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

The Eskom Sekgame-Bulkop-Sishen Project involves the following:

The project involves the construction of two new 132kV power lines:

- A ±6km 132kV power line from the new Sekgame Switching Station to the existing Ferrum/Bulkop 132kV line
- A ±6km 132kV power line from the new Sekgame Switching Station to the existing Ferrum/Sishen 132kV line.
- Above-mentioned lines will be constructed adjacent to each other.

It furthermore entails the decommissioning of two existing power lines:

- A section of the existing 132kV Ferrum-Bulkop powerline line as well as a section of the existing Ferrum-Sishen power line will be decommissioned. The lines to be decommissioned run from the Ferrum Substation up to the connection point of the new lines as proposed with the existing Ferrum-Bulkop and Ferrum-Sishen lines. The lines to be decommissioned are each approximately 11km in length.

Note
Environmental Authorisation for the proposed Sekgame Switching Station has been obtained as part of another environmental process.

The study area is situated adjacent to the N14 highway, just south of Kathu in the Northern Cape.

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

Listing Notice 1	
GN 983, Dec 2014, Number 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 275 kilovolts; or (ii) inside urban areas or industrial complexes with a capacity of 275 kilovolts or more	Two new 132kV power lines of approximately 6km each will be constructed.
GN 983, Dec 2014, Number 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;	Two existing 132kV power lines of approximately 11km each will be decommissioned.

(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.	

2. FEASIBLE AND REASONABLE ALTERNATIVES

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

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

Describe alternatives that are considered in this application as required by 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

Alternative 1 (Preferred Alternative)		
Description	Lat (DDMMSS)	Long (DDMMSS)
Alternative 2		
Description	Lat (DDMMSS)	Long (DDMMSS)
Alternative 3		
Description	Lat (DDMMSS)	Long (DDMMSS)

In the case of linear activities:

Alternative:	**Latitude (S):**	**Longitude (E):**
Alternative 1 (Preferred Route Alternative)		
• Starting point of the activity (Sekgame Switching Station)	27^0 46' 34.28" S	23^0 03' 58.59" E
• Middle/Additional point of the activity	27^0 47' 59.03" S	23^0 03' 43.47" E
• End point of the activity (Ferrum/Bulkop and Ferrum/Sishen 132kV existing lines)	27^0 48' 45.27" S	23^0 01' 49.22" E
Alternative 2		
• Starting point of the activity (Sekgame Switching Station)	27^0 46' 34.28" S	23^0 03' 58.59" E
• Middle/Additional point of the activity	27^0 48' 06.68" S	23^0 03' 48.37" E
• End point of the activity (Ferrum/Bulkop and Ferrum/Sishen 132kV existing lines)	27^0 48' 45.27" S	23^0 01' 49.22" E
Alternative 3		
• Starting point of the activity		
• Middle/Additional point of the activity		
• End point of the activity		

For route alternatives that are longer than 500m, please provide an addendum with co-ordinates taken every 250 meters along the route for each alternative alignment.
In the case of an area being under application, please provide the co-ordinates of the corners of the site as indicated on the lay-out map provided in Appendix A of this form.

ROUTE DESCRIPTION

The study area is located along the N14 near Kathu. The landscape consists of slightly undulating to flat plains with red wind-blown sands. The general slope of the area is towards the west to south-west. While the landscape along the proposed route is relatively undisturbed, much of the topography west of the study area around Sishen has been significantly altered by mining activities, with large excavations and waste rock dumps. A railway line servicing the mining areas is located west of the site, near the line to be decommissioned. There are also a number of other powerlines crossing the landscape to the west of the site.

The vegetation cover consists of a bushveld and thornveld within the Eastern Kalahari Bushveld bioregion of the Savanna Biome. Kalahari salt pans also occur within the study area. The largest part of the land is used for grazing by domestic stock and free roaming game. Although representative of the natural vegetation, none of the vegetation units are regarded as very sensitive with similar large patches of these vegetation types available in other parts of the region. Furthermore, large parts of these vegetation units shows signs of bush densification due to overgrazing in the past/present. This has lowered the ecological value of the natural ecosystem.

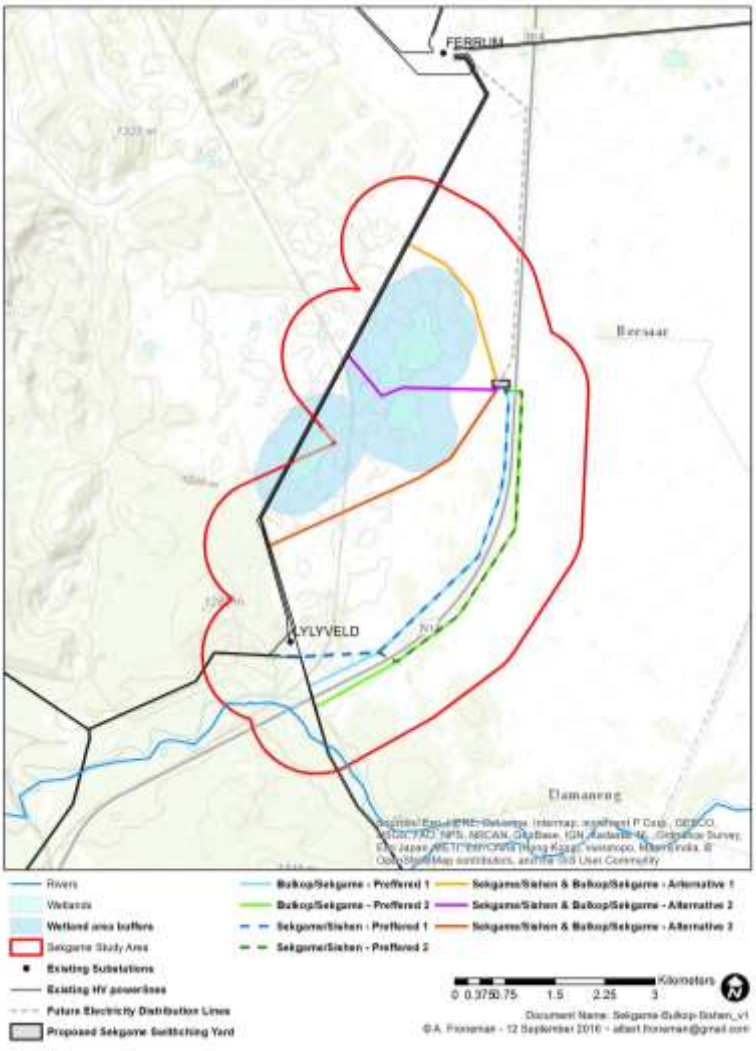
ROUTE CORRIDORS

A 1km wide route corridor is being investigated (500m on both sides of the power lines). This route corridor will be approved by the Department of Environmental Affairs, which will allow for slight deviations of the power line within the approved corridor. Please note that Eskom will however only register the required servitude within the route corridor and *not* the entire corridor.

SELECTING AN ALTERNATIVE

The maps below are also attached in Appendix A

ROUTES ORIGINALLY PRESENTED BY ESKOM AS ALTERNATIVE ROUTES



The above five route alternatives were originally presented as route alternatives. However, during the site meeting which was attended by Landscape Dynamics, the specialists as well Eskom's environmental officers and their technical team, it was decided that the three short route alternatives are not viable alternatives due to the following reasons:

- The one route crosses an identified pan – the impact is unnecessary and can be avoided by choosing a different route alternative.
- The section of the existing 132kV Ferrum/Bulkop and Ferrum/Sishen power lines to which these three route alternatives will have to be connected to are in need of refurbishment and would have to be upgraded before the new lines can be connected thereto. This can only be done at considerable cost and may render the project not financially feasible.

- Kumba Mines, the landowner on which the existing 132kV Ferrum/Bulkop and Ferrum/Sishen power lines run, requested that Eskom investigated the possibility that these lines be removed so that they may use the servitude area for their activities.

ALTERNATIVE ROUTES INVESTIGATED

The routes as mapped below were distributed during the public participation process and are also the routes on which the specialists' studies were based (also refer to Appendix A for a copy of this map).

Public Participation
One objection to the Preferred Route Alternative was received. This was however solved and the Preferred Route did not change (also refer to the Comments & Responses Report attached in Appendix E). No further objections to any route alternative were received during the public participation process conducted to date for this project.

SPECIALIST STUDIES
The route alternatives run on both sides of the N14 highway so it is to be expected that there is very little difference in the biophysical environment of the two route alternatives.

A concise summary of the specialists' studies as well as their selection of an alternative route are given below.

Fauna & Flora
The purpose of any ecological assessment is to determine areas of high sensitivity and to provide guidelines to ensure that the proposed development is ecologically sensitive and to prevent unnecessary destruction of natural ecosystems. It is mostly unavoidable to prevent all development especially power lines to cross and affect sensitive areas. It is therefore important that all possibilities for such power lines are investigated in order to provide ecologically sound recommendations on routes to be followed.

Vegetation types
On a small scale the proposed routes fall within the savanna biome and within a larger regional scale the proposed routes are according to Mucina & Rutherford (2006) located within the Eastern Kalahari Bushveld Bioregion (Svk).

In terms of vegetation types the proposed routes include the Kuruman Thornveld (SVk9); and Kathu Bushveld (SVk12) (Mucina & Rutherford 2006).

Kuruman Thornveld (SVk9)

Although none of this vegetation type is statutorily conserved it is regarded as a least threatened vegetation system with little erosion.

Kathu Bushveld (SVk12)

Although none of this vegetation type is statutorily conserved it is regarded as a least threatened vegetation system with little erosion. Some sections are already transformed due to iron ore mining activities.

Vegetation Units
The proposed powerline corridors are located within two different vegetation units namely *Tarchonanthus camphoratus* shrubland and *Senegalia mellifera* shrubland. These vegetation units are mostly natural but not regarded as being threatened. None of the impacts assessed for the different vegetation units should have a high negative effect on the environment and no unit was found to be highly sensitive to development.

Protected species
- Only one red data/protected species (the tree *Vachellia erioloba*) was observed in vegetation unit 1 (with large numbers of them already dying due to red iron dust pollution) that could be

negatively affected if large numbers are removed or damaged. This will have a local effect on their populations and could be long-term.

- This could however be mitigated by placing the pylons and powerlines such that as little as possible / none of these species are affected. A walk-down exercise by qualified Eskom personnel or a botanist should be undertaken after the final route has been decided upon and the placement of the pylons has been marked in the field.
- If single individuals of these species have to be removed, a permit from the Department of Agriculture, Fisheries and Forestry (Forestry Branch) will have to be obtained for this purpose.

Decommissioning of existing lines
The decommissioning of the proposed line will also have no negative effect on the environment, but care should be taken not to destroy the *Vachellia erioloba* individuals present in some localities.

Selecting an alternative
Based on this study it is concluded that any of the two alternative corridors could be considered for the construction of the proposed powerlines with no long or medium-term negative effects envisaged. Both proposed route alternatives is not envisaged from a plant and faunal ecological point of view have negative impacts on the ecosystem.

Aquatic Ecology
Aquatic features which occur within the study area consist of the Ga-Mogara River which flows to the north-west before discharging into the Kuruman River and then the Molopo River. The Molopo River has its confluence with the Orange River at Riemvasmaak. The river is however located south of and outside of the study area. The project will not impact on this water resource.

A few relatively small valley floor depressions or pans are located adjacent to the line to be decommissioned. All of these freshwater features tend to be ephemeral, mostly only carrying water for short periods of time during the rainy season (March-April). The streams in general have little to no riparian associated vegetation except for occasional trees and shrubs.

The proposed decommissioning has the potential to reduce the disturbance of the freshwater features within the servitude. The potential impact of this proposed activity is thus of a low significance with mitigation that may result in a low positive impact over the longer term.

The new powerline that is proposed to be constructed will be along the N14 road where it will be easily accessible. Due to the activities associated with the road, the area adjacent to the road is already disturbed. Construction of the powerline is not likely to significantly alter the current ecological state. In addition, no freshwater features occur along the proposed route or its alternative. There are thus no potential short or longer term freshwater impacts associated with the proposed new powerlines.

As a result, it is expected that there will be short term and localised negative impacts that are of a very low significance, mostly occurring during the decommissioning of the existing line with no impacts during the construction phase of the new line. Over the longer term, a low positive impact can be expected.

In line with the above, the risk of the proposed activities resulting in any degradation to the freshwater ecosystems in the study area is low. The activities can thus potentially be authorised in terms of the General Authorisations for Section 21c&i water use. The water use aspects of the proposed activities would be registered with the Department of Water & Sanitation.

Selecting an alternative

There are no freshwater features occurring along the proposed new routes (both the preferred and the alternative routes). Within the line to be decommissioned, the portions of the depression wetlands that occur within close proximity to the line and that are likely to be impacted by the proposed decommissioning activities have already been modified by the existing activities within the servitude.

The preferred and the alternative routes would have the same potential impact (nil) on the freshwater features in the area.

Bird Impact Assessment

In general, the habitat through which the proposed Sekgame 132kV alignments run is low to moderately sensitive from a potential bird impact perspective. The natural habitat is moderately to heavily disturbed woodland and is likely to attract a very limited number of Red Data power line sensitive species. Anthropogenic impacts such as mining activities and the presence of a major provincial road has had a negative impact on avifaunal diversity and abundance in the study area, which is reflected in the low reporting rates for power line sensitive Red Data species. The construction of the proposed power lines will result in various, but very limited potential impacts on the birds occurring near the new infrastructure. The proposed power line poses a **very low** collision risk which will not require the application of mitigation measures. The electrocution risk is assessed as **low**, due to the proposed structure type, and can be reduced to **very low** with appropriate mitigation. The habitat transformation and disturbance associated with the construction of the proposed Sekgame power lines and de-commissioning of the existing 132kV Bulkop-Ferrum and 132kV Ferrum-Sishen should have a **low** impact, which could be reduced to **very low** with appropriate mitigation.

Heritage Impact Assessment

During the survey no site of cultural heritage significance was identified on any of these. From a heritage perspective any of the proposed routes may be utilised.

It should be noted that the subterranean presence of archaeological and/or historical sites, graves features or artifacts is always a distinct possibility. Due to the density of vegetation in certain areas along the routes, it also is possible that some sites may only become known later on. Operating controls and monitoring should therefore be aimed at the possible unearthing of such features. Care should therefore be taken when development commences that if any of these are discovered, a qualified archaeologist be called in to investigate the occurrence.

Palaeontological Impact Assessment

The overlying Kalahari sands are most unlikely to contain any in situ fossils of significance. The underlying rocks are too old to contain any body fossils but there is a very small chance that stromatolites could occur far below the foundations for the towers, infrastructure and stations. If stromatolites are encountered then it is recommended that a small sample be sent to a palaeontologist to assess for microfossils (algae). It is concluded that the project may continue as far as the paleontology is concerned.

