of certain threatened animal species (Giant Bullfrog, African Grass Owl, Lesser Flamingo, South African Hedgehog) prior to the commencement of construction activities. In the event that any of the above-mentioned species are discovered relevant conservation authorities should be informed and activities surrounding the site suspended until further investigations have been conducted. • Permits for removal must be obtained from Provincial Nature Conservation should the *Hypoxis hemerocallidea* be affected.
	Wetlands - Work within wetlands and removal of riparian vegetation.	**(-9)**	• Work within wetlands and buffers and the removal of riparian vegetation must be subject to a Water Use Licence Application (WULA) and application for Environmental Authorisation (EA). The work within wetlands and riparian areas must comply with the conditions stipulated in the WUL and EA.
	Avifauna - Habitat destruction.	**(-8)**	• Of importance to note is that should any nests be found on the line that is to be removed a qualified avifaunal specialists must be consulted to determine the significance of this. Of critical importance will be the avifaunal walk down to determine if there are any African Grass Owls on the site. Recommendations on dealing with the African Grass Owl will be given following this phase of the project.
	Avifauna – Disturbance on birds in the study area.	**(-7)**	• Refer to mitigation measures included for *Avifauna – Habitat destruction* above.
	Heritage - Impacts on sites of heritage, cultural and archaeological significance. • Site OG12 (grave site) is located some distance (150 m) south-west of the existing power line and will not be affected by the proposed dismantling.	**(-7)**	• Site OG12 (Graves and Burial Grounds) is located some distance (150 m) south-west of the existing power line and will not be affected by the proposed dismantling. • Site OG8 (Mosque) will not be impacted upon during the dismantling activity as it is already fenced.

Activity	Impact summary	Significance	Proposed mitigation
Dismantling of a portion of the existing line			
	• Another site which is considered to be of medium significance is Site OG8. This is a Mosque and although the building is not older than 60 years, it is regarded as being of social and religious significance. • The remaining sites (OG 1-3, 9, 11 & 14) comprise of farm worker's dwellings and associated infrastructure and small villages which have all been demolished and rated low significance. They also include some sites which were recorded in an earlier heritage study but which have been demolished in the meantime (sites OG 9, 14).		
	Indirect impacts: None.		
	Cumulative impacts: None.		
Dismantling of a portion of the existing line	***Direct impacts:*** Soils - Disruption of surface soils. Erosion and sediment from removed towers/structures.	**(-7)**	• Disturbed areas of natural grassland vegetation around the removed and towers and riparian areas must be rehabilitated immediately to prevent soil erosion. • No vehicles should be allowed to cross rivers or streams in any area other than an approved crossing, taking care to prevent any impact (particularly erosion) in surrounding habitat. • As far as possible, all construction activities should occur in the low flow season, during the drier winter months. • Sheet runoff from access roads should be slowed down by the strategic placement of berms. • Remove and store topsoil separately in areas where excavation/degradation takes place. Topsoil should be used for rehabilitation purposes in order to facilitate re-growth of species that occur naturally in the area.
	Wetlands – Loss of wetland habitat and ecological structure due to	**(-10)**	• Wetland buffer areas should be physically demarcated on site and it must be ensured that these areas are off limits during the dismantling activities, except for essential

Activity	Impact summary	Significance	Proposed mitigation
Dismantling of a portion of the existing line			
	dismantling, development of access routes, dumping of waste into wetlands, clearing of wetland vegetation, and earthworks.		equipment and vehicles required. • No indiscriminate driving through the wetland areas may take place during the dismantling procedure. • During dismantling activities, the footprint area must be clearly demarcated on site and construction workers, vehicles, equipment and material, as well as dismantled infrastructure may not encroach beyond this area. • Material stockpiling is to take place within the designated footprint areas and may not encroach on surrounding natural vegetation and wetland and wetland buffer areas. • Only a single access road may be used for dismantling activities, preferably within a more disturbed area or along existing roads and tracks. All vehicles are to remain within the designated vehicle tracks. • Clearing of vegetation for dismantling purposes must be kept to a minimum. • Invasive alien floral species in the vicinity of existing power lines must be manually removed and controlled during the operational phase. • No littering, waste disposal or other pollution may take place within wetland areas during the dismantling procedure. • Failure to implement a rehabilitation plan within disturbed wetland areas.
	Wetlands - Changes to wetland ecological and socio-cultural service provision due to dismantling activities, site clearing, movement of construction vehicles, of power line infrastructure within wetland and wetland buffer areas; dumping of waste into wetland areas and inadequate management of edge effects during construction.	**(-8)**	• Physically demarcate wetland buffer areas on site and ensure that these areas are off limits during the construction phase of the development. • Ensure that no incision and canalisation of the wetland resource takes place as a result of dismantling activities. • Flow connectivity along the wetland resources should be maintained through preventing fragmentation of wetland areas. • As far as possible, all construction activities should occur in the low flow season, during the drier winter months, in order to decrease the potential for erosion and sedimentation caused by rainfall.
	Wetlands - Impacts on wetland hydrology and sediment balance due to site clearing, construction activities, earthworks and movement of vehicles.	**(-8)**	• Erosion berms should be installed in any areas where soil disturbances within the vicinity of the wetland systems have occurred to prevent gully formation and siltation of the aquatic resources. The following points should serve to guide the placement of erosion berms: – Where the track has slope of less than 2%, berms every 50 m should be installed; – Where the track slopes between 2% and 10%, berms every 25 m should be installed; and – Where the track slopes between 10%-15%, berms every 20 m should be installed. • Restrict construction to the drier summer months if possible to avoid sedimentation.

Activity	Impact summary	Significance	Proposed mitigation
Dismantling of a portion of the existing line			
			• Should it be necessary to construct on slopes, it must be ensured that the necessary erosion prevention measures are put in place • No vehicular or pedestrian movement may take place in areas where erosion is already present.
	Impact of disturbance on birds in the study area.	**(-7)**	• Care should be taken after the completion of construction during onsite maintenance activities. Of importance to note is that should any nests be found on the line that is to be removed a qualified avifaunal specialists must be consulted to determine the significance of this.
	Habitat destruction with transformation of natural vegetation and habitats within the dismantling study area.	**(-6)**	• During the construction phase workers must be limited to areas under construction and the existing servitude during the removal of existing lines and access to the undeveloped areas, especially the surrounding open grassland and valley bottom wetlands areas. • All temporary stockpile areas including litter and dumped material and rubble must be removed on completion of construction. The dismantled towers and power line must be removed from the site. All alien invasive plant should be removed from the existing servitudes to prevent further invasion. • Vehicle access to the power line servitude must as far as possible be limited to existing roads. • No dumping of any materials in undeveloped open areas and neighbouring properties. Activities in the surrounding open undeveloped areas (especially open grasslands and valley bottom wetlands) must be strictly regulated and managed.
	Destruction of suitable habitat for Red Listed plants and animals.	**(-6)**	• Minimal disturbance to vegetation where such vegetation does not interfere with construction and operation of the line. • No unnecessary destruction to surrounding vegetation during the removal of the power line. • Protection of any protected or endangered plant species. • Prevention of litigation concerning removal of vegetation. • The single *Hypoxis hemerocallidea* observed under the existing line should not be impacted on during the removal of the existing power line. • Where herbicides are used to clear vegetation, specimen-specific chemicals should be applied to individual plants only. General spraying should be prohibited. • All alien vegetation should be eradicated over a five-year period. Invasive species (*Acacia mearnsii, A. dealbata, Eucalyptus*) should be given the highest priority. • Disturbed areas of natural vegetation around the removed towers must be rehabilitated immediately to prevent soil erosion. • Re-seeding shall be done on disturbed areas as directed by the Environmental Control Officer.

Activity	Impact summary	Significance	Proposed mitigation
Dismantling of a portion of the existing line			
			• It is recommended that the developer and construction contractor as well as an independent environmental control officer (ECO) should be made aware of the possible presence of certain threatened animal species (Giant Bullfrog, African Grass Owl, Lesser Flamingo, South African Hedgehog) prior to the commencement of construction activities. In the event that any of the above-mentioned species are discovered relevant conservation authorities should be informed and activities surrounding the site suspended until further investigations have been conducted.
	Impact on sites of heritage, cultural and archaeological significance as identified in the Heritage Assessment.	**(-8)**	• Most of the sites fall outside of the construction footprint for the dismantling however If during construction any cultural heritage resources or graves are unearthed, all work has to be stopped until the site has been inspected and mitigated by a cultural heritage practitioner. • Any discovered artefacts shall not be removed under any circumstances. Any destruction of a site can only be allowed once a permit is obtained and the site has been mapped and noted. Permits must be obtained from the South African Heritage Resources Agency. • Any mitigation measures applied by an archaeologist, in the sense of excavation and documentation, should be published in order to bring this information into the public domain.
	Waste generation during the dismantling phase will have a negative impact on the environment, if not controlled adequately. Waste includes dismantled structures, general construction rubble and hazardous waste (used oil, cement and concrete etc.).	**(-7)**	• Where possible, dismantled structures and construction waste on site must be reused or recycled. • Disposal of waste must be in accordance with relevant legislative requirements. • The Contractor must familiarise themselves with the definitions of waste and the handling, storage and transport of waste as prescribed in the applicable environmental legislation. • Burning of waste will not be permitted. • Further detailed mitigation measures are included in the EMPr (**Appendix G**).
	Dust emissions - the following possible sources of fugitive dust included vehicle activities associated with the transport of equipment to and away from the site during dismantling.	**(-7)**	• Dust must be suppressed on the construction site during dry periods by the regular application of water. Water used for this purpose must be used in quantities that will not result in the generation of run-off.
	During the construction phase there is likely to be an increase in noise pollution. The following possible sources of noise could potentially generate noise pollution during	**(-7)**	• Surrounding communities and adjacent landowners are to be notified in advance of noisy construction activities. • Provide all equipment with standard silencers. Maintain silencer units on vehicles and equipment in good working order. • Construction staff working in areas where the 8-hour ambient noise levels exceed

Activity	Impact summary	Significance	Proposed mitigation
Dismantling of a portion of the existing line			
	construction: dismantling activities; construction vehicles; and construction staff.		85 dBA should wear ear protection equipment.
	Limited opportunities do, however, exist for manual labour for unskilled tasks, where the appointed Contractor would be required to make use of local workers (e.g. for vegetation clearing).	**(+6)**	• Jobs should be given to local residents during construction (such as clearing of servitudes). Should this not be possible, it should be explained to residents that the nature of the development does not allow it, so that false expectations of possible jobs do not exist.
	Visual impact from dismantling activities.	**(-9)**	• Dismantling activities will take place within the mine footprint, visual impacts will be localised. • Vegetation clearing to be limited to the servitude.
	Indirect impacts: None.		
	Cumulative impacts: Due to extensive mining activities within the region, along with extensive agriculture, the regional cumulative impacts as a result of loss of wetlands is considered to be significant. The potential impact within wetland areas is expected to be greatest during the construction phase, specifically wetland FEPAs where dismantling of infrastructure is to take place. This will however be of a short duration and should management measures (as indicated in the sections above) be followed the significance of this impact may be lowered.		