Visual Impact Assessment

The Visual Extent of the proposed power lines routings is rated Local due to surrounding Kathu Bushveld / Kuruman Thornveld vegetation, as well as the high VAC created by the mining landscapes to the west which include large man-made forms, railway line and power line infrastructure. Exposure is rated High with the main receptors, the N14 National Highway, located directly adjacent to the proposed routings. Scenic quality for all proposed Preferred routing areas was rated Low, due to the strong negative influence of the Sishen Mine as well as the Eskom transmission line corridors located in

the background. Scenic quality for all proposed Alternative routings areas was rated Medium, due to the higher ratings for the surrounding rural landscape which add value to the eastern views (away from the Sishen Mine), and the relatively neutral rural cultural landscape modifications.

Receptor Sensitivity to landscape change for the Preferred routing areas was rated Low. Given the strong mining landscape context of the site and the domination of mining within the local economy, it is likely that public interest in maintaining visual quality is low. Receptor Sensitivity to the Alternative routings was rated Medium due to the rural landscape contrasting strongly with the western modified mining landscape, which by contrast, creates a view 'escape' from the Sishen mining landscapes, increasing the value of the area as a Special Area.

The visual preference for the proposed routings is the Preferred Route. This is due to the higher VAC levels of the site as well as the mining landscape context, with the Extent of the visual impact expected to be contained at the Local level. Although the structures are likely to become permanent features, Magnitude was rated Low due to the expected weak levels of visual contrast. Due to the already strongly modified mining landscape in the background (which will become more modified by the expansion of the proposed Sishen Tailings Dam), cumulative risks from further landscape degradation associated with the proposed power line project are rated as Low. Without Mitigation, the Visual Impact Significance of the proposed power line landscape modification was rated Medium, and Low with Mitigation. Mitigation is recommended.

Due to the cumulative risks associated with landscape degradation resulting in property devaluation, Route Alternative 2 is Not Recommended. The options should only be considered should the Preferred Routing be found to be Fatally Flawed. The eastern areas surrounding the proposed routing are rural and construction of the Alternative power line routings would increase the potential for cumulative risks from landscape degradation and the resultant loss of property and aesthetic value.

SELECTING AN ALTERNATIVE

ALTERNATIVE 1 - PREFERRED ROUTE ALTERNATIVE
The route alternatives run on both sides of the N14 highway so it is to be expected that there is very little difference in the biophysical environment of the two route alternatives.

Public participation
No objection from the public was received to either the Preferred or Alternative Route options.

Specialist studies
The following specialist studies concluded that there is no specific preference to a route alternative:

- Fauna & Flora Impact Assessment
- Avifauna Impact Assessment
- Heritage Impact Assessment
- Palaeontological Impact Assessment

The Visual Impact Assessment concluded that Route Alternative 2 is not recommended due to the eastern areas surrounding the proposed route being rural and construction of the Alternative power line would increase the potential for cumulative risks from landscape degradation and the resultant loss of property and aesthetic value.

Technical considerations

- The Preferred Route is slightly shorter than Route Alternative 2
- Route Alternative 2 will entail the crossing of the N14 at two different points. This can add considerably to the construction costs of the powerline.

Alternative 2

Route Alternative 2 is not the preferred route alternative due to the following:

- The Visual Impact Assessment concluded that Route Alternative 2 is not recommended due to the eastern areas surrounding the proposed route being rural and construction of the Alternative power line would increase the potential for cumulative risks from landscape degradation and the resultant loss of property and aesthetic value.
- It is slightly longer than the Preferred Route
- The N14 will have to be crossed at two different points, making it less desirable from a costing point of view.

Alternative 3

Conclusion on selecting an alternative

Once mitigation measures have been applied, the Preferred Route Alternative would have a low and acceptable impact on the environment. The Preferred Route is therefore the alternative that is recommended for environmental authorisation

b) Lay-out alternatives

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

c) Technology alternatives

Alternative 1 (preferred alternative)
Alternative 2
Alternative 3

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

Alternative 1 (preferred alternative)		
Alternative 2		
Alternative 3		

e) No-go alternative

The Sekgame Switching Station will be constructed close to the Ferrum Substation to provide in direct customers' (for example the mines within the macro area) requirements. Kumba mines specifically applied for the deviation of the Ferrum-Sishen 132kV Traction line as well as the Ferrum-Bulkop 132kV lines on their property.

The deviation applied for by Kumba will be addressed with this project: in other words the decommissioning of those lines and the construction of new lines in a different position.

The existing lines are furthermore old and are in need of refurbishment. This project will therefore help to upgrade the wider network in the Kathu area. This will then assist in less outages and a more reliable electricity supply.

If the no-go option is applied, it means that the status quo will remain, which is definitely not the preferred alternative for this project.

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

3. PHYSICAL SIZE OF THE ACTIVITY

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

Alternative:	Size of the activity:
Alternative A1[1] (preferred activity alternative)	m^2
Alternative A2 (if any)	m^2
Alternative A3 (if any)	m^2

or, for linear activities:

Alternative:	**Length of the activity:**
Alternative 1 - Preferred Route Alternative	Sekgame / Bulkop ± 6km Sekgame / Sishen ± 6.5km
Alternative 2	Sekgame / Bulkop ± 6.5km Sekgame / Sishen ± 7km
Alternative 3	km

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

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

Alternative:	Size of the site/servitude:
Alternative 1 – Preferred Route Alternative	52m wide servitude will be registered
Alternative 2	52m wide servitude will be registered
Alternative 3	

4. 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:

New Power Lines
The new routes are adjacent to the N14 highway and new access roads are therefore not required.

Decommissioned Route
There is an existing maintenance road that will be utilised during the decommissioning process.

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

5. LOCALITY MAP

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

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

6. LAYOUT/ROUTE PLAN

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

The site or route plans must indicate the following:

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

7. SENSITIVITY MAP

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

- watercourses;
- the 1:100 year flood line (where available or where it is required by 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.

8. SITE PHOTOGRAPHS

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

9. FACILITY ILLUSTRATION

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

10. ACTIVITY MOTIVATION

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

1. Is the activity permitted in terms of the property's existing land use rights?	YES	NO	Please explain
Servitudes will be registered along the powerline route. The servitude width will be 52m.			
2. Will the activity be in line with the following?			
(a) Provincial Spatial Development Framework (PSDF)	YES	NO	Please explain
The sectoral policies, objectives and implementation strategies proposed by the August 2012 Northern Cape PSDF are informed by, amongst others, the need for bulk engineering and social services including electricity, water, health, education, housing, and recreational facilities. Economic development opportunities are the key determinant in the settlement pattern of the Northern Cape Province. Economic development, in turn, typically responds to the availability of Environmental Capital (e.g. water, suitable agricultural soil, mining resources, etc.) and Infrastructural Capital (e.g. roads, electricity, bulk engineering services, etc.). The proposed new 132kV power lines would ensure more adequate electricity supply within the macro area and local municipality. The municipality will be in a position to distribute electricity further to the local communities in which it operates. It is therefore clear that the project as proposed could assist the Northern Cape Province in achieving their development and service delivery goals.			
(b) Urban edge / Edge of Built environment for the area	YES	NO	Please explain
Not applicable			
(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 **Gamagara Local Municipality's Integrated Development Plan 2015 – 2016**, the following applies: After the various engagements with the community, the following were indicated as priorities for the 2015/16 financial year as in order of their priority: *Basic Service Delivery and Infrastructure Investment* • Water and Sanitation • Electricity • Roads and Sanitation/ EPWP Roads • Mixed development Housing • Construction of RDP Houses This project contributes to electricity infrastructure within the boundaries of the Local Municipality.			

(d) Approved Structure Plan of the Municipality	YES	NO	Please explain
A Structure Plan for the Gamagara Local Municipality is not available / does not exist.			
(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
According to the **John Taolo District Municipality's EMF, September 2011** the following applies: Improvements in access to basic services will further ensure that the pressures on natural resources, such as the use of wood for fuel, will be reduced. The availability of electricity, communication networks, water and transportation will create new, and optimise existing, opportunities for economic development and entrepreneurship. It will also increase people"s access to employment opportunities. By implication, the two aspects that come to the fore as opportunities are the availability of workforce for the major economic opportunities in mining and manufacturing/processing, as well as investment in infrastructure and services that will reduce the overall cost of the services over time – i.e. renewable energy and ecological infrastructure. Further to the above, this study is being conducted according to the NEMA principles and the environment is protected through various mitigation measures as proposed in the Environmental Management Plan which forms part of this Basic Assessment Report.			
(f) Any other Plans (e.g. Guide Plan)	YES	NO	Please explain
Unknown			
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
The proposed project provides the area with a long term solution to accommodate the expected increase in electricity demand. The economic sector as well as local communities (distribution of electricity by the municipalities) will benefit from this project. The project will strengthen the electricity network; thereby ensuring less dips and power failures.			
4. Does the community/area need the activity and the associated land use concerned (is it a societal priority)? (This refers to the strategic as well as local level (e.g. development is a national priority, but within a specific local context it could be inappropriate.)	YES	NO	Please explain
The proposed project will contribute to the provision of a long term solution to reliable electricity supply. The economic, private sectors as well as the environment will benefit from this project.			

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 project is for the distribution of existing available electricity and no additional capacity is required for this Eskom development.			
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
Municipalities recognise the need for proper engineering infrastructure (e.g. electricity) in its area of jurisdiction and much needed infrastructure (e.g. electricity) is identified as a priority to unlock the economic growth potential of the macro area.			
7. Is this project part of a national programme to address an issue of national concern or importance?	YES	NO	Please explain
This project does ultimately contribute on national level. Eskom is the national electricity utility which generates and distributes electricity to industrial, mining, commercial, agricultural and residential electricity consumers and re-distributors.			
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
All impacts can be mitigated to acceptable levels and this activity will not impact negatively on the current landuse along the route.			
9. Is the development the best practicable environmental option for this land/site?	YES	NO	Please explain
Negative impacts that this development may have on the environment can be mitigated to acceptable levels and the protection of the bio-physical environment is therefore not jeopardised. .			
10. Will the benefits of the proposed land use/development outweigh the negative impacts of it?	YES	NO	Please explain
All negative impact associated with this proposed activity can be mitigated to acceptable levels. The positive impact of reliable and adequate electrical supply outweighs possible negative impacts that may occur after mitigation measures have been applied.			

11. Will the proposed land use/development set a precedent for similar activities in the area (local municipality)?	YES	NO	Please explain
Existing electrical infrastructure such as power lines always has the potential for future upgrade and or construction of additional components to the facility and powerlines.			
12. Will any person's rights be negatively affected by the proposed activity/ies?	YES	NO	Please explain
No person's rights would be affected by the proposed activity. A thorough public participation programme was conducted and issues raised by interested & affected parties are satisfactorily addressed.			
13. Will the proposed activity/ies compromise the "urban edge" as defined by the local municipality?	YES	NO	Please explain
The activity is irrelevant to the urban edge, because it is a linear activity which is required for service provision.			
14. Will the proposed activity/ies contribute to any of the 17 Strategic Integrated Projects (SIPS)?	YES	NO	Please explain
15. What will the benefits be to society in general and to the local communities?			Please explain
The proposed project provides the area with a long term solution to accommodate the expected increase in electricity demand and it is anticipated that the network performance will improve and the duration and frequency of supply interruptions will therefore be minimal. The positive impact of reliable and adequate electrical supply outweighs possible negative impacts that may occur after mitigation measures have been applied.			
16. Any other need and desirability considerations related to the proposed activity?			Please explain
An important consideration of the project is to ensure that the proposed solution to enhance the network does not have a negative impact on the environment. Mitigation measures as proposed in this report will ensure the protection of the environment.			
17. How does the project fit into the National Development Plan for 2030?			Please explain
The **National Development Plan** aims to eliminate poverty and reduce inequality by 2030. South Africa can realise these goals by drawing on the energies of its people, growing an inclusive economy, building capabilities, enhancing the capacity of the state, and promoting leadership and partnerships throughout society. The Commission's **Diagnostic Report, June 2011** set out South Africa's achievements and shortcomings since 1994. It identified a failure to implement policies and an absence of broad partnerships as the main reasons for slow progress, and set out nine *primary challenges of which the following is relevant to this project*: "Infrastructure is poorly located, inadequate and under-maintained". Given the complexity of national development, the plan sets out six *interlinked priorities. Relevant to this project is bringing about faster economic growth*.			

The **National Development Plan** makes a firm commitment to achieving a minimum standard of living. *Elements of a decent standard of living include the following relevant to this project* :

- A more efficient and competitive infrastructure.
- Infrastructure to facilitate economic activity that is conducive to growth and job creation.

An approach will be developed to *strengthen key services* such as commercial transport, energy, telecommunications and water, while ensuring their long-term affordability and sustainability.

Economic infrastructure: The proportion of people with access to the electricity grid should rise to at least 90 percent by 2030, with non-grid options available for the rest.

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

Current procedures and/or organisational structures are not necessarily achieving integrated decision-making and/or co-operative governance and, as a result, there is a failure to properly achieve the objectives of IEM as set out in Section 23 of NEMA. EIA's however often focus on the immediate harm a project will cause rather than any benefits it might create in the long term to sustainable development.

The stated objectives of Section 23 are to ensure integrated decision-making and co-operative governance so that NEMA's principles and the general objectives for integrated environmental management of activities can be achieved. The goals are to

a) promote the integration of the principles of environmental management set out in section 2 into the making of all decisions which may have a significant effect on the environment;
b) identify, predict and evaluate the actual and potential impact on the environment, socio-economic conditions and cultural heritage, the risks and consequences and alternatives and options for mitigation of activities, with a view to minimising negative impacts, maximising benefits, and promoting compliance with the principles of environmental management set out in section 2;
c) ensure that the effects of activities on the environment receive adequate consideration before actions are taken in connection with them;
d) ensure adequate and appropriate opportunity for public participation in decisions that may affect the environment;
e) ensure the consideration of environmental attributes in management and decision-making which may have a significant effect on the environment; and
f) identify and employ the modes of environmental management best suited to ensuring that a particular activity is pursued in accordance with the principles of environmental management set out in section 2.

For this project the following actions were taken to reach the general objectives of Integrated Environmental Management as set out in Section 23 of NEMA:

a) Applicable environmental, economic and social aspects have been assessed, thereby ensuring an integrated approach in order to balance the needs of all whom would be affected by this development.
b) Impacts have been described and assessed elsewhere in this report. Mitigation measures have been supplied in order to ensure that all identified impacts are mitigated to acceptable levels. Alternatives have been thoroughly assessed and the best possible solution represents this development proposal.
c) The development proposal has to be evaluated and approved by DEA and no construction may commence prior to the issuing of the Environmental Authorisation.

d) The procedures which were followed during the public participation programme were based on the NEMA EIA Regulations which came into effect on 14 December 2015.
e) DEA will take all information as represented in this report into consideration and may request further information should they feel that further studies/information is required before an informed decision can be made.
f) The mitigation measures as supplied in this report together with the measures as per the Environmental Management Programme are deemed to be the best way to manage anticipated impacts.

By providing electricity whilst not impacting negatively on the environment, the project would contribute to a sustainable environment.

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

Chapter 2 of NEMA provides a number of principles that decision-makers have to consider when making decisions that may affect the environment, therefore, when a Competent Authority considers granting or refusing environmental authorisation based on an Environmental Impact Assessment, these principles must be taken into account.

The NEMA principles with which this application conforms are described as follows —
1. Environmental management must place people and their needs at the forefront of its concern, and serve their physical, psychological, developmental, cultural and social interests equitably.
2. Development must be socially, environmentally and economically sustainable.
3. Sustainable development requires the consideration of all relevant factors.

The social, economic and environmental impacts of activities, including disadvantages and benefits, were considered, assessed and evaluated, and informed decision-making by the authority is hereby made possible.

11. APPLICABLE LEGISLATION, POLICIES AND/OR GUIDELINES

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

Title of legislation, policy or guideline	Applicability to the project	Administering authority	Date
National Environmental Management Act (Act 107 of 1998), as amended	Environmental Authorisation is required	Department of Environmental Affairs	BAR submitted for comment Jan 2017
National Heritage Resources Act (25 of 1999)	Comment is required	SAHRA	BAR submitted for comment Jan 2017
National Water Act (Act 36 of 1998)	Comment is required	Department of Water Affairs	BAR submitted for comment Jan 2017
Section 7(1) and 15(1) of the National Forests Act of 1998 (Act 84 of 1998)	Authorisation is not required	Department of Agriculture	
Environment Conservation Act (Act 73 of 1989)	Authorisation is not required	Department of Environmental Affairs	
National Environmental Management: Biodiversity Act (Act 10 of 2004)	Authorisation is not required	Department of Environmental Affairs	

National Environmental Management: Biodiversity Act (Act 10 of 2004): Threatened & Protected Species Regulations	*Vachellia erioloba* (Camel thorn) were observed in the study area, but impact could be avoided. If not , the relevant permit application would be undertaken	Department of Environmental Affairs Department of Agriculture, Forestry & Fisheries for permit applications	
National Spatial Biodiversity Assessment (2004)	Authorisation is not required	Department of Environmental Affairs	
National Biodiversity Strategy Action Plan	Authorisation is not required	Department of Environmental Affairs	
Conservation of Agricultural Resources Act (43 of 1983)	Authorisation is not required	Department of Agriculture	
Endangered and Rare Species of Fauna and Flora (AN 1643 February 1984)	Authorisation is not required	Lists endangered species in terms of the Nature Conservation Ordinance, 1983 (Ordinance 12 of 1983)	

12. WASTE, EFFLUENT, EMISSION AND NOISE MANAGEMENT

a) Solid waste management

Will the activity produce solid construction waste during the construction/initiation phase?	YES	NO
If YES, what estimated quantity will be produced per month?	± 15m^3	

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

- Unusable waste will be disposed of at registered waste disposal sites according to the applicable waste classification.
- Hazardous construction waste will be disposed of at a H:H registered waste disposal facility.
- Steel (ferrous and non-ferrous) and aluminium will be recovered and sold as scrap for recycling.
- Refuse bags will be supplied to construction personnel for dumping of household waste. Bins with lids will be provided at construction camps for household waste.

For all waste that is disposed of, Eskom shall obtain waste manifests and disposal certificates, which shall be recorded and reported to the Environmental Control Officer (ECO) on a monthly basis.

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

- It will be transported off site by the contractor and returned to Eskom stores where scrap will be handed over to buyers. Any waste that cannot be recycled will be transported to appropriate registered waste disposal sites.
- General household waste generated by the construction team will be removed by the relevant contractor to a registered waste disposal site / municipal waste transfer station.
- The expected volumes of solid waste are small and does not require authorisation in terms of relevant legislation.

For all waste that is disposed of, Eskom shall obtain waste manifests and disposal certificates, which shall be recorded and reported to the ECO on a monthly basis.

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

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

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

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

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

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

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

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

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:

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:

No permanent noise pollution will occur as a result of the proposed activity.

Limited noise will however occur as a result of construction activities during the construction phase. Eskom shall provide all necessary equipment with standard silencers and maintain silencer units on vehicles where required. Equipment must always be in good working order to minimise unnecessary noise levels.

Studies undertaken on behalf of Eskom confirmed that calculations of electric and magnetic field levels created by overhead powerlines / substations where the public may be exposed are well within the ICNIRP guidelines. Note that ICNIRP refers to Non-ionising Radiation Protection which receives world-wide support and is endorsed by the Department of Health in South Africa.

13. WATER USE

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

Municipal **(Construction)**	Water board	Groundwater	River, stream, dam or lake	Other	The activity will not use water **(Operation)**

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.

A section of the two existing power lines that will be decommissioned occur within close proximity to depression wetlands and are likely to be impacted on. A Risk Assessment was therefore done by BlueScience (the aquatic specialists appointed for this project) and it concluded that the decommissioning will pose a low risk of impact on the watercourse.

A low risk of impact could be authorised in terms of a General Authorisations (GA). It is likely that the proposed activities associated with the aquatic ecosystems in the area can therefore be authorised in terms of the new GA. An application to DWS will be submitted in due course.

14. ENERGY EFFICIENCY

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

Not applicable

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

The activity is designed for the distribution of electricity. Energy is not being generated nor consumed by the activity, thus alternative energy has not been considered in this application.

SECTION B: SITE/AREA/PROPERTY DESCRIPTION

Important notes:

1. For linear activities (pipelines, etc) as well as activities that cover very large sites, it may be necessary to complete this section for each part of the site that has a significantly different environment. In such cases please complete copies of Section B and indicate the area, which is covered by each copy No. on the Site Plan.
   Section B Copy No. (e.g. A): [ ]
2. Paragraphs 1 - 6 below must be completed for each alternative.
3. Has a specialist been consulted to assist with the completion of this section? YES | NO

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

Property description/physical address:

Province	Northern Cape
District Municipality	John Taolo Gaetsewe District Municipality
Local Municipality	Gamagara Local Municipality
Ward Number(s)	1 & 3
Farm name and number	Farm 461, Sekgame, Kuruman RD Farm 545, Lyleveld, Kuruman RD Farm 545 Portion 2, Demaneng
Portion number	
SG Code	C041 0002 00000461 00000 C041 0002 00000545 00000 C041 0002 00000545 00002

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

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

Agriculture and mining

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?

Landowner consent is required before Eskom can register a servitude for the distribution of electricity across the relevant properties. At this stage of the EIA process all landowners had been communicated with and concerns raised were satisfactorily addressed. As soon as Environmental Authorisation is obtained, the negotiator on behalf of Eskom will have option documents signed and he/she will appoint independent land valuators to determine the compensation amount relevant to each property. A negotiation process will then take place between Eskom and the landowners after which the servitudes will be registered on the relevant property deeds.

YES | NO

1. GRADIENT OF THE SITE

Indicate the general gradient of the site.

Alternative S1:

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

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	X	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

According to the *Ecological Report on the Fauna & Flora* (summarised below and attached in Appendix D) the following applies:

The macro landscape varies from gently undulating plains to rolling hills. No major rivers flow through the proposed route area. The following topographical positions are distinguished: crest, steeper midslopes, flat midslopes and drainage lines. The soil / rock complex is being dominated by Rock and Mispah soil form.

The following geological types occur in the area: The hills consist of banded iron formation, with jaspilite, chert and riebeckite-asbestos of the Griqualand West Supergroup. In some areas small pockets of red, deep, aeolian sands of the Kalahari Group overlying the volcanics and sediments of the Griqualand West Supergroup were observed.

According to the Freshwater Assessment (summarised below and attached in Appendix D), in general the soils within the site are freely drained, structure-less red soils with a high base status that may have restricted soil depth, excessive drainage, high erodibility and low natural fertility.

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.

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.

An **Ecological Report on the Fauna & Flora** was compiled by EnviroGuard Ecological Services. The Report is attached in Appendix D and is summarised below:

FLORA

Vegetation types

On a small scale the proposed routes fall within the savanna biome and within a larger regional scale the proposed routes are according to Mucina & Rutherford (2006) located within the Eastern Kalahari Bushveld Bioregion (Svk).

In terms of vegetation types the proposed routes include the Kuruman Thornveld (SVk9); and Kathu Bushveld (SVk12) (Mucina & Rutherford 2006).

Kuruman Thornveld (SVk9)

Although none of this vegetation type is statutorily conserved it is regarded as a least threatened vegetation system with little erosion.

Kathu Bushveld (SVk12)

Although none of this vegetation type is statutorily conserved it is regarded as a least threatened vegetation system with little erosion. Some sections are already transformed due to iron ore mining activities.

Vegetation Units

The study area comprises natural vegetation with mining, agricultural (cattle & other domestic stock) and game farming activities conducted on the land. The area comprises two different vegetation units all mostly natural in species composition:

1. *Tarchonanthus camphoratus* shrubland
2. *Senegalia mellifera* shrubland

Green: *Tarchonanthus camphoratus* shrubland **Yellow: *Senegalia mellifera* shrubland**

Vegetation Unit 1: *Tarchonanthus camphoratus* shrubland

Soil	Red sandy soil 0.2-0.6m deep	**Tree cover**	2%
Topography	Floodplain (4)	**Shrub cover**	25-40%
Land use	Mining, livestock and free moving game	**Herb cover**	3%
Unit status	Natural to degraded	**Grass cover**	40-60%
Faunal spp.	Birds, insects, small mammals, domestic animals	**Rock cover**	0-2%
		Erosion	0%
Dominant spp.	*Tarchonanthus camphoratus, Senegalia mellifera, Schmidtia pappophoroides, Stipagrostis uniplumis; Eragrostis lehmanniana*.		

Conservation Value	Low-medium	**Ecosystem Functioning**	Low-medium

The *Tarchonanthus camphoratus* shrubland occurs on wide plains that are strongly associated with the Aeolian red sand and surface calcrete. The soil varies from deep red soil to slightly shallower red soil with a gravelly texture. This unit is also characteristic of the proposed decommissioning line.

This shrubland occurs on flat to slightly undulating terrain. The vegetation is natural with some areas where densification has taken place, while some degradation due to overgrazing is evident in some areas. The most common land –uses are cattle and other livestock farming, which have resulted in some areas being overgrazed. It seems as though large areas of the woody layer was sprayed with herbicides some years ago.

This vegetation unit occurs over a large area in this region and is regarded as a common vegetation type that is not threatened

The protected tree *Vachellia erioloba* (see photo below) is present as single individuals especially towards the southern section of the proposed power lines.

Protected tree *Vachellia erioloba*

Alien species

In some areas the highly invasive cactus *Cylindropuntia imbricata* and the alien invasive tree *Prosopis glanulosa* were observed.

Red data species

One protected and red data species the tree *Vachellia erioloba* was found within this shrubland.

Vegetation Unit 2: *Senegalia mellifera* shrubland

Soil	Rocky with shallow soil (0.1 –0.3m) with clay content 6- 12%.	**Tree cover**	1%
Topography	Plains (4)	**Shrub cover**	50%
Land use	Livestock and free moving game	**Herb cover**	10%
Unit status	Natural to degraded	**Grass cover**	15-40%
Faunal spp	Various birds & insects	**Rock cover**	30%
		Erosion	5%
Dominant spp	Senegalia mellifera, *Searsia ciliata*, *Tarchonanthus camphoratus, Heteropogon contortus*		

Conservation Value	Low-medium	**Ecosystem Functioning**	Low-medium

The *Senegalia mellifera* shrubland forms small pockets within the study area and is associated with plains. The soil is well-drained and rocky with small rocks covering an estimated 30% of the area.

The vegetation has a moderate to low species richness but is degraded and dominated by the shrub *Senegalia mellifera.* The shrub is also known to become dense in areas where suitable conditions prevail and will encroach into an area where degradation has taken place. The area is mostly used for grazing by animals

Alien plant species

The alien invasive succulent *Opuntia ficus-indica* is also recorded.

Red data species

No rare or endangered plant species were recorded.

Vegetation of proposed decommissioning line

The vegetation of the proposed decommissioning line belongs to that of Vegetation Unit 1 and considered to have a low-medium conservation value. The area is maintained as a servitude with a two-spoor path underneath.

Red data species

In some sections small clumps/individuals of the protected tree *Vachellia erioloba* were noted. This species has a conservation status of "declining" due to its removal for fire wood and other agricultural activities.

Below is a list with GPS locations where this species was observed along the line:

S 27.75527° E 023.05236°	S 27.80454° E 023.03219°
S 27.76431° E 023.04681°	S 27.80283° E 023.03153°
S 27.80691° E 023.03292°	S 27.80075° E 023.03090°
S 27.80590° E 023.03254°	

Threatened Ecosystems & Protected Areas

According to the SANBI data and locality maps no protected or threatened ecosystems / areas are present within the proposed study area.

Protected species

The Department of Water Affairs and Forestry (now Department of Forestry and Fisheries) developed a list of protected tree species. In terms of Section 15(1) of the National Forests Act, 1998, no person may cut, disturb, damage or destroy any protected tree or possess, collect, remove, transport, export, purchase, sell, donate or in any other manner acquire or dispose of any protected tree or any forest product derived from a protected tree, except under a license or exemption granted by the Minister to an applicant and subject to such period and conditions as may be stipulated. Trees are protected for a variety of reasons, and some species require strict protection while others require control over harvesting and utilization. The Department of Agriculture, Forestry and Fisheries (DAFF) will have to be approached to obtain the required permits for the removal of any protected tree species.

One protected species have been recorded during the survey, namely *Vachellia erioloba* (Camel Thorn).

Medicinal species

Three medicinal plant species, have been identified within the study area. These plants occur throughout the southern African region on various soil types and areas and none are threatened species. Two species (*V karroo & S frutescens*) only occur in vegetation unit 2 which is regarded as having a high conservation value.

Plant name	Plant part used	Medicinal use	Vegetation unit
Dicoma anomala	Leaves, twigs, sometimes roots	Fever, upset stomach, influenza, colds	1
Tarchonanthus camphoiratus	Leaves & twigs	Stomach trouble, headache, toothache, inflammation	1, 2
Ziziphus mucronata	Roots, bark or leaves	Cough & chest problems; diarrhea; pain relief	1, 2

Alien Plants

A total of three different declared alien invasive species, the tree *Prosopis glandulosa* (unit 1) and the succulents *Opuntia ficus-indica* (unit 2) and *Cylindropuntia imbricata* (formerly *Opuntia imbricata*) (unit 1) were found to be present in the study area.

Opuntia ficus-indica and *Cylindropuntia imbricata* are declared category 1 weeds (CARA) and category 1b plants (NEMBA), while *Prosopis glandulosa* a declared category 2 (CARA) and 1b (NEMBA) invader tree. All category 1 plants must be removed and eradicated by the land owner by law, while *Prosopis glandulosa* may not be grown or present on one's property unless a permit is obtained from nature conservation. It is therefore important that these plants are removed from the different vegetation units and that a programme is implemented on a long-term basis to control the spread of these plants.