Alternative 1 (Preferred)

Activity	Impact summary	Significance	Proposed mitigation
Alternative 1 (Preferred)			
Planning and Design	***Direct impacts:*** Fauna and Flora – Disruption to sensitive habitats and species within the vicinity of the Alternative 1.	**(-5)**	• General mitigation measures would include avoiding any physical damage to vegetation on the periphery of the proposed servitude as well as riparian vegetation. • Prior to construction and vegetation clearance a suitably qualified Environmental Control Officer (ECO) should closely examine the proposed construction areas (tower supports) for the presence of any animal burrows (including spiders and scorpions), rocky outcrops, logs, stumps and other debris and relocate any affected animals to appropriate habitat away from the servitude or tower. Special care should be taken not to damage or remove any such species unless absolutely necessary. • It is recommended that the developer and construction contractor as well as an independent environmental control officer (ECO) should be made aware of the possible

Activity	Impact summary	Significance	Proposed mitigation
Alternative 1 (Preferred)			
			presence of certain threatened animal species (Giant Bullfrog, African Grass Owl, Lesser Flamingo, South African Hedgehog) prior to the commencement of construction activities. In the event that any of the above-mentioned species are discovered relevant conservation authorities should be informed and activities surrounding the site suspended until further investigations have been conducted.
	Wetlands – Work within wetlands and removal of riparian vegetation.	**(-9)**	• Work within wetlands and buffers and the removal of riparian vegetation must be subject to a Water Use Licence Application (WULA) and application for Environmental Authorisation. The work within wetlands and riparian areas must comply with the conditions stipulated in the WUL and EA.
	Avifauna – Bird collisions.	**(-8)**	• Mitigation for collisions involves routing the line correctly as well as installing anti-collision marking devices to the line where necessary. • Areas that require anti-collision marking devices are indicated in the Sensitivity Map (**Appendix A**). These areas must be further refined during an avifaunal walk down.
	Heritage – Impacts on sites of heritage, cultural and archaeological significance. • Site OG10 (grave site) is located some 150 m west of the proposed Alternative 1. Impact on the grave site is not envisaged as they are located far from the planned construction route. • Two historic buildings (Sites OG7 and OG13) are rated with medium significance but both are located outside of the proposed construction routes. • The remaining sites (OG3, 5, 6 &15) comprise of farm worker's dwellings and associated infrastructure and small villages which have all been demolished and rated low significance.	**(-7)**	• Site OG10 (Graves and Burial Grounds) is located some 150 m west of the proposed Alternative 1. Impact on the grave site is not envisaged as they are located far from the planned construction route. • Should the demolishing of the two historic buildings (Sites OG7 and OG13) be needed, permitted recording is recommended.
	Indirect impacts: None.		

Activity	Impact summary	Significance	Proposed mitigation
Alternative 1 (Preferred)			
	Cumulative impacts: None.		
Construction	***Direct impacts:*** Soils - Disruption of surface soils. Erosion and sediment from removed towers/structures.	**(-7)**	• Disturbed areas of grassland vegetation and riparian areas must be rehabilitated immediately to prevent soil erosion. • No vehicles should be allowed to cross rivers or streams in any area other than an approved crossing, taking care to prevent any impact (particularly erosion) in surrounding habitat. • As far as possible, all construction activities should occur in the low flow season, during the drier winter months. • Sheet runoff from access roads should be slowed down by the strategic placement of berms. • Remove and store topsoil separately in areas where excavation/degradation takes place. Topsoil should be used for rehabilitation purposes in order to facilitate re-growth of species that occur naturally in the area.
	Wetlands – Loss of wetland habitat and ecological structure due to dismantling, development of access routes, dumping of waste into wetlands, clearing of wetland vegetation, and earthworks.	**(-10)**	• Physically demarcate wetland buffer areas on site and ensure that these areas are off limits during the construction phase of the development. The development footprint area must be clearly demarcated on site and construction workers, vehicles, equipment and material may not occur beyond this area. • Positioning of the concrete foundations for the support towers must be located as far as possible outside of the 32 m wetland buffer zones. • No support towers should be erected directly within wetland areas. • It must be ensured that no incision and canalisation of the wetland resource takes place as a result of the construction activities. • It must be ensured that flow connectivity along the wetland resource is maintained by preventing fragmentation of wetland areas. • As far as possible, all construction activities should occur in the low flow season, during the drier winter months, in order to decrease the potential for erosion and sedimentation caused by rainfall.
	Wetlands - Changes to wetland ecological and socio-cultural service provision due to dismantling activities, site clearing, movement of construction vehicles, of power line infrastructure within wetland and wetland buffer areas; dumping of waste into wetland areas and	**(-8)**	• It must be ensured that flow connectivity along the wetland resources are maintained by ensuring construction takes place beyond the wetland areas. • Minimise impacts on hydrological and habitat provision functioning through control of surface water flow and water quality. • Restrict construction to the drier winter months if possible to avoid sedimentation of wetland systems in the vicinity of the proposed development and to minimise the severity of disturbance of wetland habitat and hydrological function. • Concrete may not be mixed directly on the ground and any visible concrete remains

Activity	Impact summary	Significance	Proposed mitigation
Alternative 1 (Preferred)			
	inadequate management of edge effects during construction.		must be physically removed immediately and disposed of as waste in a licenced landfill site.
	Wetlands - Impacts on wetland hydrology and sediment balance due to site clearing, construction activities, earthworks; Construction of stream crossings altering stream and baseflow patterns; and movement of vehicles.	**(-8)**	• Erosion berms should be installed in any areas where soil disturbances within the vicinity of the wetland systems have occurred to prevent gully formation and siltation of the aquatic resources. The following points should serve to guide the placement of erosion berms: – Where the track has slope of less than 2%, berms every 50 m should be installed; – Where the track slopes between 2% and 10%, berms every 25 m should be installed; and – Where the track slopes between 10%-15%, berms every 20 m should be installed. • Restrict construction to the drier summer months if possible to avoid sedimentation. • Should it be necessary to construct on slopes, it must be ensured that the necessary erosion prevention measures are put in place • No vehicular or pedestrian movement may take place in areas where erosion is already present.
	Avifauna – Electrocutions.	**(-8)**	• Mitigation for electrocutions is dependent on the power line pole design. • Eskom have indicated that a steel monopole design as per Figure 4, **Appendix C**) will be used. If this design is implemented and the dimensions of the pole are as per Figure 4 and **Appendix C** then the impact of electrocutions will be very low. If the design changes, a suitably qualified avifaunal specialist must be contacted to re-evaluate this impact.
	Impact of birds on the quality of electricity supply.	**(-8)**	• Mitigation is dependent on the power line pole design. Eskom have indicated that a steel monopole design as per Figure 4, **Appendix C**) will be used. If this design is implemented and the dimensions of the pole are as per Figure 4 and **Appendix C**. If this is the case the impact of birds on the quality of supply will be very unlikely as this design is generally immune from this impact.
	Habitat destruction with transformation of natural vegetation and habitats within the proposed site.	**(-8)**	• During the construction phase workers must be limited to areas under construction and the existing servitude during the removal of existing lines and access to the undeveloped areas, especially the surrounding open grassland and valley bottom wetlands areas must be strictly regulated ("no-go" areas during construction and removal activities). • All temporary stockpile areas including litter and dumped material and rubble must be removed on completion of construction. The dismantled towers and power line must be removed from the site. All alien invasive plant should be removed from the existing servitudes to prevent further invasion. • Access to the new power line servitudes must be restricted. • No dumping of any materials in undeveloped open areas and neighbouring properties.

Activity	Impact summary	Significance	Proposed mitigation
Alternative 1 (Preferred)			
			Activities in the surrounding open undeveloped areas (especially open grasslands and valley bottom wetlands) must be strictly regulated and managed. • Upon completion of the stringing operations and before handover, the servitude must be inspected and all vegetation interfering with the safe operation of the line shall be removed / cut down. All alien vegetation in the total servitude and densifiers creating a fire hazard shall be cleared and treated with herbicides.
	Destruction of suitable habitat for Red Listed plants and animals.	**(-5)**	• Minimal disturbance to vegetation where such vegetation does not interfere with construction and operation of the line. • As the majority of the alignment is situated within transformed agricultural lands and degraded grasslands vegetation removal will be restricted to the removal of alien invasive tree species. • Prior to construction and vegetation clearance a suitably qualified ECO should closely examine the proposed construction areas (tower supports) for the presence of any animal burrows (including spiders and scorpions), rocky outcrops, logs, stumps and other debris and relocate any affected animals to appropriate habitat away from the servitude or tower. • Disturbed areas of natural grassland vegetation around the installed towers must be rehabilitated immediately to prevent soil erosion. • As a precautionary mitigation measure it is recommended that the developer and construction contractor as well as an independent ECO should be made aware of the possible presence of certain threatened animal species (Giant Bullfrog, African Grass Owl, Lesser Flamingo, South African Hedgehog) prior to the commencement of construction activities. In the event that any of the above-mentioned species are discovered relevant conservation authorities should be informed and activities surrounding the site suspended until further investigations have been conducted. • Where herbicides are used to clear vegetation, specimen-specific chemicals should be applied to individual plants only. General spraying should be prohibited. • All alien vegetation should be eradicated over a five-year period. Invasive species (*Acacia mearnsii, A. dealbata, Eucalyptus*) should be given the highest priority. • Re-seeding shall be done on disturbed areas as directed by the Environmental Control Officer.
	Impact on sites of heritage, cultural and archaeological significance as identified in the Heritage Assessment.	**(-8)**	• Most of the sites fall outside of the construction footprint however If during construction any cultural heritage resources or graves are unearthed, all work has to be stopped until the site has been inspected and mitigated by a cultural heritage practitioner. • Any discovered artefacts shall not be removed under any circumstances. Any destruction of a site can only be allowed once a permit is obtained and the site has been

Activity	Impact summary	Significance	Proposed mitigation
Alternative 1 (Preferred)			
			mapped and noted. Permits must be obtained from the South African Heritage Resources Agency. • Any mitigation measures applied by an archaeologist, in the sense of excavation and documentation, should be published in order to bring this information into the public domain.
	Waste generation during the construction phase will have a negative impact on the environment, if not controlled adequately. Waste includes general construction rubble and hazardous waste (used oil, cement and concrete etc.).	**(-7)**	• Where possible, construction waste on site must be reused or recycled. • Disposal of waste must be in accordance with relevant legislative requirements. • The Contractor must familiarise themselves with the definitions of waste and the handling, storage and transport of waste as prescribed in the applicable environmental legislation. • Burning of waste will not be permitted. • Further detailed mitigation measures are included in the EMPr (**Appendix G**).
	Dust emissions will vary from day to day depending on the phase of construction, the level of activity, and the prevailing meteorological conditions. The following possible sources of fugitive dust included vehicle activities associated with the transport of equipment to and away from the site during dismantling.	**(-7)**	• Dust must be suppressed on the construction site during dry periods by the regular application of water. Water used for this purpose must be used in quantities that will not result in the generation of run-off.
	During the construction phase there is likely to be an increase in noise pollution. The following possible sources of noise could potentially generate noise pollution during construction: construction activities; construction vehicles; and construction staff.	**(-7)**	• Surrounding communities and adjacent landowners are to be notified in advance of noisy construction activities. • Provide all equipment with standard silencers. Maintain silencer units on vehicles and equipment in good working order. • Construction staff working in areas where the 8-hour ambient noise levels exceed 85 dBA should wear ear protection equipment.
	Limited opportunities do, however, exist for manual labour for unskilled tasks, where the appointed Contractor would be required to make use of local workers (e.g. for vegetation clearing).	**(+6)**	• Jobs should be given to local residents during construction (such as clearing of servitudes). Should this not be possible, it should be explained to residents that the nature of the development does not allow it, so that false expectations of possible jobs do not exist.
	Visual impacts due to construction	**(-9)**	• Vegetation clearing to be limited to the servitude.

Activity	Impact summary	Significance	Proposed mitigation
Alternative 1 (Preferred)			
	activities.		• Phased, rather than indiscriminate clearing of the length of the alignment to be undertaken. • Vegetation clearing to be limited to the servitude.
	Indirect impacts: None.		
	Cumulative impacts: Due to extensive mining activities within the region, along with extensive agriculture, the regional cumulative impacts as a result of loss of wetlands is considered to be significant. The potential impact within wetland areas is expected to be greatest during the construction phase, specifically wetland FEPAs where construction of infrastructure is to take place. This will however be of a short duration and should management measures (as indicated in the sections above) be followed the significance of this impact may be lowered.		
Operations	***Direct impacts:*** Wetlands - Loss of wetland habitat and ecological structure due to: ongoing erosion and sedimentation of wetlands arising from increased runoff due to cleared area, leading to loss of wetland habitat; the development of permanent maintenance routes for construction purposes through wetland areas; failure to remove all construction material and equipment from the study area; and inadequate ongoing management of edge effects, such as erosion and alien vegetation during the operational phase of the project.	**(-7)**	• Re-profiling and re-vegetation of wetland areas, disturbed as a result of the proposed project must take place immediately after completion of construction with indigenous wetland vegetation and monitored during the operational phase. • No open trenches to be left or stockpiles may remain after construction has been completed. • Any areas where active erosion is observed must be immediately rehabilitated in such a way as to ensure that the hydrology of the area is re-instated to conditions which are as natural as possible. • Areas around foundation slabs, in particular are to be checked before and after the summer rains for signs of soil erosion due to storm water runoff. Such areas have to be rehabilitated to prevent ongoing erosion. • All wetland areas must be regularly monitored for erosion and incision. • Vegetation within the power line servitudes is to be mowed or hand-cut as a maintenance procedure and not ploughed, as ploughing disturbs the soils creating conditions for alien plant species to invade the area, as well as increasing the possibility of soil erosion by water runoff. • Maintenance vehicles should not have access to the wetland areas and wetland buffer zones, therefore the layout of access and maintenance roads should take the wetland areas and buffer zones into consideration and be planned in such a way as to avoid traversing the wetland habitat wherever possible. • Edge effects of activities need to be strictly managed in development footprint and surrounding areas. • Effective waste management must be implemented in order to prevent general waste from entering the wetland environment.
	Wetlands - Changes to wetland ecological and sociocultural service	**(-5)**	• Re-vegetate wetland areas with indigenous wetland species in order to improve erosion control and sediment trapping capabilities.

Activity	Impact summary	Significance	Proposed mitigation
Alternative 1 (Preferred)			
	provision due to: ongoing disturbance of soils with general operational activities; alien vegetation proliferation resulting in loss of wetland floral species and assimilation capability; and movement of maintenance and operational vehicles within wetland areas.		• Monitor the wetland areas for erosion and incision. • Implement alien vegetation control program within wetland areas. • Ongoing monitoring of the wetland for erosion, incision and proliferation of alien vegetation must take place.
	Wetlands - Impacts on wetland hydrology and sediment balance due to insufficient aftercare and maintenance leading to on-going erosion and increased sedimentation due to poor management; and increased water runoff into the wetland resource, leading to altered hydrological regime.	**(-7)**	• Any discharge of runoff into the wetland system must be done in such a way as to prevent erosion. In this regard special mention is made of the use of energy dissipating structures in stormwater discharge. • The footprint of the development must be kept as small as possible in order to minimise the loss of catchment yield in the various systems. • Ongoing monitoring of the wetland for erosion, incision, and proliferation of alien vegetation must take place. Alien vegetation should be manually removed and chemical control is not recommended.
	Collision of birds with overhead power line.	**(-8)**	• Mitigation for collisions involves routing the line correctly as well as installing anti-collision marking devices to the line where necessary. • Areas that require anti-collision marking devices must be further refined during an avifaunal walk down.
	Avifauna – Electrocutions.	**(-8)**	• Mitigation for electrocutions is dependent on the power line pole design. Eskom have indicated they will use the steel monopole design (**Appendix C**). If this does happen and the dimensions of the pole are as per the attachment then the impact of electrocutions will be very low as this is a generally safe structure for avifauna. If this design changes, a suitably qualified avifaunal specialist must be contacted to re-evaluate this impact.
	Impact of birds on the quality of electricity supply.	**(-8)**	• Mitigation is dependent on the power line pole design. Eskom have indicated that a steel monopole design as per Figure 4, **Appendix C** will be used. If this design is implemented and the dimensions of the pole are as per Figure 4 and **Appendix C**. If this is the case the impact of birds on the quality of supply will be very unlikely as this design is generally immune from this impact.
	Waste generation during the operation phase will have a negative impact on the environment, if not controlled adequately. Waste includes	**(-7)**	• Where possible, operational waste on site must be reused or recycled. • Disposal of waste must be in accordance with relevant legislative requirements. • The Contractor must familiarise themselves with the definitions of waste and the handling, storage and transport of waste as prescribed in the applicable environmental

Activity	Impact summary	Significance	Proposed mitigation
Alternative 1 (Preferred)			
	general waste or hazardous waste (used oil etc.).		legislation. • Burning of waste material will not be permitted. • Further detailed mitigation measures are included in the EMPr (**Appendix G**).
	By virtue of their size (height), power line towers and lines could be visually intrusive. However only limited areas of permanent human habitation would be exposed to high or very high degree of visual exposure.	**(-9)**	• Limiting of operational vegetation clearing.
	Indirect impacts: Surrounding areas and species present in the direct vicinity of the study area could be affected by indirect impacts resulting from maintenance activities.	**(-8)**	• Maintenance activities must be restricted to the power line servitude.
	Electromagnetic Fields (EMF) - Magnetic fields that naturally emanate from sources such as power lines are directly proportionate to the amount of current flowing through the power lines at any given time. A higher loading condition such as may be present in hot summer months will result in increased magnetic field levels. According to the World Health Organisation (WHO) it has become increasingly unlikely (based on the existing body of research) that exposure to Electromagnetic Fields (EMFs) constitutes a serious health hazard, although some uncertainty remains.	**(-8)**	• In general, it is not recommended that humans should live under power lines due to the effects of EMF. However, the radiation decreases with an increase in distance from the source. The EMFs are insignificant on the servitude border.
	Cumulative impacts: None.		
Decommissioning and Closure	***Direct impacts:*** Waste generation during the	**(-7)**	• Disposal of waste must be in accordance with relevant legislative requirements. • Waste must be disposed off in the appropriate manner at a licenced disposal site.

Activity	Impact summary	Significance	Proposed mitigation
Alternative 1 (Preferred)			
	decommissioning phase will have a negative impact on the environment, if not controlled adequately. Waste includes general waste or hazardous waste.		
	Wetlands - removal of towers placed in wetlands could cause damage to the hydrology and vegetation of the wetland in the manner described above for construction; the termination of servitude management through riparian corridors post-decommissioning could increase the risk of alien invasive plant encroachment into the servitude area, and thus into adjoining riparian habitat and if roads and tracks associated with the power line are not maintained this could result in erosion and siltation.	**(-10)**	• Decommissioning to be guided by Eskom guidelines for construction / decommissioning. • Decommissioning to be monitored by an ECO according to the stipulations of the EMPr. • No temporary accesses to be constructed through any surface water feature and no machinery to enter any wetland unless authorised under the EMPr by the ECO as part of a decommissioning activity. • After decommissioning of the power line, management of alien invasive vegetation should continue for a period.
	Erosion - all areas disturbed during construction and operation are to be re-vegetated to avoid erosion.	**(-8)**	• Rehabilitation of areas affected by construction and operation activities should ideally commence at the start of the rainy season. • Recommended rehabilitation is in the form of active re-vegetation of affected areas, including areas where surface disturbances resulted from construction. • All partially constructed areas should be completed and prepared for final rehabilitation and re-vegetation. • All areas where topsoil was removed or placing of monopoles should be landscaped in order to reflect surrounding conditions. • Erosion monitoring and control should be conducted. This should be in the form of inspections subsequent to rains. Topsoil should be replaced in all areas that were eroded. It is critical that adequate topsoil remains in construction areas, implying that topsoil might need to be supplemented in some areas until such time that a layer of vegetation has stabilised the soil. • Where necessary a suitable mixture of grass seed shall be used to re-seed damaged areas. Badly damaged areas shall be fenced in to enhance rehabilitation. Areas to be rehabilitated must be planted with a mixture of endemic pioneer grass species, as soon

Activity	Impact summary	Significance	Proposed mitigation
Alternative 1 (Preferred)			
			as the new growing season starts. To get the best results in a specific area, it is a good idea to consult with a vegetation specialist or the local extension officer of the Department of Agriculture.
	Indirect impacts: None.		
	Cumulative impacts: None.		

Alternative 2

Activity	Impact summary	Significance	Proposed mitigation
Alternative 2			
Planning and Design	***Direct impacts:*** Fauna and Flora – Disruption to sensitive habitats and species within the vicinity of the Alternative 2.	**(-5)**	• General mitigation measures would include avoiding any physical damage to vegetation on the periphery of the proposed servitude as well as riparian vegetation. • Prior to construction and vegetation clearance a suitably qualified Environmental Control Officer (ECO) should closely examine the proposed construction areas (tower supports) for the presence of any animal burrows (including spiders and scorpions), rocky outcrops, logs, stumps and other debris and relocate any affected animals to appropriate habitat away from the servitude or tower. Special care should be taken not to damage or remove any such species unless absolutely necessary. • It is recommended that the developer and construction contractor as well as an independent environmental control officer (ECO) should be made aware of the possible presence of certain threatened animal species (Giant Bullfrog, African Grass Owl, Lesser Flamingo, South African Hedgehog) prior to the commencement of construction activities. In the event that any of the above-mentioned species are discovered relevant conservation authorities should be informed and activities surrounding the site suspended until further investigations have been conducted.
	Wetlands – Work within wetlands and removal of riparian vegetation.	**(-9)**	• Work within wetlands and buffers and the removal of riparian vegetation must be subject to a Water Use Licence Application (WULA) and application for Environmental Authorisation. The work within wetlands and riparian areas must comply with the conditions stipulated in the WUL and EA.
	Avifauna – Bird collisions.	**(-8)**	• Mitigation for collisions involves routing the line correctly as well as installing anti-collision marking devices to the line where necessary. • Areas that require anti-collision marking devices are indicated in the Sensitivity Map (**Appendix A**). These areas must be further refined during an avifaunal walk down.