FAUNA

Mammals

The majority of larger mammal species are likely to have been eradicated or have moved away from the area, as a result of previous agricultural activities, hunting and poaching as well as severe habitat alteration and degradation. The collection or harvesting of wood (stumps) and rock material as well as the frequent burning of the vegetation reduces available refuge habitat an exposes remaining smaller terrestrial mammals to increased predation levels. Major road networks (N14) with high vehicular traffic increase the risk of road fatalities (hedgehogs, hares) of mammals. Smaller mammal species including the South African Hedgehog are extremely vulnerable to feral cats and dogs.

The Yellow and Slender Mongooses and Meerkat/Suricates were observed on the site and prey on the smaller rodents, birds, reptiles and amphibians. Animal burrows (Yellow Mongooses, Ground Squirrel, Suricate, Highveld Gerbil, Multimmamate Mouse and African Molerat) were observed around the sandy sections of the grasslands. Several active Antbear burrow systems were observed within the foothills.

Small isolated patches of rocky outcrops are present in some localities and offer suitable habitat for rupicolous mammal species such as Rock Hyrax, Smith's Elephant Shrew, Bushveld Elephant Shrew, Dassie Rat, Smith's Rock Rabbit and Rock Dormouse. Several rodent burrows (most likely Bushveld Gerbils) were observed within the sandy sections of the alignments.

Threatened Mammal Species

According to Friedman & Daly (2004) and Skinner & Chimimba (2006), the majority of species within the study area are common and widespread and listed as species of least concern.

Reptiles

The majority reptile species are sensitive to severe habitat alteration and fragmentation. Due to current mining activities in the area coupled with increased habitat degradation (overgrazing) and disturbances are all causal factors in the alteration of reptile species occurring in these areas.

Threatened Reptile Species

No threatened reptile species have been recorded from the combined locus = 2723CC.

Amphibians: Giant Bullfrog *(Pyxicephalus adspersus)*

The Giant Bullfrog is currently assigned as a near-threatened species (IUCN Red List category). No Giant Bullfrogs have been recorded from the Kathu area and immediate adjacent grid squares during previous surveys as well as during the South African Frog Atlas Project (SAFAP).

ECOLOGICAL SENSITIVITY ANALYSIS

A sensitivity analysis was done for the two vegetation units identified. This was achieved by evaluating the different vegetation units against a set of habitat criteria. The results indicate that both units have medium-low sensitivity to disturbance.

Sensitivity analysis for the two vegetation units identified along the proposed power line routes (Single scores range between 1 and 10 - the higher the score the more important the criterion).

Criteria	**Vegetation Unit 1** *Tarchonanthus camphoratus* shrubland	**Vegetation Unit 2** *Senegalia mellifera* open shrubland
Presence of protected / red data species	9	4
Species richness and composition	5	5
Dominant/prominent species ecological status	3	7
Sensitivity to disturbance	3	4
Conservation status and ecological functioning	4	4
Area fragmentation	7	6
Medicinal plants	3	3
Important topographical features (steep slopes, cliffs etc.)	2	2
TOTAL SCORE	**45**	**44**
Sensitivity rating	**Low-medium**	**Low-medium**

Ecological Sensitivity Map

IMPACT ASSESSMENT

Fauna

Habitat destruction and disturbance

During the construction phase and maintenance of powerlines, some habitat destruction and alteration inevitably takes place. This happens with the construction of access roads, and the clearing of servitudes. Servitudes have to be cleared of excess vegetation at regular intervals in order to allow access to the line for maintenance, to prevent vegetation from intruding into the legally prescribed clearance gap between the ground and the conductors and to minimize the risk of fire under the line which can result in electrical flashovers.

The alignment for this project however occurs within shrubland vegetation dominated by small shrubs and grasses where limited vegetation clearance will be required during the operational phase of the project. These activities have an impact on fauna breeding, foraging and roosting in or in close proximity of the servitude, both through modification of habitat and disturbance caused by human activity. The proposed impact will be of **medium-low; short-long term impact** on remaining faunal species.

Mitigation and Recommendations

The following general recommendations are made to minimise the impacts of proposed powerline construction on the immediate environment and remaining fauna:

- Close site supervision must be maintained during construction.

- Workers must be limited to areas under construction within the servitude and access to the undeveloped areas must be strictly regulated ("no-go" areas during construction activities).
- All temporary stockpile areas including litter and dumped material and rubble must be removed on completion of construction. All alien invasive plant should be removed from the site to prevent further invasion.
- Firearms or any other hunting weapons must be prohibited on site.
- Contract employees must be educated about the value of wild animals and the importance of their conservation.
- Educational programmes for the contractor's staff must be implemented to ensure that project workers are alerted to the possibility of snakes being found during vegetation clearance. The construction team must be briefed about the management of snakes in such instances. In particular, construction workers are to go through ongoing refresher courses to ensure that protected snakes, such as Southern African Python, are not killed or persecuted when found.
- Severe contractual fines must be imposed and immediate dismissal on any contract employee who is found attempting to snare or otherwise harm remaining faunal species.
- No animals should be intentionally killed or destroyed and poaching and hunting should not be permitted on the site.

MAMMAL MANAGEMENT RECOMMENDATIONS

- Due habitat transformation and destruction as well as the high level of human activity within the proposed it is however unlikely that the study area comprises significant habitat for any larger threatened mammal species. These are restricted to the private game parks in the area.
- All large indigenous tree species should be conserved wherever possible as they form important habitat for arboreal mammal species.
- No hunting or poaching activities must be allowed along the servitudes during all phase of the project.

REPTILE MANAGEMENT RECOMMENDATIONS

- No rock removal should occur adjacent to the proposed towers. No termite mounds should be intentionally destroyed. If any moribund termite mounds have to be destroyed due to tower position it should be carefully excavated by hand and pick.
- Any animals rescued or recovered will be relocated in suitable habitat away from the transmission tower and line.
- Trees including stumps; bark and holes in trees are vital habitats for numerous arboreal reptiles (chameleons, snakes, agamas, geckos and monitors).
- Exotic cleared vegetation should form wood piles and logs and stumps. Dead or decaying wood piles should be created as these will provide valuable refuge areas especially due to the clearance of vegetation cover. Logs and stumps also provide important habitats for several reptile species as well as smaller mammals, amphibians, arachnids and scorpions. With time they will eventually be reduced to valuable compost by several animal species. Dead trees and stumps will also be used for nesting purposes by barbets, hoopoes, owls, hornbills as well as perching or hunting platforms for birds like the kingfisher. Any lizards, gecko's, agamids, monitors or snakes encountered should be allowed to escape to suitable habitat away from the disturbance. No reptile should be intentionally killed, caught or collected during any phase of the project.
- Several venomous snake species occur along the proposed lines including Cape Cobra (*Naja nivea*) and Puff Adder (*Bitis arietans*).
- General avoidance of snakes if the best policy if encountered. Snakes should not be intentionally harmed or killed and allowed free movement away from the area.
- Appropriate foot wear (sturdy leather boots) should be worn in the field.

AMPHIBIAN MANAGEMENT RECOMMENDATIONS

- Construction activities of the proposed powerline should be restricted to daylight hours reducing the potential impact on the nocturnal breeding activities of the majority of amphibian species.
- Ideally the installation of the new towers should be undertaken during the dry winter months (May-September) when the majority of amphibian species are dormant.
- As a precautionary mitigation measure it is recommended that the developer and construction contractor as well as an independent environmental control officer (ECO) should be made aware of the possible presence of certain threatened amphibian species (Giant Bullfrog) prior to the commencement of construction of the new line.

Vegetation / Flora

Impact 1 – Loss of natural vegetation

The construction of pylons will lead to the destruction and loss of vegetation. Vegetation loss can result in degradation of the environment, loss of vegetation cover and resultant erosion and loss of topsoil, increase in water runoff and less water infiltration, loss of habitat for sensitive or secondary species, reduction of species richness and system diversity and eventual loss of ecosystem functioning and species composition. These activities have an impact on fauna breeding, foraging and roosting in or in close proximity of the servitude, both through modification of habitat and disturbance caused by human activity. Thus it is important that no unnecessary destruction of the habitat takes place during any development/construction phase.

Impact 2 – Habitat fragmentation (loss of landscape connectivity)

Habitat fragmentation refers to destruction of the habitat leading to a discontinuity in a species/populations' the environment. The remaining habitat therefore becomes smaller. The implications of habitat fragmentation is that edge effects along the fragments can cause a further reduction in the habitat while plants and sessile organisms are not able to reproduce anymore that will eventually lead to them dying out. Thus these isolated habitats will become unsuitable to many of the original species occurring in the area. Species populations can only remain viable if large enough habitat remains or if sizeable corridors exist between the fragments.

Impact 3 – Impacts on vulnerable species

For the purpose of this report the term "vulnerable species" to threatened, protected, medicinal and red data species. Natural populations of species not regarded as "vulnerable" usually occur in large numbers within various suitable habitats. Vulnerable species are normally species whose habitats have become smaller, usually as a result of human actions, but also as a result of natural disasters (e.g. floods, droughts, fire etc.). The result is that these species are already under stress and any further reduction in their habitat could cause their extinction. Not only will the loss of such a species cause further degradation of the environment and the conservation status of the ecosystem, but it will alter also the functioning of adjacent ecosystems and their species compositions. It is therefore recommended that buffer zones varying from 5m to a 1000m are placed around such species/ecosystems to protect their integrity and survival.

Impact 4 – Establishment of invasive plants and declared weeds

Weeds, alien invasive and indigenous invasive plants are normally aggressive growers that can out-compete other natural species growing in the environment. These species have superior reproduction and/or vegetative growth mechanisms that enable them to grow and increase faster than other species in the same habitat. Under normal conditions in a stable ecosystem they will not become dominant. However, if a disturbance in the environment takes place whether human induced or natural, these species will normally invade these disturbed areas, displace the few natural species remaining and form a homogeneous stand of vegetation. This could then lead to an uncontrollable spread of these species into the ecosystem as well as

adjacent systems. The consequences of alien plant invasions is a loss of soil water, change in nutrient status of the soil, loss of indigenous and climax vegetation, species diversity, change in plant community composition and structure and eventually loss in ecosystem functioning as well as adjacent ecosystems.

The results of the above impact evaluations show that the proposed power lines should have no severe (high) impacts on the different units with low-medium impacts over the short-medium term that will be experienced in the different vegetation units (fauna & flora).

The impacts on the loss of flora and habitat will be low to medium due to the areas having few sensitive species (except for the declining *Vachellia erioloba* in unit 1). The expected influence could however be further mitigated by restricting the clearing of natural vegetation to as small an area as needed for the construction of the pylons.

The fragmentation of the habitat is not expected to be of any significance with normal connectivity between ecosystems still intact due to the relatively small footprint of the pylons. Any fragmentation will also be mitigated by clearing as small an area as possible when constructing the pylons.

Mitigation and recommendations

The following general recommendations are made to minimise the impacts of proposed powerline construction on the flora and fauna:

- Provision of adequate toilet facilities must be implemented to prevent the possible contamination of ground (borehole) water in the area.
- All temporary stockpile areas including litter and dumped material and rubble must be removed on completion of construction. All alien invasive plant should be removed from the site to prevent further invasion.
- All vegetation not interfering with the operation of the line shall be left undisturbed this is especially pertinent to the protected and red data Camel Thorn (*Vachellia erioloba*). None of these species may be removed without permission from the DAFF & Nature Conservation.
- Collection of firewood and traditional medicinal plants is strictly prohibited.
- All alien vegetation should be eradicated along the corridor.
- In areas where degradation has taken place as a result of the construction, a suitably qualified ecologist or rehabilitation specialist should be appointed for the commencement of rehabilitation activities. The specialist should identify areas requiring rehabilitation as well as appropriate seed mixes which are required.
- No open fires shall be allowed on site under any circumstance. The Contractor shall have fire-fighting equipment available on all vehicles working on site, especially during the winter months.
- As a precautionary mitigation measure it is recommended that the developer and construction contractor as well as an environmental control officer should be made aware of the possible presence of certain threatened animal species (Giant Bullfrog, South African Hedgehog) prior to the commencement of construction activities. In the event that any of the above-mentioned species are discovered the animal should not be interfered with and allowed to move away from the construction activities

Vegetation clearance

The object of vegetation clearing is to trim, cut or clear the minimum number of trees and vegetation necessary for the safe mechanical construction and electrical operation of the transmission line. Only an 8m strip may be cleared flush with the ground to allow vehicular passage during construction. No scalping shall be allowed on any part of the servitude road unless absolutely necessary.

Vegetation clearing on tower sites must be kept to a minimum. Any alien invasive trees with large root systems shall be cut manually and removed, as the use of a bulldozer will cause major damage to the soil when the root systems are removed. Stumps shall be treated with herbicide. Smaller vegetation can be flattened with a machine, but the blade should be kept above ground level to prevent scalping. Any vegetation cleared on a tower site shall be removed or flattened and not be pushed to form an embankment around the tower.

Disturbed areas of natural vegetation as well as cut and fills must be rehabilitated immediately to prevent soil erosion as well as alien invasive vegetation invasion. The use of herbicides shall only be allowed after a proper investigation into the necessity. Eskom's approval for the use of herbicides is mandatory. Application shall be under the direct supervision of a qualified technician. All surplus herbicide shall be disposed of in accordance with the supplier's specifications. All alien vegetation in the total servitude and densifiers creating a fire hazard shall be cleared and treated with herbicides.

It is recommended that a contractor for vegetation clearing should comply with the following parameters:

- The contractor must have the necessary knowledge to be able to identify the protected tree *Vachelia* (*Acacia*) *erioloba*; (camel thorn) interfering with the operation of the line due to their height and growth rate.
- The contractor must also be able to identify declared weeds and alien species (*Prosopis glandulosa*, Opuntia* spp.) that can be totally eradicated.
- The contractor must be in possession of a valid herbicide applicators license.

Protected species

- Only one red data/protected species (the tree *Vachellia erioloba*) was observed in vegetation unit 1 (with large numbers of them already dying due to red iron dust pollution) that could be negatively affected if large numbers are removed or damaged. This will have a local effect on their populations and could be long-term.
- This could however be mitigated by placing the pylons and powerlines such that as little as possible / none of these species are affected. A walk-down exercise by qualified Eskom personnel or a botanist should be undertaken after the final route has been decided upon and the placement of the pylons has been marked in the field.
- If single individuals of these species have to be removed, a permit from the Department of Agriculture, Fisheries and Forestry (Forestry Branch) will have to be obtained for this purpose.

Alien invasive species

- Three declared alien invasive species were found to be present in the area along the corridors. Thus the clearing of vegetation around the proposed pylon sites could create an opening for these species to invade these sites. This influence will however be site specific and could be mitigated by implementing a long-term monitoring plan whereby any growth of this species are eradicated with immediate effect. The areas affected by the construction activities should also be rehabilitated as soon as the construction is completed. That would also assist in preventing these species establishing.