Activity	Impact summary	Significance	Proposed mitigation
	Alternative 2		
	Heritage - Impacts on sites of heritage, cultural and archaeological significance. • There are three recorded graveyard sites (Sites OG 4, 10 and 12) which were identified during the physical survey and with the help of previously located graveyards during heritage surveys. Site **OG10** is located approximately 70 m north of planned Alternative 2. Impact on the grave site is not envisaged as they are located far from the planned construction routes. • One historic building (Site OG13) is rated with medium significance but located outside of the proposed construction routes. • The remaining sites (OG3, 5, 6 & 15) comprise of farm worker's dwellings and associated infrastructure and small villages which have all been demolished and rated low significance.	**(-7)**	• Site OG10 (Graves and Burial Grounds) is located approximately 70 m north of planned Alternative 2. Impact on the grave site is not envisaged as they are located far from the planned construction routes. • Should the demolishing of the one historic building (Site OG13) be needed, permitted recording is recommended
	Indirect impacts: None.		
	Cumulative impacts: None.		
Construction	***Direct impacts:*** Soils - Disruption of surface soils. Erosion and sediment from removed towers/structures.	**(-7)**	• Disturbed areas of grassland vegetation and riparian areas must be rehabilitated immediately to prevent soil erosion. • No vehicles should be allowed to cross rivers or streams in any area other than an approved crossing, taking care to prevent any impact (particularly erosion) in surrounding habitat. • As far as possible, all construction activities should occur in the low flow season, during

Activity	Impact summary	Significance	Proposed mitigation
Alternative 2			
			the drier winter months. • Sheet runoff from access roads should be slowed down by the strategic placement of berms. • Remove and store topsoil separately in areas where excavation/degradation takes place. Topsoil should be used for rehabilitation purposes in order to facilitate re-growth of species that occur naturally in the area.
	Wetlands – Loss of wetland habitat and ecological structure due to dismantling, development of access routes, dumping of waste into wetlands, clearing of wetland vegetation, and earthworks.	**(-10)**	• Physically demarcate wetland buffer areas on site and ensure that these areas are off limits during the construction phase of the development. The development footprint area must be clearly demarcated on site and construction workers, vehicles, equipment and material may not occur beyond this area. • Positioning of the concrete foundations for the support towers must be located as far as possible outside of the 32 m wetland buffer zones. • No support towers should be erected directly within wetland areas. • It must be ensured that no incision and canalisation of the wetland resource takes place as a result of the construction activities. • It must be ensured that flow connectivity along the wetland resource is maintained by preventing fragmentation of wetland areas. • As far as possible, all construction activities should occur in the low flow season, during the drier winter months, in order to decrease the potential for erosion and sedimentation caused by rainfall.
	Wetlands - Changes to wetland ecological and socio-cultural service provision due to dismantling activities, site clearing, movement of construction vehicles, of power line infrastructure within wetland and wetland buffer areas; dumping of waste into wetland areas and inadequate management of edge effects during construction.	**(-8)**	• It must be ensured that flow connectivity along the wetland resources are maintained by ensuring construction takes place beyond the wetland areas. • Minimise impacts on hydrological and habitat provision functioning through control of surface water flow and water quality. • Restrict construction to the drier winter months if possible to avoid sedimentation of wetland systems in the vicinity of the proposed development and to minimise the severity of disturbance of wetland habitat and hydrological function. • Concrete may not be mixed directly on the ground and any visible concrete remains must be physically removed immediately and disposed of as waste in a licenced landfill site.
	Wetlands - Impacts on wetland hydrology and sediment balance due to site clearing, construction activities, earthworks; Construction of stream crossings altering stream and baseflow patterns; and movement of	**(-8)**	• Erosion berms should be installed in any areas where soil disturbances within the vicinity of the wetland systems have occurred to prevent gully formation and siltation of the aquatic resources. The following points should serve to guide the placement of erosion berms: – Where the track has slope of less than 2%, berms every 50 m should be installed; – Where the track slopes between 2% and 10%, berms every 25 m should be

Activity	Impact summary	Significance	Proposed mitigation
Alternative 2			
	vehicles.		installed; and – Where the track slopes between 10%-15%, berms every 20 m should be installed. • Restrict construction to the drier summer months if possible to avoid sedimentation. • Should it be necessary to construct on slopes, it must be ensured that the necessary erosion prevention measures are put in place • No vehicular or pedestrian movement may take place in areas where erosion is already present.
	Avifauna – Electrocutions.	**(-8)**	• Mitigation for electrocutions is dependent on the power line pole design. • Eskom have indicated that a steel monopole design as per Figure 4, **Appendix C**) will be used. If this design is implemented and the dimensions of the pole are as per Figure 4 and **Appendix C** then the impact of electrocutions will be very low. If the design changes, a suitably qualified avifaunal specialist must be contacted to re-evaluate this impact.
	Impact of birds on the quality of electricity supply.	**(-8)**	• Mitigation is dependent on the power line pole design. Eskom have indicated that a steel monopole design as per Figure 4, **Appendix C** will be used. If this design is implemented and the dimensions of the pole are as per Figure 4 and **Appendix C**. If this is the case the impact of birds on the quality of supply will be very unlikely as this design is generally immune from this impact.
	Habitat destruction with transformation of natural vegetation and habitats within the proposed site.	**(-8)**	• During the construction phase workers must be limited to areas under construction and the existing servitude during the removal of existing lines and access to the undeveloped areas, especially the surrounding open grassland and valley bottom wetlands areas must be strictly regulated ("no-go" areas during construction and removal activities). • All temporary stockpile areas including litter and dumped material and rubble must be removed on completion of construction. The dismantled towers and power line must be removed from the site. All alien invasive plant should be removed from the existing servitudes to prevent further invasion. • Access to the new power line servitudes must be restricted. • No dumping of any materials in undeveloped open areas and neighbouring properties. Activities in the surrounding open undeveloped areas (especially open grasslands and valley bottom wetlands) must be strictly regulated and managed. • Upon completion of the stringing operations and before handover, the servitude must be inspected and all vegetation interfering with the safe operation of the line shall be removed / cut down. All alien vegetation in the total servitude and densifiers creating a fire hazard shall be cleared and treated with herbicides.
	Destruction of suitable habitat for Red Listed plants and animals.	**(-5)**	• Minimal disturbance to vegetation where such vegetation does not interfere with construction and operation of the line.

Activity	Impact summary	Significance	Proposed mitigation
Alternative 2			
			• As the majority of the alignment is situated within transformed agricultural lands and degraded grasslands vegetation removal will be restricted to the removal of alien invasive tree species. • Prior to construction and vegetation clearance a suitably qualified ECO should closely examine the proposed construction areas (tower supports) for the presence of any animal burrows (including spiders and scorpions), rocky outcrops, logs, stumps and other debris and relocate any affected animals to appropriate habitat away from the servitude or tower. • Disturbed areas of natural grassland vegetation around the installed towers must be rehabilitated immediately to prevent soil erosion. • As a precautionary mitigation measure it is recommended that the developer and construction contractor as well as an independent ECO should be made aware of the possible presence of certain threatened animal species (Giant Bullfrog, African Grass Owl, Lesser Flamingo, South African Hedgehog) prior to the commencement of construction activities. In the event that any of the above-mentioned species are discovered relevant conservation authorities should be informed and activities surrounding the site suspended until further investigations have been conducted. • Where herbicides are used to clear vegetation, specimen-specific chemicals should be applied to individual plants only. General spraying should be prohibited. • All alien vegetation should be eradicated over a five-year period. Invasive species (*Acacia mearnsii, A. dealbata, Eucalyptus*) should be given the highest priority. • Re-seeding shall be done on disturbed areas as directed by the Environmental Control Officer.
	Impact on sites of heritage, cultural and archaeological significance as identified in the Heritage Assessment.	**(-8)**	• Most of the sites fall outside of the construction footprint however If during construction any cultural heritage resources or graves are unearthed, all work has to be stopped until the site has been inspected and mitigated by a cultural heritage practitioner. • Any discovered artefacts shall not be removed under any circumstances. Any destruction of a site can only be allowed once a permit is obtained and the site has been mapped and noted. Permits must be obtained from the South African Heritage Resources Agency. • Any mitigation measures applied by an archaeologist, in the sense of excavation and documentation, should be published in order to bring this information into the public domain.
	Waste generation during the construction phase will have a negative impact on the environment, if	**(-7)**	• Where possible, construction waste on site must be reused or recycled. • Disposal of waste must be in accordance with relevant legislative requirements. • The Contractor must familiarise themselves with the definitions of waste and the

Activity	Impact summary	Significance	Proposed mitigation
Alternative 2			
	not controlled adequately. Waste includes general construction rubble and hazardous waste (used oil, cement and concrete etc.).		handling, storage and transport of waste as prescribed in the applicable environmental legislation. • Burning of waste will not be permitted. • Further detailed mitigation measures are included in the EMPr (**Appendix G**).
	Dust emissions will vary from day to day depending on the phase of construction, the level of activity, and the prevailing meteorological conditions. The following possible sources of fugitive dust included vehicle activities associated with the transport of equipment to and away from the site during dismantling.	**(-7)**	• Dust must be suppressed on the construction site during dry periods by the regular application of water. Water used for this purpose must be used in quantities that will not result in the generation of run-off.
	During the construction phase there is likely to be an increase in noise pollution. The following possible sources of noise could potentially generate noise pollution during construction: construction activities; construction vehicles; and construction staff.	**(-7)**	• Surrounding communities and adjacent landowners are to be notified in advance of noisy construction activities. • Provide all equipment with standard silencers. Maintain silencer units on vehicles and equipment in good working order. • Construction staff working in areas where the 8-hour ambient noise levels exceed 85 dBA should wear ear protection equipment.
	Limited opportunities do, however, exist for manual labour for unskilled tasks, where the appointed Contractor would be required to make use of local workers (e.g. for vegetation clearing).	**(+6)**	• Jobs should be given to local residents during construction (such as clearing of servitudes). Should this not be possible, it should be explained to residents that the nature of the development does not allow it, so that false expectations of possible jobs do not exist.
	Visual impacts due to construction activities.	**(-9)**	• Vegetation clearing to be limited to the servitude. • Phased, rather than indiscriminate clearing of the length of the alignment to be undertaken. • Vegetation clearing to be limited to the servitude.
	Indirect impacts: None.		
	Cumulative impacts: Due to extensive mining activities within the region, along with extensive agriculture, the regional cumulative impacts as a result of loss of wetlands is considered to be significant. The potential impact within wetland areas is expected to be greatest during the construction phase, specifically wetland FEPAs		

Activity	Impact summary	Significance	Proposed mitigation
Alternative 2			
	where construction of infrastructure is to take place. This will however be of a short duration and should management measures (as indicated in the sections above) be followed the significance of this impact may be lowered.		
Operations	***Direct impacts:*** Wetlands - Loss of wetland habitat and ecological structure due to: ongoing erosion and sedimentation of wetlands arising from increased runoff due to cleared area, leading to loss of wetland habitat; the development of permanent maintenance routes for construction purposes through wetland areas; failure to remove all construction material and equipment from the study area; and inadequate ongoing management of edge effects, such as erosion and alien vegetation during the operational phase of the project.	**(-7)**	• Re-profiling and re-vegetation of wetland areas, disturbed as a result of the proposed project must take place immediately after completion of construction with indigenous wetland vegetation and monitored during the operational phase. • No open trenches to be left or stockpiles may remain after construction has been completed. • Any areas where active erosion is observed must be immediately rehabilitated in such a way as to ensure that the hydrology of the area is re-instated to conditions which are as natural as possible. • Areas around foundation slabs, in particular are to be checked before and after the summer rains for signs of soil erosion due to storm water runoff. Such areas have to be rehabilitated to prevent ongoing erosion. • All wetland areas must be regularly monitored for erosion and incision. • Vegetation within the power line servitudes is to be mowed or hand-cut as a maintenance procedure and not ploughed, as ploughing disturbs the soils creating conditions for alien plant species to invade the area, as well as increasing the possibility of soil erosion by water runoff. • Maintenance vehicles should not have access to the wetland areas and wetland buffer zones, therefore the layout of access and maintenance roads should take the wetland areas and buffer zones into consideration and be planned in such a way as to avoid traversing the wetland habitat wherever possible. • Edge effects of activities need to be strictly managed in development footprint and surrounding areas. • Effective waste management must be implemented in order to prevent general waste from entering the wetland environment.
	Wetlands - Changes to wetland ecological and sociocultural service provision due to: ongoing disturbance of soils with general operational activities; alien vegetation proliferation resulting in loss of wetland floral species and assimilation capability; and movement of maintenance and operational vehicles within wetland areas.	**(-5)**	• Re-vegetate wetland areas with indigenous wetland species in order to improve erosion control and sediment trapping capabilities. • Monitor the wetland areas for erosion and incision. • Implement alien vegetation control program within wetland areas. • Ongoing monitoring of the wetland for erosion, incision and proliferation of alien vegetation must take place.

Activity	Impact summary	Significance	Proposed mitigation
Alternative 2			
	Wetlands - Impacts on wetland hydrology and sediment balance due to insufficient aftercare and maintenance leading to on-going erosion and increased sedimentation due to poor management; and increased water runoff into the wetland resource, leading to altered hydrological regime.	**(-7)**	• Any discharge of runoff into the wetland system must be done in such a way as to prevent erosion. In this regard special mention is made of the use of energy dissipating structures in stormwater discharge. • The footprint of the development must be kept as small as possible in order to minimise the loss of catchment yield in the various systems. • Ongoing monitoring of the wetland for erosion, incision, and proliferation of alien vegetation must take place. Alien vegetation should be manually removed and chemical control is not recommended.
	Collision of birds with overhead power line.	**(-8)**	• Mitigation for collisions involves routing the line correctly as well as installing anti-collision marking devices to the line where necessary. • Areas that require anti-collision marking devices must be further refined during an avifaunal walk down.
	Avifauna – Electrocutions.	**(-8)**	• Mitigation for electrocutions is dependent on the power line pole design. Eskom have indicated they will use the steel monopole design (**Appendix C**). If this does happen and the dimensions of the pole are as per the attachment then the impact of electrocutions will be very low as this is a generally safe structure for avifauna. If this design changes, a suitably qualified avifaunal specialist must be contacted to re-evaluate this impact.
	Impact of birds on the quality of electricity supply.	**(-8)**	• Mitigation is dependent on the power line pole design. Eskom have indicated that a steel monopole design as per Figure 4, **Appendix C**) will be used. If this design is implemented and the dimensions of the pole are as per Figure 4 and **Appendix C**. If this is the case the impact of birds on the quality of supply will be very unlikely as this design is generally immune from this impact.
	Waste generation during the operation phase will have a negative impact on the environment, if not controlled adequately. Waste includes general waste or hazardous waste (used oil etc.).	**(-7)**	• Where possible, operational waste on site must be reused or recycled. • Disposal of waste must be in accordance with relevant legislative requirements. • The Contractor must familiarise themselves with the definitions of waste and the handling, storage and transport of waste as prescribed in the applicable environmental legislation. • Burning of waste material will not be permitted. • Further detailed mitigation measures are included in the EMPr (**Appendix G**).
	By virtue of their size (height), power line towers and lines could be visually intrusive. However only limited areas of permanent human habitation would be exposed to high or very high	**(-9)**	• Limiting of operational vegetation clearing.

Activity	Impact summary	Significance	Proposed mitigation
		Alternative 2	
	degree of visual exposure.		
	Indirect impacts: Surrounding areas and species present in the direct vicinity of the study area could be affected by indirect impacts resulting from maintenance activities.	**(-8)**	• Maintenance activities must be restricted to the power line servitude.
	Electromagnetic Fields (EMF) - Magnetic fields that naturally emanate from sources such as power lines are directly proportionate to the amount of current flowing through the power lines at any given time. A higher loading condition such as may be present in hot summer months will result in increased magnetic field levels. According to the World Health Organisation (WHO) it has become increasingly unlikely (based on the existing body of research) that exposure to Electromagnetic Fields (EMFs) constitutes a serious health hazard, although some uncertainty remains.	**(-8)**	• In general, it is not recommended that humans should live under power lines due to the effects of EMF. However, the radiation decreases with an increase in distance from the source. The EMFs are insignificant on the servitude border.
	Cumulative impacts: None.		
Decommissioning and Closure	***Direct impacts:*** Waste generation during the decommissioning phase will have a negative impact on the environment, if not controlled adequately. Waste includes general waste or hazardous waste.	**(-7)**	• Disposal of waste must be in accordance with relevant legislative requirements. • Waste must be disposed off in the appropriate manner at a licenced disposal site.
	Wetlands - removal of towers placed in wetlands could cause damage to the hydrology and vegetation of the	**(-10)**	• Decommissioning to be guided by Eskom guidelines for construction / decommissioning. • Decommissioning to be monitored by an ECO according to the stipulations of the EMPr. • No temporary accesses to be constructed through any surface water feature and no

Activity	Impact summary	Significance	Proposed mitigation
Alternative 2			
	wetland in the manner described above for construction; the termination of servitude management through riparian corridors post-decommissioning could increase the risk of alien invasive plant encroachment into the servitude area, and thus into adjoining riparian habitat and if roads and tracks associated with the power line are not maintained this could result in erosion and siltation.		machinery to enter any wetland unless authorised under the EMPr by the ECO as part of a decommissioning activity. • After decommissioning of the power line, management of alien invasive vegetation should continue for a period.
	Erosion - all areas disturbed during construction and operation are to be re-vegetated to avoid erosion.	**(-8)**	• Rehabilitation of areas affected by construction and operation activities should ideally commence at the start of the rainy season. • Recommended rehabilitation is in the form of active re-vegetation of affected areas, including areas where surface disturbances resulted from construction. • All partially constructed areas should be completed and prepared for final rehabilitation and re-vegetation. • All areas where topsoil was removed or placing of monopoles should be landscaped in order to reflect surrounding conditions. • Erosion monitoring and control should be conducted. This should be in the form of inspections subsequent to rains. Topsoil should be replaced in all areas that were eroded. It is critical that adequate topsoil remains in construction areas, implying that topsoil might need to be supplemented in some areas until such time that a layer of vegetation has stabilised the soil. • Where necessary a suitable mixture of grass seed shall be used to re-seed damaged areas. Badly damaged areas shall be fenced in to enhance rehabilitation. Areas to be rehabilitated must be planted with a mixture of endemic pioneer grass species, as soon as the new growing season starts. To get the best results in a specific area, it is a good idea to consult with a vegetation specialist or the local extension officer of the Department of Agriculture.
	Indirect impacts: None.		
	Cumulative impacts: None.		

Alternative 3

Activity	Impact summary	Significance	Proposed mitigation
Alternative 3			
Planning and Design	***Direct impacts:*** Fauna and Flora – Disruption to sensitive habitats and species within the vicinity of the Alternative 3.	**(-5)**	• General mitigation measures would include avoiding any physical damage to vegetation on the periphery of the proposed servitude as well as riparian vegetation. • Prior to construction and vegetation clearance a suitably qualified Environmental Control Officer (ECO) should closely examine the proposed construction areas (tower supports) for the presence of any animal burrows (including spiders and scorpions), rocky outcrops, logs, stumps and other debris and relocate any affected animals to appropriate habitat away from the servitude or tower. Special care should be taken not to damage or remove any such species unless absolutely necessary. • It is recommended that the developer and construction contractor as well as an independent environmental control officer (ECO) should be made aware of the possible presence of certain threatened animal species (Giant Bullfrog, African Grass Owl, Lesser Flamingo, South African Hedgehog) prior to the commencement of construction activities. In the event that any of the above-mentioned species are discovered relevant conservation authorities should be informed and activities surrounding the site suspended until further investigations have been conducted.
	Wetlands – Work within wetlands and removal of riparian vegetation.	**(-9)**	• Work within wetlands and buffers and the removal of riparian vegetation must be subject to a Water Use Licence Application (WULA) and application for Environmental Authorisation. The work within wetlands and riparian areas must comply with the conditions stipulated in the WUL and EA.
	Avifauna – Bird collisions.	**(-8)**	• Mitigation for collisions involves routing the line correctly as well as installing anti-collision marking devices to the line where necessary. • Areas that require anti-collision marking devices are indicated in the Sensitivity Map (**Appendix A**). These areas must be further refined during an avifaunal walk down.
	Heritage - Impacts on sites of heritage, cultural and archaeological significance. • There are three recorded graveyard sites (Sites **OG 4**, 10 and 12) which were identified during the physical survey and with the help of previously located graveyards during heritage surveys. The new	**(-9)**	• To minimise possible impact on the Site OG4 (Graves and Burial Grounds) it is recommended that the graveyard be fenced and any surviving relatives be allowed access. • Should the demolishing of the one historic building (Site OG7) be needed, permitted recording is recommended.

Activity	Impact summary	Significance	Proposed mitigation
	Alternative 3		
	planned Alternative 3 is located approximately 100 m south of Site OG4 and across the road R545 to the west of the graveyard (west of the road). • One historic building (Site OG7) is rated with medium significance but located outside of the proposed construction routes. • The remaining sites (OG6 & 15) comprise of farm worker's dwellings and associated infrastructure and small villages which have all been demolished and rated low significance.		
	Indirect impacts: None.		
	Cumulative impacts: None.		
Construction	***Direct impacts:*** Soils - Disruption of surface soils. Erosion and sediment from removed towers/structures.	**(-7)**	• Disturbed areas of grassland vegetation and riparian areas must be rehabilitated immediately to prevent soil erosion. • No vehicles should be allowed to cross rivers or streams in any area other than an approved crossing, taking care to prevent any impact (particularly erosion) in surrounding habitat. • As far as possible, all construction activities should occur in the low flow season, during the drier winter months. • Sheet runoff from access roads should be slowed down by the strategic placement of berms. • Remove and store topsoil separately in areas where excavation/degradation takes place. Topsoil should be used for rehabilitation purposes in order to facilitate re-growth of species that occur naturally in the area.
	Wetlands – Loss of wetland habitat and ecological structure due to dismantling, development of access routes, dumping of waste into	**(-11)**	• Physically demarcate wetland buffer areas on site and ensure that these areas are off limits during the construction phase of the development. The development footprint area must be clearly demarcated on site and construction workers, vehicles, equipment and material may not occur beyond this area.