SELECTING AN ALTERNATIVE and CONCLUSION

The purpose of any ecological assessment is to determine areas of high sensitivity and to provide guidelines to ensure that the proposed development is ecologically sensitive and to prevent unnecessary destruction of natural ecosystems. It is mostly unavoidable to prevent all development especially power lines to cross and affect sensitive areas. It is therefore important that all possibilities for such power lines are investigated in order to provide ecologically sound recommendations on routes to be followed.

The proposed powerline corridors are located within two different vegetation types that are not regarded as being threatened. None of the impacts assessed for the different vegetation units should have a high negative effect on the environment and no unit was found to be highly sensitive to development.

Based on this study it is concluded that any of the two alternative corridors could be considered for the construction of the proposed powerlines with no long or medium-term negative effects envisaged. Both proposed route alternatives is not envisaged from a plant and faunal ecological point of view have negative impacts on the ecosystem.

The decommissioning of the proposed line will also have no negative effect on the environment, but care should be taken not to destroy the *Vachellia erioloba* individuals present in some localities.

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.

A **Freshwater Assessment** was undertaken by BlueScience and is attached in Appendix D. A summary thereof is provided below.

Background

The study area lies primarily in the catchment of the north-west flowing Ga-Mogara River which discharges into the Kuruman and Molopo Rivers before it too reaches the Orange River at Riemvasmaak. A few valley floor depressions or pans occur near the line to be decommissioned.

The Ga-Mogara River lies to the south of, and outside of the study area.

Vegetation

Southern Kalahari Salt Pans vegetation occurs near the route of the line to be decommissioned. This vegetation type is also considered to be Least Threatened. This vegetation is associated with the endorheic pans of the southern Kalahari and consists of low grasslands on pan bottoms that are dominated by *Sporobolus* species. Low shrubs also occur on the outer edge of pans that are dominated by *Lycium* and *Rhigozum*.

Aquatic features

A few valley floor depressions or pans and their associated drainage features are the main aquatic features within the study area. These features occur near the line that is to be decommissioned.

View of a portion of the depression wetland area that occurs under the line to be decommissioned

Classification of the valley floor depressions

The wetland assessment consists of the following aspects: Wetland classification; Wetland integrity; and Ecosystem services supplied by the wetland.

Wetland classification

Name	Pans along the proposed line to be decommissioned
System	Inland
Ecoregion	Southern Kalahari Ecoregion
Landscape setting	Depression on the valley floor
Longitudinal zonation	Associated with the foothill reach of the Ga-Mogara River
Drainage	Endorheic (water mostly exists by means of infiltration and evaporation)
Seasonality	Ephemeral
Anthropogenic influence	Some disturbances due to surrounding activities
Geology	Tertiary to recent secondary deposits with carbonate rocks dominating together with surficial deposits, lavas and sub-ordinate shales and dolerites
Vegetation	Primarily within Kuruman Thornveld, immediate vegetation type South Kalahari Salt Pans Azonal Vegetation
Substrate	Sand/loam
Salinity	Fresh becoming saline through the season

Wetland Habitat Integrity Assessment

Criteria & Attributes	Valley floor depressions
Hydrologic	
Flow Modification	3.5
Permanent Inundation	3.5
Water Quality	
Water Quality Modification	3.0
Sediment Load Modification	2.5
Hydraulic/Geomorphic	
Canalisation	3.5
Topographic Alteration	3.0
Biota	
Terrestrial Encroachment	3.0
Indigenous Vegetation Removal	2.5
Invasive Plant Encroachment	3.5
Alien Fauna	3.5
Over utilisation of Biota	3.0
Total Mean	**3.1**
Category	**B/C (largely natural to moderately modified)**

Ecosystem Services

Goods and services assessment results for wetland (high=4; low=0)

Goods and services	Valley floor depressions	Goods and services	Valley floor depressions
Flood attenuation	2.5	Carbon storage	1.5
Stream flow regulation	2.0	Maintenance of biodiversity	2.0
Sediment trapping	2.5	Water supply for human use	1.5
Phosphate trapping	1.5	Natural resources	2.0
Nitrate removal	2.0	Cultivated foods	0
Toxicant removal	1.5	Cultural significance	0
Erosion control	2.5	Education and research	1.0
Tourism and recreation		1.0	

In terms of goods and services, the pans provide some goods and services including some flood attenuation and sediment trapping functionality, as well as the provision of some habitat for aquatic life primarily during the rainy season.

Ecological importance and sensitivity of the valley floor depressions

Biotic Determinants	Valley Floor Depressions
Rare and endangered biota	1
Unique biota	1.5
Intolerant biota	1
Species/taxon richness	1
Aquatic Habitat Determinants	
Diversity of aquatic habitat types or features	1
Refuge value of habitat type	1.5
Sensitivity of habitat to flow changes	2
Sensitivity of flow related water quality changes	2
Migration route/corridor for instream and riparian biota	1
National parks, wilderness areas, Nature Reserves, Natural Heritage sites & areas, PNEs	1
Median	1.3
EIS CATEGORY	**Moderate**

The ecological importance and sensitivity of the depression wetlands within the study area is deemed to be moderate.

National Water Act, 1998 (Act no 36 of 1998): General Authorisation

The General Authorisations for Section 21 (c) and (i) water uses (impeding or diverting flow or changing the bed, banks or characteristics of a watercourse) as defined under the NWA have recently been revised (Government Notice R509 of 2016). Determining if a water use licence is required for these water uses is now associated with the risk of degrading the ecological status of a watercourse. A low risk of impact could be authorised in terms of a General Authorisations (GA).

It is likely that the proposed activities associated with the aquatic ecosystems in the area can be authorised in terms of the new GA.

Risk Assessment

The Risk Assessment Matrix has been developed to assist with the determination of risks associated various proposed water use activities and needs to be submitted as part of the GA application to the Department of Water & Sanitation.

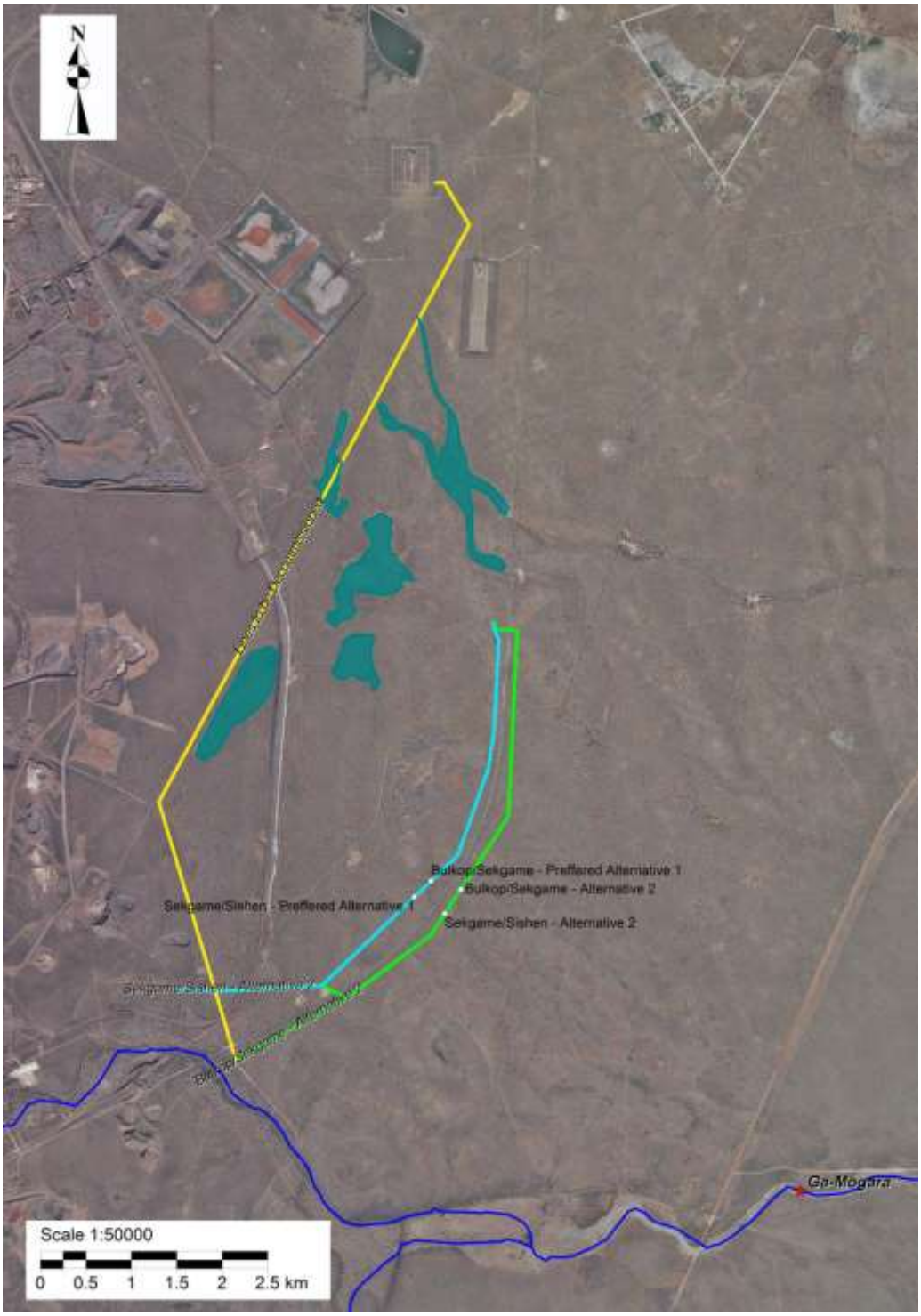
Based on the outcome of the Risk Assessment Matrix, LOW risk activities will be generally authorised with conditions, while moderate to high risk activities will be required to go through a Water Use Licence Application Process. Water use activities that are authorised in terms of the General Authorisations will still need to be registered with the DWS.

A summary of the Risk Assessment is provided below. A full Risk Assessment Matrix is attached in the Freshwater Assessment (Appendix D). Only the decommissioning of the existing lines was considered as the new lines pose no risk to any aquatic features.

Activity	Impact	Significance	Risk Rating
Decommission of existing powerline	Aquatic habitat disturbance with potential to divert surface runoff	35	Low

Freshwater Constraints Map

There are no freshwater features occurring along the proposed new routes (both the preferred and the alternative routes). Within the line to be decommissioned, the portions of the depression wetlands that occur within close proximity to the line and that are likely to be impacted by the proposed decommissioning activities have already been modified by the existing activities within the servitude.



Mapped freshwater constraints for the proposed new powerline and the proposed project alternative as well as the aquatic features (green polygons indicated extent of depression wetlands) adjacent to the line to be decommissioned

IMPACT ASSESSMENT

Please note that mitigation measures below are also included in the Environmental Management Plan.

DECOMMISSIONING OF EXISTING POWER LINE

Nature of Impact

Activities that would be associated with the dismantling and the removal of the existing powerline will include the following:

- Access to all the existing pylon structures;
- Dismantling of structures; and
- Removal of the material from site.

Activities during the dismantling phase of the line could be expected to have a very ***limited aquatic habitat disturbance*** due to the fact that the existing line occurs within a servitude to the powerlines with an existing access road. A localised short term impact could be expected that would be associated with increased disturbance within the servitude with larger vehicles. The longer term impact could potentially be positive but of a very low significance if properly decommissioned and rehabilitated.

Significance of impacts without mitigation

A longer term impact of very low overall significance in terms of its impact on the identified aquatic ecosystems.

Proposed mitigation

- The decommissioning activities should be limited as far as possible and should take place in the in the dry season.
- Traffic (vehicular and pedestrian) between structures within the demarcated wetland areas must be kept to a minimum. These areas should be clearly marked with poles.
- Any top soil removed to re-fill the foundation area after construction should be stored outside of the demarcated areas. No material may be stored or dumped (temporarily or semi-permanent) in these depression wetland areas.
- If material needs to be filled or excavated within the demarcated wetlands for the removal of the pylons, the replaced soil should be returned such that the top soil layer is replaced last. The filled area should resemble the surface height of the surrounding landscape. No ponding or new drains should be created.
- Cleared areas must be rehabilitated after dismantling is completed by re-vegetating with suitable indigenous plants that have been removed prior to the dismantling phase. An experienced botanist or horticulturalist should assist with this rehabilitation process.
- Invasive alien plants that currently exist within the immediate area of the existing servitude must be removed and any regrowth prevented and managed for a period of at least 5 years.

Significance of impacts after mitigation

A localized, short-term impact will occur during the decommission phase; however, the overall significance of the impact on the aquatic ecosystems is expected to be a very low positive impact.

CUMULATIVE IMPACT OF THE ACTIVITIES ON FRESHWATER ECOSYSTEMS

The proposed project will result in the decommissioning of the existing power line route. This decommissioning will take place within an Eskom servitude where a number of powerlines are present and the freshwater features within the servitude have been modified by these activities. The proposed decommissioning has the potential to reduce the disturbance of the freshwater features within the servitude. A new power line will be constructed along the N14 road where it will be easily accessible. Due to the activities associated with the road, the area

adjacent to the road is already disturbed. Construction of the powerline is not likely to significantly alter the current ecological state. In addition, no freshwater features occur along the proposed route or its alternative.

As a result, it is expected that there will be short term and localised negative impacts that are of a very low significance, mostly occurring during the decommissioning of the existing line with no impacts during the construction phase of the new line. Over the longer term, a low positive impact can be expected.

CONCLUSION

The proposed project will result in the decommissioning of the existing power line route within an Eskom servitude where a number of powerlines are present. The freshwater features within the servitude have been modified by these activities. The proposed decommissioning has the potential to reduce the disturbance of the freshwater features within the servitude. The potential impact of this proposed activity is thus of a low significance with mitigation that may result in a low positive impact over the longer term.

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)
The project is mainly taking place on land belonging to mines.		

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

The proposed power lines will cross over a railway line. Transnet Freight Rail (TFR), an Operating Division of Transnet SOC Limited comment as follows:

- Crossing of power lines over stations and yards may not be allowed, therefore routes selection should try by all means to avoid options that cross over these areas.
- Measures must be implemented to prevent project workers from vandalising and trespassing into TFR properties.
- All anticipated significant negative environmental impacts that can affect TFR properties and its operations in the vicinity of the project area need to be identified, mitigated and documented in the BAR.

Response from Landscape Dynamics

The following mitigating measures are supplied in the Environmental Management Plan:

- *Power lines may not cross any Transnet stations or yards*
- *Standard procedures and stipulations must be followed for the crossing of the railway line.*
- *No workers are allowed within any properties belonging to TFR and vandalising of any property or goods are not allowed. It is important that these issues are addressed during the training sessions and before construction commences.*

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

Not applicable

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

Not applicable

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

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

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

Biodiversity maps on the SANBI website are not available for the Gamagara Local Municipality nor the John Tsoala District Municipality. Maps are available in the Northern Cape Province for the Namakwaland District Municipality only.

The vegetation types within the study area have however been identified as *Least Threatened*.