Activity	Impact summary	Significance	Proposed mitigation
		Alternative 3	
	wetlands, clearing of wetland vegetation, and earthworks.		• Positioning of the concrete foundations for the support towers must be located as far as possible outside of the 32 m wetland buffer zones. • No support towers should be erected directly within wetland areas. • It must be ensured that no incision and canalisation of the wetland resource takes place as a result of the construction activities. • It must be ensured that flow connectivity along the wetland resource is maintained by preventing fragmentation of wetland areas. • As far as possible, all construction activities should occur in the low flow season, during the drier winter months, in order to decrease the potential for erosion and sedimentation caused by rainfall.
	Wetlands - Changes to wetland ecological and socio-cultural service provision due to dismantling activities, site clearing, movement of construction vehicles, of power line infrastructure within wetland and wetland buffer areas; dumping of waste into wetland areas and inadequate management of edge effects during construction.	**(-8)**	• It must be ensured that flow connectivity along the wetland resources are maintained by ensuring construction takes place beyond the wetland areas. • Minimise impacts on hydrological and habitat provision functioning through control of surface water flow and water quality. • Restrict construction to the drier winter months if possible to avoid sedimentation of wetland systems in the vicinity of the proposed development and to minimise the severity of disturbance of wetland habitat and hydrological function. • Concrete may not be mixed directly on the ground and any visible concrete remains must be physically removed immediately and disposed of as waste in a licenced landfill site.
	Wetlands - Impacts on wetland hydrology and sediment balance due to site clearing, construction activities, earthworks; Construction of stream crossings altering stream and baseflow patterns; and movement of vehicles.	**(-9)**	• Erosion berms should be installed in any areas where soil disturbances within the vicinity of the wetland systems have occurred to prevent gully formation and siltation of the aquatic resources. The following points should serve to guide the placement of erosion berms: – Where the track has slope of less than 2%, berms every 50 m should be installed; – Where the track slopes between 2% and 10%, berms every 25 m should be installed; and – Where the track slopes between 10%-15%, berms every 20 m should be installed. • Restrict construction to the drier summer months if possible to avoid sedimentation. • Should it be necessary to construct on slopes, it must be ensured that the necessary erosion prevention measures are put in place • No vehicular or pedestrian movement may take place in areas where erosion is already present. • Any wetland crossing if this alternative is implemented should span the extent of the wetlands if possible.

Activity	Impact summary	Significance	Proposed mitigation
Alternative 3			
	Avifauna – Electrocutions.	**(-8)**	• Mitigation for electrocutions is dependent on the power line pole design. • Eskom have indicated that a steel monopole design as per Figure 4, **Appendix C**) will be used. If this design is implemented and the dimensions of the pole are as per Figure 4 and **Appendix C** then the impact of electrocutions will be very low. If the design changes, a suitably qualified avifaunal specialist must be contacted to re-evaluate this impact.
	Impact of birds on the quality of electricity supply.	**(-8)**	• Mitigation is dependent on the power line pole design. Eskom have indicated that a steel monopole design as per Figure 4, **Appendix C** will be used. If this design is implemented and the dimensions of the pole are as per Figure 4 and **Appendix C**. If this is the case the impact of birds on the quality of supply will be very unlikely as this design is generally immune from this impact.
	Habitat destruction with transformation of natural vegetation and habitats within the proposed site.	**(-8)**	• During the construction phase workers must be limited to areas under construction and the existing servitude during the removal of existing lines and access to the undeveloped areas, especially the surrounding open grassland and valley bottom wetlands areas must be strictly regulated ("no-go" areas during construction and removal activities). • All temporary stockpile areas including litter and dumped material and rubble must be removed on completion of construction. The dismantled towers and power line must be removed from the site. All alien invasive plant should be removed from the existing servitudes to prevent further invasion. • Access to the new power line servitudes must be restricted. • No dumping of any materials in undeveloped open areas and neighbouring properties. Activities in the surrounding open undeveloped areas (especially open grasslands and valley bottom wetlands) must be strictly regulated and managed. • Upon completion of the stringing operations and before handover, the servitude must be inspected and all vegetation interfering with the safe operation of the line shall be removed / cut down. All alien vegetation in the total servitude and densifiers creating a fire hazard shall be cleared and treated with herbicides.
	Destruction of suitable habitat for Red Listed plants and animals.	**(-5)**	• Minimal disturbance to vegetation where such vegetation does not interfere with construction and operation of the line. • As the majority of the alignment is situated within transformed agricultural lands and degraded grasslands vegetation removal will be restricted to the removal of alien invasive tree species. • Prior to construction and vegetation clearance a suitably qualified ECO should closely examine the proposed construction areas (tower supports) for the presence of any animal burrows (including spiders and scorpions), rocky outcrops, logs, stumps and other debris and relocate any affected animals to appropriate habitat away from the

Activity	Impact summary	Significance	Proposed mitigation
Alternative 3			
			servitude or tower. • Disturbed areas of natural grassland vegetation around the installed towers must be rehabilitated immediately to prevent soil erosion. • As a precautionary mitigation measure it is recommended that the developer and construction contractor as well as an independent ECO should be made aware of the possible presence of certain threatened animal species (Giant Bullfrog, African Grass Owl, Lesser Flamingo, South African Hedgehog) prior to the commencement of construction activities. In the event that any of the above-mentioned species are discovered relevant conservation authorities should be informed and activities surrounding the site suspended until further investigations have been conducted. • Where herbicides are used to clear vegetation, specimen-specific chemicals should be applied to individual plants only. General spraying should be prohibited. • All alien vegetation should be eradicated over a five-year period. Invasive species (*Acacia mearnsii, A. dealbata, Eucalyptus*) should be given the highest priority. • Re-seeding shall be done on disturbed areas as directed by the Environmental Control Officer.
	Impact on sites of heritage, cultural and archaeological significance as identified in the Heritage Assessment.	**(-8)**	• Most of the sites fall outside of the construction footprint however If during construction any cultural heritage resources or graves are unearthed, all work has to be stopped until the site has been inspected and mitigated by a cultural heritage practitioner. • Any discovered artefacts shall not be removed under any circumstances. Any destruction of a site can only be allowed once a permit is obtained and the site has been mapped and noted. Permits must be obtained from the South African Heritage Resources Agency. • Any mitigation measures applied by an archaeologist, in the sense of excavation and documentation, should be published in order to bring this information into the public domain.
	Waste generation during the construction phase will have a negative impact on the environment, if not controlled adequately. Waste includes general construction rubble and hazardous waste (used oil, cement and concrete etc.).	**(-7)**	• Where possible, construction waste on site must be reused or recycled. • Disposal of waste must be in accordance with relevant legislative requirements. • The Contractor must familiarise themselves with the definitions of waste and the handling, storage and transport of waste as prescribed in the applicable environmental legislation. • Burning of waste will not be permitted. • Further detailed mitigation measures are included in the EMPr (**Appendix G**).
	Dust emissions will vary from day to day depending on the phase of construction, the level of activity, and	**(-7)**	• Dust must be suppressed on the construction site during dry periods by the regular application of water. Water used for this purpose must be used in quantities that will not result in the generation of run-off.

Activity	Impact summary	Significance	Proposed mitigation
	Alternative 3		
	the prevailing meteorological conditions. The following possible sources of fugitive dust included vehicle activities associated with the transport of equipment to and away from the site during dismantling.		
	During the construction phase there is likely to be an increase in noise pollution. The following possible sources of noise could potentially generate noise pollution during construction: construction activities; construction vehicles; and construction staff.	**(-7)**	• Surrounding communities and adjacent landowners are to be notified in advance of noisy construction activities. • Provide all equipment with standard silencers. Maintain silencer units on vehicles and equipment in good working order. • Construction staff working in areas where the 8-hour ambient noise levels exceed 85 dBA should wear ear protection equipment.
	Limited opportunities do, however, exist for manual labour for unskilled tasks, where the appointed Contractor would be required to make use of local workers (e.g. for vegetation clearing).	**(+6)**	• Jobs should be given to local residents during construction (such as clearing of servitudes). Should this not be possible, it should be explained to residents that the nature of the development does not allow it, so that false expectations of possible jobs do not exist.
	Visual impacts due to construction activities.	**(-9)**	• Vegetation clearing to be limited to the servitude. • Phased, rather than indiscriminate clearing of the length of the alignment to be undertaken. • Vegetation clearing to be limited to the servitude.
	Indirect impacts: None.		
	Cumulative impacts: Due to extensive mining activities within the region, along with extensive agriculture, the regional cumulative impacts as a result of loss of wetlands is considered to be significant. The potential impact within wetland areas is expected to be greatest during the construction phase, specifically wetland FEPAs where construction of infrastructure is to take place. This will however be of a short duration and should management measures (as indicated in the sections above) be followed the significance of this impact may be lowered.		
Operations	***Direct impacts:*** Wetlands - Loss of wetland habitat and ecological structure due to: ongoing erosion and sedimentation of wetlands arising from increased runoff	**(-7)**	• Re-profiling and re-vegetation of wetland areas, disturbed as a result of the proposed project must take place immediately after completion of construction with indigenous wetland vegetation and monitored during the operational phase. • No open trenches to be left or stockpiles may remain after construction has been completed.

Activity	Impact summary	Significance	Proposed mitigation
Alternative 3			
	due to cleared area, leading to loss of wetland habitat; the development of permanent maintenance routes for construction purposes through wetland areas; failure to remove all construction material and equipment from the study area; and inadequate ongoing management of edge effects, such as erosion and alien vegetation during the operational phase of the project.		• Any areas where active erosion is observed must be immediately rehabilitated in such a way as to ensure that the hydrology of the area is re-instated to conditions which are as natural as possible. • Areas around foundation slabs, in particular are to be checked before and after the summer rains for signs of soil erosion due to storm water runoff. Such areas have to be rehabilitated to prevent ongoing erosion. • All wetland areas must be regularly monitored for erosion and incision. • Vegetation within the power line servitudes is to be mowed or hand-cut as a maintenance procedure and not ploughed, as ploughing disturbs the soils creating conditions for alien plant species to invade the area, as well as increasing the possibility of soil erosion by water runoff. • Maintenance vehicles should not have access to the wetland areas and wetland buffer zones, therefore the layout of access and maintenance roads should take the wetland areas and buffer zones into consideration and be planned in such a way as to avoid traversing the wetland habitat wherever possible. • Edge effects of activities need to be strictly managed in development footprint and surrounding areas. • Effective waste management must be implemented in order to prevent general waste from entering the wetland environment.
	Wetlands - Changes to wetland ecological and sociocultural service provision due to: ongoing disturbance of soils with general operational activities; alien vegetation proliferation resulting in loss of wetland floral species and assimilation capability; and movement of maintenance and operational vehicles within wetland areas.	**(-5)**	• Re-vegetate wetland areas with indigenous wetland species in order to improve erosion control and sediment trapping capabilities. • Monitor the wetland areas for erosion and incision. • Implement alien vegetation control program within wetland areas. • Ongoing monitoring of the wetland for erosion, incision and proliferation of alien vegetation must take place.
	Wetlands - Impacts on wetland hydrology and sediment balance due to insufficient aftercare and maintenance leading to on-going erosion and increased sedimentation due to poor management; and	**(-7)**	• Any discharge of runoff into the wetland system must be done in such a way as to prevent erosion. In this regard special mention is made of the use of energy dissipating structures in stormwater discharge. • The footprint of the development must be kept as small as possible in order to minimise the loss of catchment yield in the various systems. • Ongoing monitoring of the wetland for erosion, incision, and proliferation of alien

Activity	Impact summary	Significance	Proposed mitigation
Alternative 3			
	increased water runoff into the wetland resource, leading to altered hydrological regime.		vegetation must take place. Alien vegetation should be manually removed and chemical control is not recommended.
	Collision of birds with overhead power line.	**(-8)**	• Mitigation for collisions involves routing the line correctly as well as installing anti-collision marking devices to the line where necessary. • Areas that require anti-collision marking devices must be further refined during an avifaunal walk down.
	Avifauna – Electrocutions.	**(-8)**	• Mitigation for electrocutions is dependent on the power line pole design. Eskom have indicated they will use the steel monopole design (**Appendix C**). If this does happen and the dimensions of the pole are as per the attachment then the impact of electrocutions will be very low as this is a generally safe structure for avifauna. If this design changes, a suitably qualified avifaunal specialist must be contacted to re-evaluate this impact.
	Impact of birds on the quality of electricity supply.	**(-8)**	• Mitigation is dependent on the power line pole design. Eskom have indicated that a steel monopole design as per Figure 4, **Appendix C**) will be used. If this design is implemented and the dimensions of the pole are as per Figure 4 and **Appendix C**. If this is the case the impact of birds on the quality of supply will be very unlikely as this design is generally immune from this impact.
	Waste generation during the operation phase will have a negative impact on the environment, if not controlled adequately. Waste includes general waste or hazardous waste (used oil etc.).	**(-7)**	• Where possible, operational waste on site must be reused or recycled. • Disposal of waste must be in accordance with relevant legislative requirements. • The Contractor must familiarise themselves with the definitions of waste and the handling, storage and transport of waste as prescribed in the applicable environmental legislation. • Burning of waste material will not be permitted. • Further detailed mitigation measures are included in the EMPr (**Appendix G**).
	By virtue of their size (height), power line towers and lines could be visually intrusive. However only limited areas of permanent human habitation would be exposed to high or very high degree of visual exposure.	**(-9)**	• Limiting of operational vegetation clearing.
	Indirect impacts: Surrounding areas and species present in the direct vicinity of the study area could be affected by indirect impacts resulting from maintenance activities.	**(-8)**	• Maintenance activities must be restricted to the power line servitude.

Activity	Impact summary	Significance	Proposed mitigation
		Alternative 3	
	Electromagnetic Fields (EMF) - Magnetic fields that naturally emanate from sources such as power lines are directly proportionate to the amount of current flowing through the power lines at any given time. A higher loading condition such as may be present in hot summer months will result in increased magnetic field levels. According to the World Health Organisation (WHO) it has become increasingly unlikely (based on the existing body of research) that exposure to Electromagnetic Fields (EMFs) constitutes a serious health hazard, although some uncertainty remains.	**(-8)**	• In general, it is not recommended that humans should live under power lines due to the effects of EMF. However, the radiation decreases with an increase in distance from the source. The EMFs are insignificant on the servitude border.
	Cumulative impacts: None.		
Decommissioning and Closure	***Direct impacts:*** Waste generation during the decommissioning phase will have a negative impact on the environment, if not controlled adequately. Waste includes general waste or hazardous waste.	**(-7)**	• Disposal of waste must be in accordance with relevant legislative requirements. • Waste must be disposed off in the appropriate manner at a licenced disposal site.
	Wetlands - removal of towers placed in wetlands could cause damage to the hydrology and vegetation of the wetland in the manner described above for construction; the termination of servitude management through riparian corridors post-decommissioning could increase the risk of alien invasive plant encroachment into the servitude area, and thus into adjoining riparian habitat	**(-10)**	• Decommissioning to be guided by Eskom guidelines for construction / decommissioning. • Decommissioning to be monitored by an ECO according to the stipulations of the EMPr. • No temporary accesses to be constructed through any surface water feature and no machinery to enter any wetland unless authorised under the EMPr by the ECO as part of a decommissioning activity. • After decommissioning of the power line, management of alien invasive vegetation should continue for a period.

Activity	Impact summary	Significance	Proposed mitigation
Alternative 3			
	and if roads and tracks associated with the power line are not maintained this could result in erosion and siltation.		
	Erosion - all areas disturbed during construction and operation are to be re-vegetated to avoid erosion.	**(-8)**	• Rehabilitation of areas affected by construction and operation activities should ideally commence at the start of the rainy season. • Recommended rehabilitation is in the form of active re-vegetation of affected areas, including areas where surface disturbances resulted from construction. • All partially constructed areas should be completed and prepared for final rehabilitation and re-vegetation. • All areas where topsoil was removed or placing of monopoles should be landscaped in order to reflect surrounding conditions. • Erosion monitoring and control should be conducted. This should be in the form of inspections subsequent to rains. Topsoil should be replaced in all areas that were eroded. It is critical that adequate topsoil remains in construction areas, implying that topsoil might need to be supplemented in some areas until such time that a layer of vegetation has stabilised the soil. • Where necessary a suitable mixture of grass seed shall be used to re-seed damaged areas. Badly damaged areas shall be fenced in to enhance rehabilitation. Areas to be rehabilitated must be planted with a mixture of endemic pioneer grass species, as soon as the new growing season starts. To get the best results in a specific area, it is a good idea to consult with a vegetation specialist or the local extension officer of the Department of Agriculture.
	Indirect impacts: None.		
	Cumulative impacts: None.		

A complete impact assessment in terms of Regulation 19(3) of GN 733 must be included as **Appendix F**.

2. ENVIRONMENTAL IMPACT STATEMENT

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

Most Preferred
Suitable
Least Preferred
No Preference

Without Mitigation (WoM)
With Mitigation (WM)
Please note: The greater the negative rating, the higher the impact.

Table 2: Quantitative assessment of unmitigated vs mitigated impacts (design & planning and construction/dismantling phases) for the dismantling of a portion of the existing Grootpan-Brakfontein power line

Dismantling of a portion of the existing Grootpan-Brakfontein power line		
	WoM	WM
Design and Planning - Direct	7.8	5
Design and Planning - Indirect	-	-
Design and Planning - Cumulative		--
Construction/Dismantling - Direct	6.9	4.4
Construction/Dismantling - Indirect	-	-
Construction/Dismantling - Cumulative	-	-
Operations - Direct	-	-
Operations - Indirect	-	-
Operations – Cumulative	-	-
Decommissioning and Closure - Direct	-	-
Decommissioning and Closure - Indirect	-	-
Decommissioning and Closure - Cumulative	-	-

Table 3: Quantitative assessment of unmitigated vs mitigated impacts (design & planning; construction; operations and decommissioning phases) for new two 88kV power line alternatives

Two new 88 kV Power lines						
	Alternative 1		Alternative 2		Alternative 3	
	WoM	WM	WoM	WM	WoM	WM
Design and Planning – Direct	7.3	5	7.3	5	7.8	5.5
Design and Planning – Indirect	-	-	-	-	-	-
Design and Planning – Cumulative	-	-	-	-	-	-
Construction – Direct	7.7	5.5	7.7	5.5	7.7	5.5
Construction – Indirect	-	-	-	-	-	-

Two new 88 kV Power lines						
	Alternative 1		Alternative 2		Alternative 3	
	WoM	WM	WoM	WM	WoM	WM
Construction – Cumulative	-	-	-	-	-	-
Operation – Direct	7.4	6	7.4	6	7.4	6
Operation – Indirect	8	7	8	7	8	7
Operation – Cumulative	-	-	-	-	-	-
Decommissioning and Closure - Direct	8.3	5.7	8.3	5.7	8.3	5.7
Decommissioning and Closure - Indirect	-	-	-	-	-	-
Decommissioning and Closure - Cumulative	-	-	-	-	-	-

Table 4: Preference Rating for the three alternatives as per the specialist disciplines

	Ecology	Wetlands	Avifauna	Heritage
Alternative 1	5	5	5	3
Alternative 2	5	5	3	3
Alternative 3	3	3	3	3

1 – Least Preferred
3 - Suitable
5 – Most Preferred

Dismantling of a portion of the existing Grootpan-Brakfontein power line

The aim of the project is to dismantle and relocate a portion of the existing 88 kV double-circuit mink power line approximately 5.2 km in length as the existing power lines are located on GlencoreXstrata mining property. The mine has requested that Eskom relocate the lines as they are within the operational footprint of the mine.

Based on the impact identification and proposed mitigation measures, during the planning and design and dismantling phases of the project, the impacts are rated as **medium-low** before mitigation and **low** after mitigation.

The grasslands adjacent to the mining and intensive agricultural areas are heavily transformed and degraded and dominated by pioneer weedy plant species. From an ecological perspective, the level of disturbance and habitat destruction will be minimal considering the current status of the study area. A single orange listed 'Declining' African Potato (*Hypoxis hemerocallidea*) was observed under the existing Grootpan-Brakfontein servitude. Low numbers are expected due to high levels of medicinal plant harvesting within the remaining open grasslands. The single *Hypoxis hemerocallidea* does not need to be fenced off.

Suitable habitat occurs within the existing power line servitude for *Crinum bulbispermum*, *Crinum macowanii* and *Eucomis autumnalis*. None were observed during the site visit and this section of the power line is remaining and not been removed; so no further impact should occur within this sensitive wetland habitat.

The dismantling of a portion of the existing line will encroach into the 32 m buffer zone of Wetland 4 and also impacts on Wetland 2, 3 and 6. Wetlands 2 and 3 are FEPAs. The 100 m FEPA buffer zone of Wetland 5 will also be encroached. All wetlands in the study area and their associated riparian zones should be treated as highly sensitive areas, and be strictly maintained as 'no-go' areas, except in the case of construction activities such as stringing of the lines and clearing of vegetation or subject to conditions outlined in an approved Water Use Licence. No lay-down areas should be placed within riparian corridors and no construction right of ways should be created through or across watercourses (other than where existing roads / accesses cross watercourses).

Large portions of the valley bottom wetlands have become heavily degraded due to adjacent agricultural activities and invaded by *Pennisetum clandestinum* as well as Pom Pom Weed (*Campuloclinium macrocephalum*). The adjacent coal mining activities adjacent to the existing lines have resulted in severe degradation and transformation of the valley bottom wetlands and adjacent moist grasslands or seepage wetlands.

Furthermore, from an avifaunal perspective, the specialist has consulted with the Endangered Wildlife Trust (EWT) regarding the presence of the African Grass Owl on or around this site. The African Grass Owl is listed as Vulnerable by Taylor (2014) but is not recorded by SABAP 1 or 2. There is one record of occurrence reported by the EWT occurring 2 km south east of Ogies town centre. This is within 1 km of the proposed new line and within 600 m of the existing line. An avifaunal walk down should undertaken prior to dismantling and should the African Grass Owl be found, suitable recommendations will need to be provided. A single Lesser Flamingo was observed at Grootpan as well as several Red-Knobbed Coots. Standard EMPr principles must be followed to mitigate for the impact of habitat destruction and disturbance on avifauna and should this be done, the project may proceed with minimal impact on avifauna.