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	

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:

Heritage Impact Assessment
A Heritage Impact Assessment was undertaken by Archaetnos Culture & Cultural Resource Consultants and is attached in Appendix D. A summary thereof follows below:

SUMMARY OF FINDINGS

The environment
The area that was surveyed is located in the semi-desert region of the Northern Cape. The environment along both alternative options are similar, mainly since they run on different sides of the same roads. Certain sections along the route show signs of disturbance, mainly by former and current mining activities and infrastructure.

Conclusion
During the survey no site of cultural heritage significance was identified on any of these. From a heritage perspective any of the proposed routes may be utilised.

It should be noted that the subterranean presence of archaeological and/or historical sites, graves features or artifacts is always a distinct possibility. Due to the density of vegetation in certain areas along the routes, it also is possible that some sites may only become known later on. Operating controls and monitoring should therefore be aimed at the possible unearthing of such features. Care should therefore be taken when development commences that if any of these are discovered, a qualified archaeologist be called in to investigate the occurrence.

Palaeontological Impact Assessment
A Palaeontological Impact Assessment and Paleontological Survey were undertaken by Prof Marion Bamford (Palaeobotanist from WITS) and were attached in Appendix D. The report concluded as follows:

The overlying Kalahari sands are most unlikely to contain any in situ fossils of significance. The underlying rocks are too old to contain any body fossils but there is a very small chance that stromatolites could occur far below the foundations for the towers, infrastructure and stations. If stromatolites are encountered then it is recommended that a small sample be sent to a palaeontologist to assess for microfossils (algae). It is concluded that the project may continue as far as the paleontology is concerned.

A **Visual Impact Assessment** was undertaken by Visual Resource Management Africa and is attached in Appendix D. A short summary thereof is given below.

Regional Landscape Character
The following landmarks defining the surrounding area's characteristic landscape, were identified within the proposed project viewshed, and subsequently surveyed during the site visit:

- The N14 National Road
  The N14 is a national road located 1.7km to the west of the proposed project boundary. The N14 connects the town of Kathu in the north, to the towns of Upington in the west, and Postmasburg in the south (via the R325). Traffic utilising the road is mainly mining related, but could also include tourist traffic.

- Sishen Mine
  The overall landscape character of the site and surrounds is influenced negatively, visually degrading the surrounding landscape context within an approximate six kilometre radius, which does include the proposed power line study area

- Rural agricultural areas
  The proposed site and surroundings (excluding Reitzhof to the north) are zoned for agricultural land uses. Care should be taken to ensure that landuse changes on the site do not negatively influence the property value of the adjacent farming lands.

- Eskom regional substation and power lines
  Strong vertical line elements are found in the landscape created by the vertical lines of the transmission poles and lattice structures. The light grey colour of the transmission structures also increases the colour contrast in the landscape.

RESULTS

Visual Extent
The visual extent, or zone of visual influence, of the proposed power lines projects is rated Local due to surrounding bushveld / thornveld vegetation, as well as the higher VAC levels created by the mining landscapes to the west which include large man-made forms, railway line and power line infrastructure.

Exposure
Exposure is rated High with the main receptors, the N14 National Highway, located adjacent to the proposed routings.

Scenic Quality
Scenic quality for all proposed Preferred routings areas was rated Low, due to the strong negative influence of the Sishen Mine as well as the Eskom transmission line corridors located in the background.

Scenic quality for all proposed Alternative routings areas was rated Medium, due to the higher ratings for the surrounding rural landscape that add value to the eastern views (away from the Sishen Mine), and the neutral rural relative cultural landscape modifications.

Receptor Sensitivity to Landscape Change
Receptor sensitivity to landscape change for Preferred routings areas was rated Low. Given the strong mining landscape context of the site and the domination of mining within the local economy, it is likely that public interest in maintaining visual quality is low.

The receptor sensitivity for the Alternative routings was rated Medium due to the rural landscape contrasting strongly with the eastern modified mining landscape, which by contrast creates a view 'escape' from the Sishen mining landscapes, increasing the value of the area as a Special Area.

IMPACT ASSESSMENT AND SELECTING AN ALTERNATIVE

Preferred Route Alternative 1

The proposed Preferred power line routing is located to the west of the N14 on modified Kathu Bushveld and Kuruman Thornveld. The VRM Class for this landscape is rated Class IV due to the Low rating for the Scenic Quality and the expected Low receptor sensitivity to landscape change. The low Scenic Quality rating is due to the flatter terrain, fragmented and modified vegetation, no water resources and the surrounding landscape context which is strongly associated with mining. The Receptor Sensitivity to this alternative is rated low due to the strongly modified mining landscape with is clearly visible in the background, as well as no tourist related activities, or landscape sensitive receptors.

The main receptors that would use this landscape are limited to the N14 road users traveling in a north and south direction. Due to the strong vertical line element in the existing landscape created by the telecommunication poles in the immediate foreground, and existing Eskom lattice mast in the background, the contrast generated by the proposed monopoles is expected to be weak. The modified mining landscape forms in the background also further increase the VAC levels in this westerly view direction, resulting in less noticeable form contrast from the monopoles.

Due to the higher VAC levels of the site, as well as the mining landscape context, the Extent of the visual impact is expected to remain contained to local levels. Although the structures are likely to become permanent features, Magnitude of this Preferred Alternative is rated Low due to the expected weak levels of visual contrast. Due to the already strongly modified mining landscape in the background (which will become more modified by the expansion of the proposed Sishen Tailings Dam), Cumulative Risks to the area from further landscape degradation are rated as Low. Without Mitigation, the proposed power line landscape modification is rated Medium and Low with Mitigation. Mitigation is recommended and would include the following actions:

Mitigation
- Planning Phase:
  - Maintain a 100m buffer where possible from the N14 Road servitude to create a visual buffer as well as to allow for future expansion of the N14 should this become necessary.
- Construction Phase:
  - Utilising existing access roads as much as possible.

- Operation Phase:
    - On-going maintenance for soil erosion along maintenance access routes.

Route Alternative 2

The proposed Alternative power line routing is located to the east of the N14 on modified Kathu Bushveld and Kuruman Thornveld. The VRM Class for this landscape is rated Class III due to the Medium rating for Scenic Quality and the expected Medium Receptor Sensitivity to landscape change. The Medium Scenic Quality rating for this route area is mainly due to the higher rating for the surrounding rural landscape which adds value to the eastern views (away from the Sishen Mine), and the relatively neutral rural cultural landscape modifications which are farm related. The Receptor Sensitivity is rated Medium, due to the rural landscape contrasting strongly with the eastern modified mining landscape, which by contrast, creates a view 'escape' from the Sishen mining landscapes, increasing the value of the area as a Special Area.

The predominant receptors that would use this landscape are limited to the N14 road users traveling in a north and south direction. Due to the lack of strong vertical line elements in the existing landscape, the contrast generated by the proposed monopoles is expected to be Strong especially if located in close proximity to the road. The rural landscapes in the foreground and background have a low VAC levels, resulting in noticeable form and line contrast generated by the monopoles in contrast to the landscape.

Due to the surrounding bushveld type landscape, the Extent of the visual impact is expected to be contained within the local levels. As the structures are likely to become permanent features, Magnitude has been rated Medium due to the expected Strong levels of visual contrast. As the eastern areas surrounding the proposed routing are rural, the probability of cumulative risks from landscape degradation are rated as Good, as landscape degradation and loss of property value could be expected. Without Mitigation, the proposed power line landscape modification is rated Medium to High, and Medium to Low with Mitigation. Due to the cumulative risks associated with landscape degradation resulting in property devaluation, this routing option is ***Not Recommended*** and should only be considered should the Preferred Routing be fatally flawed.

Decommissioning of the existing lines

The main Receptors that would use this landscape are limited to the N14 road users traveling in a north and south direction. Due to the strong vertical line element in the existing landscape created by the telecommunication poles in the immediate foreground, and existing Eskom lattice structures in the background, the contrast generated by the removal of the existing monopoles is expected to be weak and a short term impact. The modified mining landscape forms in the background also further increase the VAC levels in this westerly view direction, resulting in less noticeable form contrast from the deconstruction of the power line structures.

Due to the higher VAC levels of the site as well as the mining landscape context, the Extent of the visual impact is expected to be contained to within the Local level. Magnitude was rated Low due to the expected weak levels of visual contrast. Due to the already strongly modified mining landscape in the background (which will become more modified by the expansion of the proposed Sishen Tailings Dam), Cumulative Risks from landscape degradation are rated as Low. Without Mitigation, the proposed power line deconstruction is rated Medium, and Very Low with Mitigation. Mitigation is recommended and would include the following actions:

Mitigation

- Planning Phase:
  - Generation of a detailed management plan on how to access the wetland buffer area so as to reduce site specific impacts during the deconstruction process, using only existing access roads during dry season periods.
- Deconstruction Phase:
  - Utilising existing access roads as much as possible.
  - If the power line structures and cables can't be reused or recycled, then disposing of the materials according to South Africa waste regulations.
- Post Deconstruction Phase:
  - On-going maintenance for soil erosion along previous maintenance access routes.

	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.

8. SOCIO-ECONOMIC CHARACTER

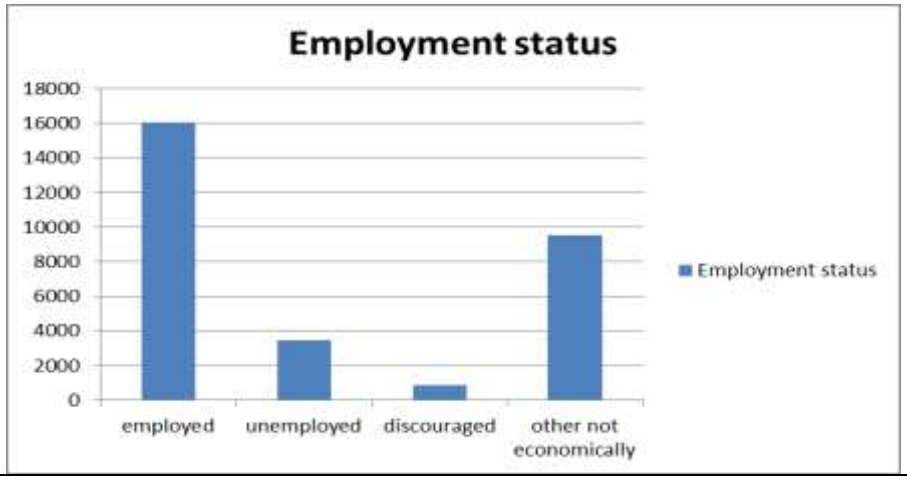
a) Local Municipality

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

The following information was obtained from the **Gamagara Local Municipality's Integrated Development Plan, 2015 - 2017.**

Level of unemployment:

The majority of employed people in the municipal jurisdiction are male, while female are the most unemployed and discouraged work-seekers. Females also constitute a large number of those that are not economically active.



Economic profile of local municipality:

Gamagara Local Municipality has become a significant player in the Northern Cape Province and an important contributor to South Africa's mining sector, and international mining value chain. Thus making it a centre of concentration on the development for providing relevant and up to date infrastructure to accommodate such development. The municipality thus infrastructure investments drives and initiatives that have to characterize the town's economic development trajectory. The municipality has identify the economic pull and push factors, such as education and training, research, entrepreneurship, community image and the arts.

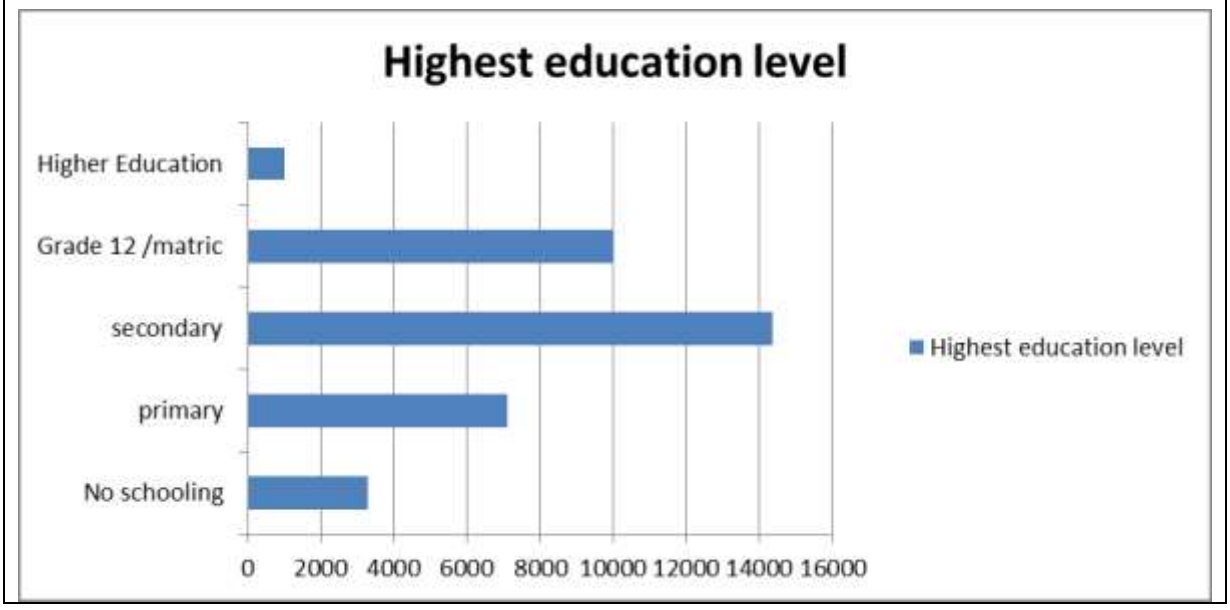
Gamagara has planned to develop into a commercial and industrial town over and above the mining economic spin-offs. It has a potential to develop into a City as envisioned by Council.

43% of the employed people are employed in the formal sector while 5% are those in the informal sector. The importance of the informal sector in the local economy is recognised, as it gives those who are not skilled an opportunity to create livelihoods for themselves and their families. 5% are employed in private house, which means, they work as gardeners, as housekeepers or child minders.

The following tourist attraction points exist namely, the mines, Kathu archeologically complex consist of three heritage sites in and around the town of Kathu, which includes the Kathu town lands, Kathu pan and the Best wood pan. The municipality identified the need to draw on its heritage resources to generate jobs and alternate economic streams for the socio- economic development of the communities it serves and aligning it with other tourism opportunities. Focus has also been put on indigenous knowledge as a possible tourist attracting activity.

Level of education:

Education is often a means to expand the range of career options a person may choose from and influence a person's income and ability to meet their basic needs. Education levels and income levels thus become important indicators of human development. From the table below it is clear that there is a high number of people who has a secondary school education, followed by those who have matric. The number of those with no schooling has increased from the 2007 survey to 2011.



b) Socio-economic value of the activity

What is the expected capital value of the activity on completion?	Unknown	
What is the expected yearly income that will be generated by or as a result of the activity?	Unknown	
Will the activity contribute to service infrastructure?	YES	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?	*Minimal	
What is the expected value of the employment opportunities during the development and construction phase?	Unknown	
What percentage of this will accrue to previously disadvantaged individuals?	Unknown	
How many permanent new employment opportunities will be created during the operational phase of the activity?	None	
What is the expected current value of the employment opportunities during the first 10 years?	Unknown	
What percentage of this will accrue to previously disadvantaged individuals?	Unknown	

* The proposed project involves the experience and expertise of highly skilled labour. All of Eskom's policies encourage the use of local labour where possible. Minimal additional employment opportunity will be available during the construction phase. During the operational phase no additional employment opportunities exist – the project will, however, secure employment for existing Eskom employees.

9. BIODIVERSITY

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

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

Systematic Biodiversity Planning Category				**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)	Biodiversity maps on the SANBI website are not available for the Gamagara Local Municipality nor the John Tsoala District Municipality. Maps are only available in the Northern Cape Province for the Namakwaland District Municipality. The vegetation types within the study area have been identified as Least Threatened.

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		Please refer to the **Ecological Report on the Fauna & Flora** which was undertaken by EnviroGuard Ecological Services and summarised above under Section B, Paragraph 4 (the full report is attached in Appendix B).
Near Natural (includes areas with low to moderate level of alien invasive plants)		
Degraded (includes areas heavily invaded by alien plants)		
Transformed (includes cultivation, dams, urban, plantation, roads, etc)		

c) Complete the table to indicate:

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

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

Ecosystem status maps are not available for the Gamagara Local Municipality on the SANBI website. The vegetation was however identified as being *Least Vulnerable*.

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)

An **Ecological Report on the Fauna & Flora** was compiled by EnviroGuard Ecological Services and is attached in Appendix D. A summary thereof is provided above under Section B, Paragraph 4.

A **Freshwater Assessment** was undertaken by BlueScience and is attached in Appendix D. A summary thereof is provided above under Section B, Paragraph 5.

A **Bird Impact Assessment** was undertaken by Chris van Rooyen Consulting and is attached in Appendix D. A summary thereof is provided below.

Important Bird Areas

The study area does not overlap with any Important Bird Areas (IBAs). The closest IBA is the Spitskop Dam IBA (SA 028) which is located 160km to the east of the study area (Marnewick *et al.* 2015). The proposed development should therefore not have any direct impact on the Spitskop Dam IBA or the species that it supports.

Primary vegetation divisions (biomes)

The study area extends over a single primary vegetation division, namely savanna (woodland) (Mucina & Rutherford 2006).

Bird habitat classes

The following bird habitat classes were recorded in the study:

Savanna

The study area is situated in the savanna biome and the natural woodland consists of mainly of Kathu Bushveld (Muchina & Rutherford 2006). Kathu Bushveld is characterised by medium-tall tree layer with *Acacia erioloba* in places, but mostly open and including *Boscia albitrunca* as the prominent trees. The shrub layer is generally most important with, for example, *A. mellifera*, *Diospyros lycioides* and *Lycium hirsutum*. The grass layer is variable in cover.

The natural woodland in the study area has been disturbed, and in some places completely eradicated by mining operations and associated infrastructure (roads, pipelines and utility lines). The area east of the N14 is less transformed. The remaining woodland areas are utilised for live-stock grazing and game farming.

SABAP2 reporting rates for large power line sensitive Red Data avifauna potentially occurring in woodland habitat in the study area are very low. Many species which would be expected to occur in undisturbed woodland of this nature, especially large raptors, is entirely absent from the SABAP2 dataset, indicating that human activity has impacted on the habitat and that levels of disturbance are high. Red Data species that could potentially be found in this habitat in the study area are Lanner Falcon, Martial Eagle, Kori Bustard, Ludwig's Bustard, White-backed Vulture and Secretarybird.

Rivers

The study area contains one ephemeral river, the Gamagara River. Drainage lines are important habitat for birds in that they act as corridors of microhabitat for waterbirds and woodland species. Ephemeral rivers generally only flow for short periods in the rainy season, but pools of water can persist for many months and aquatic organisms that occur in those pools could provide potential sources of food for various species. The pools in the Gamagara River could attract Red Data Black Stork and Abdim's Stork as well as many other non-threatened waterbirds, and the surrounding riverine woodland, which often contain some of the last remaining large trees, could support many non-Red Data woodland species. Raptors and vultures, including Martial Eagle and White-backed Vulture could also use the pools in the river for drinking and bathing.

Pans

A feature of the arid landscape where the proposed site is located is the presence of pans. Pans are endorheic wetlands having closed drainage systems; water usually flows in from small catchments but with no outflow from the pan basins themselves. They are typical of poorly drained, relatively flat and dry regions. Water loss is mainly through evaporation, sometimes resulting in saline conditions, especially in the most arid regions. Water depth is shallow (<3m), and flooding characteristically ephemeral. The study area contains three large pans. When these pans hold water (which is only likely after exceptional rainfall events), waterbird movement between these pans is possible, including Greater Flamingo and Lesser Flamingo. The pans, when full, could also attract Red Data waterbirds such as Black Stork, Maccoa Duck, and Abdim's Stork, as well as Martial Eagle and White-backed Vulture who could use it for drinking and bathing. When the pans are dry, they are covered with grass. During these periods the pans could be attractive to Kori Bustard, Ludwig's Bustard, Burchell's Courser, Secretarybird and Black Harrier.

Power line sensitive species occurring in the study area

A total of fourteen Red Data species could potentially occur in the study area.

DESCRIPTION OF EXPECTED IMPACTS

Because of their size and prominence, electrical infrastructure constitutes an important interface between wildlife and man. Negative interactions between wildlife and electricity structures take many forms, but two common problems in southern Africa are electrocution of birds (and other animals) and birds colliding with power lines.

Impact 1 Electrocutions

Electrocution refers to the scenario where a bird is perched or attempts to perch on the electrical structure and causes an electrical short circuit by physically bridging the air gap between live components and/or live and earthed components. The tower design that has been proposed for this project is the steel monopole.

Clearance between phases on the same side of the 132kV pole structure is approximately 2.2m for this type of design, and the clearance on strain structures is 1.8m. The length of the stand-off insulators is approximately 1.6m. This clearance should be sufficient to reduce the risk of phase – phase electrocutions of birds on the towers to negligible for all species except vultures. If vultures attempt to perch on the stand-off insulators, they are potentially able to touch both the conductor and the earthed pole simultaneously potentially resulting in a phase – earth electrocution. This is particularly likely when more than one bird attempts to sit on the same pole, which may happen with vultures. Vultures are unlikely to occur regularly within the study area, but sporadic occurrence cannot be ruled out. The only envisaged high risk scenario would be when a carcass becomes available within a few hundred metres of the line, attracting White-backed Vultures which may cluster on a few poles. This is likely to be a very rare event in the study area. Furthermore, there are several other higher high voltage lines in the study area which offers a more attractive perching and roosting substrate, due to their height and design.

In summary, it is concluded that the risk of electrocution posed to avifauna by the steel monopole design is likely to be very limited and restricted to vultures, but it cannot be ruled out entirely.

Impact 2 Collisions

Collisions are probably the biggest single threat posed by transmission lines to birds in southern Afria. Most heavily impacted upon are bustards, storks, cranes and various species of waterbirds. These species are mostly heavy-bodied birds with limited manoeuvrability, which makes it difficult for them to take the necessary evasive action to avoid colliding with power lines.

During periods when the pans hold water, several Red Data waterbirds and raptors might potentially be at risk of collisions. However, none of the potential alignments are running between the pans themselves, which means the risk of waterbirds commuting between the three pans being exposed to potential powerline collisions is eliminated. The closest alignment is approximately 1.4km from the nearest pan, which is a fairly substantial distance, and it is not situated across any obvious flight paths between the three pans.

There is also a potential collision risk associated with the ephemeral Gamagara River where it is expected that waterbirds could commute up and down the drainage line when it is flowing or when it contains large pools of standing water, and raptors and vulture could descend to pools in the river to drink and bath. However, none of the alignments cross the river, therefore this source of collisions is also effectively eliminated.

In summary, the risk of collision posed to Red Data avifauna by the proposed power lines is likely to be of very limited significance.

Impact 3: Displacement due to habitat destruction and disturbance

During the construction phase and maintenance of power lines and associated infrastructure, some habitat destruction and transformation inevitably takes place. Servitudes must be cleared of excess vegetation at regular intervals to allow access to the line for maintenance, to prevent vegetation from intruding into the legally prescribed clearance gap between the ground and the conductors and to minimize the risk of fire under the line, which can result in electrical flashovers. These activities have an impact on birds breeding, foraging and roosting in or near the servitude through transformation of habitat, which could result in temporary or permanent displacement.

In the present instance, the risk of displacement of Red Data species due to habitat transformation is likely to be limited given the low reporting rate for Red Data species in the study area. The biggest potential impact would be the removal of large trees that could potentially serve as nesting substrate for large Red Data raptors such as Martial Eagle (and many other non-threatened avifauna), although again it is noted that reporting rates for large raptors are very low, and that the area where the proposed alignments is situated contains very few (if any) suitable trees. Furthermore, the proximity of the busy N14 road and mining operations makes it unlikely that large raptors will breed in the study area. Most remaining large trees in the study area are found in riparian woodland along the Gamagara River, which will not be affected by the powerline. The proposed construction of the new power line should therefore have a very limited habitat transformation impact from an avifaunal perspective.

Apart from direct habitat destruction, the above-mentioned construction and maintenance activities also impact on birds through disturbance; this could lead to breeding failure if the disturbance happens during a critical part of the breeding cycle. Construction activities near a nest could be a source of disturbance and could lead to temporary breeding failure or even permanent abandonment of nests . The low reporting rates for Red Data species in the study area are an indication that they are not regularly utilising the area for breeding, for reasons already stated namely, habitat transformation and the fact that all the alignments are situated next to a busy road, which acts as a natural deterrent to Red Data powerline sensitive species. The potential impact of disturbance is therefore likely to be very limited as far as Red Data species are concerned.

ASSESSMENT OF IMPACTS AND PROPOSED MITIGATION MEASURES

Impact during the construction phase

Displacement of Red Data species due to habitat destruction and disturbance associated with the construction of the power line

Impact	*Nature*	*Extent*	*Duration*	*Severity*	*Impact on Irreplaceable Resources*	*Consequence*	*Probability*	*Significance*	*Confidence*
Impact: Displacement of Red Data species due to habitat destruction and disturbance associated with the construction of the power lines									
Impact Description: Displacement of Red Data species may occur during the construction phase of the power lines, and may be caused by the noise and movement associated with the construction activities.									
Without Mitigation	Negative	Site	Short	Medium	No	Slightly detrimental	Probable	Low - negative	High

Mitigation Description:

- Construction activity should be restricted to the immediate footprint of the infrastructure.
- Access to the remainder of the site should be strictly controlled to prevent unnecessary disturbance of Red Data species.
- Measures to control noise should be applied per current best practice in the industry.
- Maximum use should be made of existing access roads and the construction of new roads should be kept to a minimum.
- The recommendations of the ecological and botanical specialist studies must be strictly implemented, especially as far as limitation of the construction footprint and rehabilitation of disturbed areas is concerned.
- The final powerline alignment must be inspected on foot by the avifaunal specialist prior to construction to ascertain if any Red Data species nests are present. All relevant detail must be recorded i.e. species, coordinates and nest status. Should any nests be recorded, it would require management of the potential impacts on the breeding birds once construction commences, which would necessitate the involvement of the avifaunal specialist and the Environmental Control Officer. An effective communication strategy should be implemented whereby the avifaunal specialist is provided with a construction schedule which will enable him/her to ascertain when and where such breeding Red Data species could be impacted by the construction activities. This could then be addressed through the timing of construction activities during critical periods of the breeding cycle, once it has been established that a nest is active.

Impact	*Nature*	*Extent*	*Duration*	*Severity*	*Impact on Irreplaceable Resources*	*Consequence*	*Probability*	*Significance*	*Confidence*
With Mitigation	Negative	Site	Short	Low	No	Negligible	Improbable	Very low - Negative	High

Cumulative Impact:

Although each power line probably affects a relatively small proportion of the landscape, there are already several existing activities and infrastructure in this area that has resulted in significant habitat transformation, and additional infrastructure in the form of power lines and substations will add further cumulative impact. It is important therefore to try to limit the effects of the new power lines as much as possible, by applying the mitigations described above.

Impact during the operational phase
Electrocution of Red Data species on the 132kV line

Impact	*Nature*	*Extent*	*Duration*	*Severity*	*Impact on Irreplaceable Resources*	*Consequence*	*Probability*	*Significance*	*Confidence*
Impact: Electrocution of Red Data species on the 132kV lines									
Impact Description: Electrocution of Red Data species on the steel monopole structure.									
Without Mitigation	Negative	Regional	Long term	Low	Yes	Slightly detrimental	Improbable	Low-negative	High
Mitigation Description: An Eskom approved bird friendly pole design must be used (APPENDIX 2). The Distribution Technical Bulletin must be used in this regard. In addition, if a monopole structure is used, as this report has assumed, a Bird Perch must be installed on top of all poles, to provide safe perching substrate for birds well above the dangerous hardware.									
Impact	*Nature*	*Extent*	*Duration*	*Severity*	*Impact on Irreplaceable Resources*	*Consequence*	*Probability*	*Significance*	*Confidence*
With Mitigation	Negative	Regional	Long term	Low	No	Negligible	Improbable	Very Low-Negative	High
Cumulative Impact: The cumulative impacts of power lines on birds through electrocution are significant nationally. No effort should be spared to ensure that the new power lines are built bird friendly and results in no additional impact on birds in the area. Due to the low risk of electrocution, the envisaged cumulative impact is also likely to be low.									

Impact during the operational phase
Collision of Red Data species with the earthwire of the 132kV line

Impact	*Nature*	*Extent*	*Duration*	*Severity*	*Impact on Irreplaceable Resources*	*Consequence*	*Probability*	*Significance*	*Confidence*
Impact: Collision of Red Data species with the earthwire of the 132kV lines									
Impact Description: Red Data species mortality due to collisions with the earthwire of the power lines.									
Without Mitigation	Negative	Regional	Long term	Low	Yes	Slightly detrimental	Improbable	Very low-negative	High
Mitigation: Due to the very low collision risk posed by the powerlines to powerline sensitive Red Data species, no mitigation is required specifically for potential collision mortality.									

Impact	Nature	Extent	Duration	Severity	Impact on Irreplaceable Resources	Consequence	Probability	Significance	Confidence
Not applicable	Negative	Regional	Long term	Low	Yes	Slightly detrimental	Improbable	Very low-negative	High

Cumulative Impact:

The cumulative impacts of power lines on birds through collision are significant nationally. However, the low reporting rates for Red Data species in the study area indicates that the collision impact of existing powerlines in the study area is likely to be low to start with, due to the location of the study area. The cumulative impact of collisions on the proposed line is therefore regarded to be negligible.