In terms of the heritage impact assessment, eight sites were observed in close proximity to the

dismantling section of the existing power line. Five of these sites (OG1; 2; 9; 11 and 14) are ruins with a low historic and archaeological significance. Site OG12, three graves were reported to be located here in previous studies, but may have since been relocated. This site is located some distance (150 m) south-west of the existing power line and will not be affected by the proposed dismantling. Site OG8 (Mosque) has a low-medium historic significance but is not older than 60 years and will not be impacted during the proposed dismantling as it is already fenced. Site OG3 is a gabion structure that will not be affected by dismantling activities.

Dismantling impacts are short-term impacts and can be effectively mitigated by the measures and recommendations contained in the EMPr (See **Appendix G**).

Alternative 1 (preferred alternative)

The aim of the project is to dismantle and relocate a portion of the existing 88 kV double-circuit mink power line approximately 5.2 km in length as the existing power lines are located on GlencoreXstrata mining property. In order for Eskom to continue supplying electrictiy reliably to the surrounding areas, it is proposed that two new 88 kV power lines within a 2 km corridor are constructed to ensure reliable electricity supply to the surrounding areas once the portion of the existing line is dismantled.

Based on the impact identification and proposed mitigation measures, the impacts are rated as follows per phase:

- **Design and planning – medium** before mitigation and **low** after mitigation;
- **Construction – medium** before mitigation and **low** after mitigation;
- **Operations – medium** before mitigation and **low** after mitigation; and
- **Construction – medium** before mitigation and **low** after mitigation.

Heavily degraded patches of Eastern Highveld Grassland occur adjacent to the proposed Alternative 1. From an ecological perspective, this is the preferred alternative, with Alternative 2, as the entire alignment is situated within transformed and heavily degraded vegetation units as well as impoverished faunal habitats. Vegetation clearance will be restricted to the removal of alien invasive tree species. Furthermore, no Red Listed, rare or threatened plant or sensitive or endangered mammals were observed within the transformed grasslands within were recorded or likely to occur within these transformed vegetation units along and adjacent to Alternative 1. No major Giant Bullfrogs populations are expected from the existing power line servitude or immediate surrounding areas due to extensive habitat transformation (mining and agricultural activities; major road networks bisecting foraging and breeding habitats) as well as degradation (massive deterioration in surface and groundwater quality).

Alternative 1 encroaches into the 32 m buffer zone of Wetland 4 and within the 100 m FEPA buffer zones of Wetland 3 (along the western portion) and Wetland 5. However, the alignment follows existing roads within all areas where encroachment into the buffer zones takes place. The proposed route alignment is therefore unlikely to have a significant impact on wetlands in the area, provided that the wetland areas are not impacted and that suitable mitigation measures to prevent this are implemented. No new wetland crossings will be required should the Alternative 1 be selected.

There is a slight preference for this alternative from an avifaunal perspective, however for all alternatives 1-3, the specialist recommends anti-collision marking devices for certain areas of the proposed alignment (refer to **Appendix A** – Sensitivity Map). Furthermore, the steel monopole design must be used to mitigate against electrocutions.

Seven heritage/archaeological sites were observed in close proximity to Alternative 1. Three of these

sites (OG5; 6 and 15) are ruins with a low historic and archaeological significance. Site OG10 (grave site) is located some 150 m west of the proposed Alternative 1. Impact on the grave site is not envisaged as they are located far from the planned construction route. Site OG7 and Site OG13 are historical buildings have a low-medium historic significance rating and a low archaeological significance rating and will not be impacted buy construction activities. Site OG3 is a gabion structure that will not be affected by construction activities.

The EAP therefore recommends **Alternative 1** be authorised.

Alternative 2

Based on the impact identification and proposed mitigation measures, the impacts for Alternative 2 are rated as follows per phase:

- **Design and planning – medium** before mitigation and **low** after mitigation;
- **Construction – medium** before mitigation and **low** after mitigation;
- **Operations – medium** before mitigation and **low** after mitigation; and
- **Construction – medium** before mitigation and **low** after mitigation.

Heavily degraded patches of Eastern Highveld Grassland occur adjacent to the proposed Alternative 2. From an ecological perspective, this is the preferred alternative, with Alternative 1, as the entire alignment is situated within transformed and heavily degraded vegetation units as well as impoverished faunal habitats. Vegetation clearance will be restricted to the removal of alien invasive tree species. Furthermore, no Red Listed, rare or threatened plant or sensitive or endangered mammals were observed within the transformed grasslands within were recorded or likely to occur within these transformed vegetation units along and adjacent to Alternative 2. No major Giant Bullfrogs populations are expected from the existing power line servitude or immediate surrounding areas due to extensive habitat transformation (mining and agricultural activities; major road networks bisecting foraging and breeding habitats) as well as degradation (massive deterioration in surface and groundwater quality).

Alternative 2 encroaches into the 32 m buffer zones of Wetland 4 and Wetland 6, also in the vicinity of existing roads. Both Wetlands 4 and 6 are considered to have lowered EIS and PES and the proposed route alternative is unlikely to significantly impact on wetland, provided that the wetland areas are not impacted and that suitable mitigation measures to prevent impacts on the wetland areas are implemented. As with Alternative 1, no new wetland crossings will be required should the Alternative 2 route alignment be selected for development and from a wetland ecological perspective, both Alternatives 1 and 2 are preferred.

This alternative is considered suitable from an avifaunal perspective, however for all alternatives 1-3, the specialist recommends anti-collision marking devices for certain areas of the proposed alignment (refer to **Appendix A** – Sensitivity Map). Furthermore, the steel monopole design must be used to mitigate against electrocutions.

Six heritage/archaeological sites were observed in close proximity to Alternative 2. Three of these sites (OG5; 6 and 15) are ruins with a low historic and archaeological significance. Site OG10 (grave site) is located 70 m north of the proposed Alternative 2. Impact on the grave site is not envisaged as they are located away from the planned construction route. Site OG13 is a historical building with a low-medium historic significance rating and a low archaeological significance rating, this building will not be impacted upon during construction. Site OG3 is a gabion structure that will not be affected by construction activities.

This site is considered a close second alternative together with Alternative 1, however Alternative 1 is still preferred for licencing.

Alternative 3

Based on the impact identification and proposed mitigation measures, the impacts for Alternative 3 are rated as follows per phase:

- **Design and planning – medium** before mitigation and **low** after mitigation;
- **Construction – medium** before mitigation and **low** after mitigation;
- **Operations – medium** before mitigation and **low** after mitigation; and
- **Construction – medium** before mitigation and **low** after mitigation.

Even though the impacts are rated the same as Alternatives 1 and 2, during the design and planning phase the impacts before mitigation is 7.8 and 5.5 after mitigation which is higher than Alternatives 1 and 2 scoring of 7 .3 and 5 respectively.

Heavily degraded patches of Eastern Highveld Grassland occur adjacent to the proposed Alternative 3. From an ecological perspective, this is the second preferred option due to the direct crossing of Wetland 2 (unchannelled valley bottom FEPA). Large portions of the valley bottom wetlands have become heavily degraded due to adjacent agricultural activities and invaded by *Pennisetum clandestinum* as well as Pom Pom Weed (*Campuloclinium macrocephalum*). The adjacent coal mining activities adjacent to the existing lines have resulted in severe degradation and transformation of the valley bottom wetlands and adjacent moist grasslands or seepage wetlands.

Vegetation clearance will be restricted to the removal of alien invasive tree species. Furthermore, no Red Listed, rare or threatened plant or sensitive or endangered mammals were observed within the transformed grasslands within were recorded or likely to occur within these transformed vegetation units along and adjacent to Alternative 3. No major Giant Bullfrogs populations are expected from the existing power line servitude or immediate surrounding areas due to extensive habitat transformation (mining and agricultural activities; major road networks bisecting foraging and breeding habitats) as well as degradation (massive deterioration in surface and groundwater quality).

Alternative 3 encroaches into the 32 m buffer zones of Wetlands 4 and 6 along existing roads, and also requires the direct crossing of Wetland 2, a wetland FEPA. The risk of impacts on this wetland is therefore considered to be high should this alternative be selected and as far as possible this wetland crossing should be spanned.

This alternative is considered suitable from an avifaunal perspective, however for all alternatives 1-3, the specialist recommends anti-collision marking devices for certain areas of the proposed alignment (refer to **Appendix A** – Sensitivity Map). Furthermore, the steel monopole design must be used to mitigate against electrocutions.

Four heritage/archaeological sites were observed in close proximity to Alternative 3. Two of these sites (OG6 and 15) are ruins with a low historic and archaeological significance. Alternative 2 is located approximately 100 m south of the graveyard (Site OG4) and across the road R545 to the west of the graveyard (west of the road). To minimise possible impact on the graves it is recommended that the graveyard be fenced and any surviving relatives be allowed access. Site OG7 is a historical building with a low-medium historic significance rating and a low archaeological significance rating, this building will not be impacted upon during construction.

Alternative 3 is not preferred de to the finding presented above.

No-go alternative (compulsory)

The no go option would be not to dismantle a portion of the existing Grootpan-Brakfontein power line that will limit the extent of current operations and future expansion of the GlencoreXstrata mine. Without the project, there would be no additional environmental impact, however, this option is not preferred as it affects the mine's current and future activities.

SECTION E. RECOMMENDATION OF PRACTITIONER

Is the information contained in this report and the documentation attached hereto sufficient to make a decision in respect of the activity applied for (in the view of the environmental assessment practitioner)?	YES	NO

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

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

- If during construction any cultural heritage resources or graves are unearthed all work has to be stopped until the site has been inspected and mitigated by a cultural heritage practitioner.
- A bird-friendly steel monopole structure should be used to avoid electrocutions and certain areas of the alignment should be marked with anti-collision marking devices (refer to the Sensitivity Map – Appendix A) to avoid bird collisions.
- All wetlands and their associated riparian zones should be treated as highly sensitive areas, and be strictly maintained as 'no-go' areas, except in the case of construction activities such as stringing of the lines and clearing of vegetation or subject to conditions outlined in an approved Water Use Licence. No lay-down areas should be placed within riparian corridors and no construction right of ways should be created through or across watercourses (other than where existing roads / accesses cross watercourses).
- An avifaunal walk down should be undertaken prior to dismantling activities and should the African Grass Owl be found, suitable recommendations will need to be provided.
- A Water Use Licence must be obtained from the Department of Water and Sanitation for the impeding and diverting the flow of water in a watercourse and the altering of the bed and banks, course or characteristics of a watercourse (Section 21 c and i).
- Permits for removal must be obtained from the Provincial Nature Conservation body should the *Hypoxis hemerocallidea* be affected.
- Permitted recording is recommended if the heritage/archaeological sites of medium significance are required to be demolished. However, this is not envisaged presently as outline in the Heritage Assessment.

Is an EMPr attached?	YES	NO

The EMPr must be attached as **Appendix G**.

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

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

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

_____

NAME OF EAP

_____ _____

SIGNATURE OF EAP DATE

SECTION F: APPENDICES

The following appendixes must be attached:

Appendix A: Maps

Appendix B: Photographs

Appendix C: Facility illustration(s)

Appendix D: Specialist reports (including terms of reference)

Appendix E: Public Participation

Appendix F: Impact Assessment

Appendix G: Environmental Management Programme (EMPr)

Appendix H: Details of EAP and expertise

Appendix I: Specialist's declaration of interest

Appendix J: Additional Information