Impact during the decommissioning of the existing lines

Impact	Nature	Extent	Duration	Severity	Impact on Irreplaceable Resources	Consequence	Probability	Significance	Confidence
Impact: Displacement of Red Data species due to disturbance associated with the decommissioning of the existing 132kV Bulkop-Ferrum and 132kV Ferrum-Sishen									
Impact Description: Displacement of Red Data species may occur during the decommissioning of the existing Bulkop – Ferrum and Ferrum – Sishen 132kV lines and may be caused by the noise and movement associated with the dismantling activities.									
Without Mitigation	Negative	Site	Short	Low	No	Slightly detrimental	Improbable	Low - negative	High
• Decommissioning activity should be restricted to the immediate footprint of the infrastructure. • Access to the remainder of the site should be strictly controlled to prevent unnecessary disturbance of Red Data species. • Maximum use should be made of existing access roads and the construction of new roads should be kept to a minimum. • The recommendations of the ecological and botanical specialist studies must be strictly implemented, especially as far as rehabilitation of disturbed areas is concerned. • The powerlines must be inspected on foot by the avifaunal specialist prior to dismantling to ascertain if any Red Data species nests are present. All relevant detail must be recorded i.e. species, coordinates and nest status. Should any nests be recorded, it would require management of the potential impacts on the breeding birds once dismantling commences. An effective communication strategy should be implemented whereby the avifaunal specialist is provided with a dismantling schedule which will enable him/her to ascertain when and where such breeding Red Data species could be impacted by the dismantling activities. This could then be addressed through the timing of dismantling activities during critical periods of the breeding cycle, once it has been established that a nest is active.									
With Mitigation	Negative	Site	Short	Low	No	Negligible	Improbable	Very Low - Negative	High
Cumulative Impact: Very low									

SELECTION OF PREFERRED ALTERNATIVE

The Sekgame powerline alternatives are very similar in terms of envisaged impacts on avifauna, as they are located very closely together on both sides of the N14 road in similar habitat, namely moderately to heavily disturbed woodland. No preferred alternative can therefore be identified, as all four alternatives are acceptable options from a bird impact perspective.

CONCLUSION

In general, the habitat through which the proposed Sekgame 132kV alignments run is low to moderately sensitive from a potential bird impact perspective. The natural habitat is moderately to heavily disturbed woodland and is likely to attract a very limited number of Red Data power line sensitive species. Anthropogenic impacts such as mining activities and the presence of a major provincial road has had a negative impact on avifaunal diversity and abundance in the study area, which is reflected in the low reporting rates for power line sensitive Red Data species. The construction of the proposed power lines will result in various, but very limited potential impacts on the birds occurring near the new infrastructure. The proposed power line poses a **very low** collision risk which will not require the application of mitigation measures. The electrocution risk is assessed as **low**, due to the proposed structure type, and can be reduced to **very low** with appropriate mitigation. The habitat transformation and disturbance associated with the construction of the proposed Sekgame power lines and de-commissioning of the existing 132kV Bulkop-Ferrum and 132kV Ferrum-Sishen should have a **low** impact, which could be reduced to **very low** with appropriate mitigation.

The project can proceed subject to the implementation of the following recommendations:

- An avifaunal walk through of the final power line route should be conducted prior to construction, to identify any Red Data species that may be breeding on the site or within the immediate surrounds and to ensure that any impacts likely to affect Red Data breeding species (if any) are adequately managed.
- An avifaunal walk-through should likewise be conducted for the sections of the existing 132kV Bulkop-Ferrum and 132kV Ferrum-Sishen powerlines which are to be dismantled, to identify any Red Data species that may be breeding on the site or within the immediate surrounds and to ensure that any impacts likely to affect Red Data breeding species (if any) are adequately managed.
- The correct bird-friendly pole structure must be utilized to avoid electrocution (refer to the Bird Impact Assessment attached in Appendix D).
- In addition to this, the normal suite of environmental good practices should be applied, such as ensuring strict control of staff, vehicles and machinery on site and limiting the creation of new roads as far as possible.

SECTION C: PUBLIC PARTICIPATION

1. ADVERTISEMENT AND NOTICE

Publication name	Kathu Gazette	
Date published	24 September 2016	
Site notice position	**Latitude**	**Longitude**
Entrance to the Ferrum Substation on the R380	27^0 43' 06.70"S	23^0 03' 34.74"E
Entrance to the Lyleveld Substation	27^0 48' 39.04"S	23^0 01' 59.20"E
Where the existing 132kV power line crosses the N14	27^0 49' 07.35"S	23^0 02' 09.90"E
West of the N14 in the approximate middle of the Preferred Route Alternative 1	27^0 47' 58.64"S	23^0 03' 46.27"E
East of the N14 in the approximate middle of Route Alternative 2	27^0 48' 01.97"S	23^0 03' 45.87"E
At a roadside stop in very close proximity to the position of the future Sekgame Switching Station	27^0 46' 41.43"S	23^0 04' 04.36"E
Date placed	19 September 2016	

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.

ACTIONS UNDERTAKEN DURING THE PUBLIC PARTICIPATION PROCESS

- ***Notification to the directly affected and adjacent landowners***
  A list of directly affected and adjacent landowners was compiled and notification letters were forwarded during September / October 2016 and onwards. A 30-day commenting period applied.

- ***Notification to Government Departments, Municipalities and other IAPs***
  A General I&AP List was compiled and includes municipalities, government departments and other applicable organisations. Notification letters were emailed to everyone on this list during September / October 2016 and onwards. A 30-day commenting period applied.

- ***Onsite notification***
  Six English and Afrikaans onsite notices were placed along the powerline routes on 19 September 2016. The notifications were A2 in size and laminated.

- ***Newspaper Advertisement***
  A newspaper advertisement was placed in the Kathu Gazette, a local newspaper, dated 24 September 2016.

- ***Distribution of the Draft Basic Assessment Report (this document) for comment***
  The Draft BAR is being distributed as follows (a 30-day commenting period applies):

- Hard copies are being delivered to the
  - National Department of Environmental Affairs: Environmental Authorisation
  - National Department of Environmental Affairs: Biodiversity Section
  - Department of Environment and Nature Conservation, Northern Cape
  - Gamagara Local Municipality
  - Department of Water & Sanitation, Northern Cape
- All registered Interested and Affected Parties would receive an electronic copy of the Draft BAR via email.
- The Draft BAR was linked to the SAHRIS website of the South African Heritage Resources Agency (SAHRA) for their perusal and comment.

Public participation to continue

- Based on comment received on the Draft BAR, it will be determined if any further public participation measures (i.e. a public meeting) are deemed necessary;
- Comment received will be responded to in the Final BAR;
- The Final BAR will be submitted to DEA for approval / refusal of the project.
- IAPs will be informed of the DEA's decision and their right to appeal.

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

Please refer to Appendix E for the contact details of below mentioned IAPs

POTENTIALLY DIRECTLY AFFECTED LANDOWNERS: Preferred Alternative and Decommissioning Route

Farm 461, Sekgame, Kuruman RD and Farm 545, Lyleveld, Kuruman RD: SISHEN IRON ORE COMPANY PTY LTD: For attention Mr Harry Dul
Farm 545 Portion 2, Demaneng: TRANSNET LTD • Senior Consultant Environment & Sustainability: TFR Risk Management: Mr LW Ndou • Transnet: Geo-Spatial: Western Region, Transnet Property: For attention Senior Property Technician, Mr Jaco Hanekom

POTENTIALLY DIRECTLY AFFECTED LANDOWNERS: Route Alternative 2

Farm 461, Sekgame, Kuruman RD and Farm 545, Lyleveld, Kuruman RD and Farm 546, Demaneng and Farm 546 Portion 2, Demaneng: SISHEN IRON ORE COMPANY PTY LTD: For attention Mr Harry Dul

ADJACENT LANDOWNERS

Farm 460 Portion 1, Legoko: HENQUE 3516 CC: For attention Mr Francousa Hendrikus Briedenhann & Mrs Alruida Briendenhann)

Farm 544, Bruce, Kuruman RD (directly west of lines that will be decommissioned): ASSMANG LTD: Superintendent: Environmental Services, Mr Dirk Coetzee
Farm 544 Portion 1, Bruce, Kuruman RD (directly west of lines that will be decommissioned): SISHEN IRON ORE COMPANY PTY LTD: For attention Mr Harry Dul

GENERAL STAKEHOLDERS

Birdlife SA, The CEO, The Policy and Advocacy Manager (also for Save the Flamingo): Dr Mark Anderson and Mr Simon Gear
WESSA, Regional Representative for the Northern Cape, Regional Chairman, for attention: Mr Stan Harvey
SKA Africa: Spectrum & Telecoms Manager: Mr Selaelo Matlhane
SLR Consulting / SLR Synergistics (on behalf of the Gamagara Local Municipality): Ms Chiara D'Egidio Kotze

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

3.1 Comment received during the Initial Advertising Period from 9 June 2016 up to compilation of the Draft BAR

Summary of main issues raised by I&APs and Response from EAP
Transnet Freight Rail (TFR), an Operating Division of Transnet SOC Limited: Senior Consultant: Environment & Sustainability: TFR Risk Management: Mr LW Ndou The proposed power lines will cross over a railway line. Transnet comment as follows: • Crossing of power lines over stations and yards may not be allowed, therefore routes selection should try by all means to avoid options that cross over these areas. • Measures must be implemented to prevent project workers from vandalising and trespassing into TFR properties. • All anticipated significant negative environmental impacts that can affect TFR properties and its operations in the vicinity of the project area need to be identified, mitigated and documented in the BAR.

Response from Landscape Dynamics

The following mitigating measures are supplied in the Environmental Management Plan:

- *Power lines may not cross any Transnet stations or yards*
- *Standard procedures and stipulations must be followed for the crossing of the railway line.*
- *No workers are allowed within any properties belonging to TFR and vandalising of any property or goods are not allowed. It is important that these issues are addressed during the training sessions and before construction commences.*

Transnet: Geo-Spatial: Western Region, Transnet Property: For attention Senior Property Technician, Mr Jaco Hanekom

A route map was requested and forwarded to Mr Hanekom

SKA Africa: Spectrum & Telecoms Manager: Mr Selaelo Matlhane

A high-level risk assessment has been conducted at the South African SKA Project Office to determine the potential impact of the proposed Eskom project on the Square Kilometre Array. The outcomes of the risk assessment are:

- The location of the proposed transmission line has been provided by Landscape Dynamics in the form of Google Earth Shapefiles;
- The nearest SKA station has been identified as Rem-Opt-12, and it is located approximately 101 km away from the proposed transmission line route;
- Based on distance to the nearest SKA station, and the information currently available on the detailed design of the power infrastructure, this infrastructure poses a low risk of detrimental impact on the SKA;
- Any transmitters that are to be established, or have been established, at the site for the purposes of voice and data communication will be required to comply with the relevant AGA regulations concerning the restriction of use of the radio frequency spectrum that applies in the area concerned;

As a result of the low risk associated with the power infrastructure, no mitigation measures would be required at this stage. However, the South African SKA Project Office would like to be kept informed of progress with this project and reserves the right to further risk assessments at a later stage.

This technical advice is provided by the South African SKA Project Office on the basis of the protection requirements of the SKA in South Africa and does not constitute legal approval of the powerline in terms of the Astronomy Geographic Advantage Act, the Management Authority, and its regulations or declarations.

Response from Landscape Dynamics

- *Comment noted*
- *The SKA was added to the IAP register and they will be informed of the developments of this project.*

SLR Consulting (on behalf of the Gamagara Local Municipality): Ms Chiara D'Egidio Kotze

SLR Consulting is conducting a Basic Assessment on behalf of the Gamagara Local Municipality for the proposed Kathu Cemetery. The original planned position of the cemetery was within the route corridor of the Preferred Route (refer to the map below).

The orange block in the southern part of the route represents the position of the proposed cemetery

Response from Landscape Dynamics
A meeting was held (minutes attached in Appendix E) with officials from Eskom, the Gamagara Local Municipality, SLR Consulting/ SLR Synergistics, Kumba Mine as well as Landscape Dynamics.
SLR Consulting conducted various surveys and the following new position of the cemetery was agreed on (note that the cemetery now falls outside of the proposed 52m servitude):

The Preferred Route and the cemetery will therefore not impact on each other.

3.1 Comment received on the Draft BAR (*to be included in the Final BAR*)

4. COMMENTS AND RESPONSE REPORT

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

5. AUTHORITY PARTICIPATION

Authorities and organs of state identified as key stakeholders:

Please refer to Appendix E for the contact details of below mentioned IAPs

GOVERNMENT DEPARTMENTS

Department of Environment and Nature Conservation, Northern Cape, The Environmental Officer, Impact Officer: Ms Dorien Werth
The Northern Cape Provincial Department of Environment and Nature Conservation, For attention: Administrative Officer, AT. Makaudi
Department of Water and Sanitation, Northern Cape Region, Upington Office, Assistant-director: Water Quality: For attention: Mr Sean Cloete and Ms Melinda Mei
Department of Water and Sanitation, Northern Cape Region, Upington Office, Acting Area Manager: For attention: Ms Mashudu Ranwedzi
National Department of Environmental Affairs: Biodiversity Conservation: Deputy-director: Mr Seoka Lekota
The South African Heritage Resources Agency: Heritage Officer for the Northern Cape: Ms Natasha Higgitt
The Northern Cape Provincial Heritage Resources Agency, Heritage Officer: Mr A Timothy (Ngwao Boswa Kapa Bokoni)
Department Economic Development & Tourism (DEDAT) Northern Cape, Regional Manager, The Head of the Department, for attention: Mrs Hendrina Samson (PA: Ms T Booysen)
Department of Rural Development & Land Reform, Office of the Regional Land Claims Commissioner, Northern Cape, Chief Director, for attention: Ms Mangalane du Toit
Department of Rural Development & Land Reform, Regional Land Claims Commissioner, for attention: Mr Harry Maphutha
South Africa Roads Agency: Western Region, Statutory Control: Ms Marilyn Kleinhans & Ms Rene de Kock
Department of Mineral Resources, Northern Cape, The Regional Manager: Mr Sunday Mabaso
Northern Cape Operating Unit (NCOU) Wayleave applications, for attention: Mr. Wimpie Henning
SA National Roads Agency: Western Region, Statutory Control: For attention Ms C Runkel and Ms R de Kock
SANRAL: The Environmental Coordinator, Western Region: Ms Nicole Abrahams
Eskom, Environmental Management, Megawatt Park, EIA COE Manager, For attention: Mr Tobile Bokwe
Transnet, Acting Executive Manager Iron Ore & Manganese, Mr Vernon Samuels
Transnet Freight Rail: The Senior Manager: - Environmental Management: Mr Ezekiel Monyamane
PRASA (Passenger Rail Agency of SA) CEO PRASA Rail: Mr Mosenngwa Mofi
PRASA (Passenger Rail Agency of SA) Board Chairman of PRASA: Mr P Molefe, and the Company Secretary, Mr L Zide
Department of Agriculture, Forestry & Fisheries: Director – Land Use and Soil Management: For attention Ms R L Bosoga
Department of Agriculture, Forestry & Fisheries, for attention: Ms D Khuthala
SA Civil Aviation Authority: The Environmental Officer: Miss C Mazhetese
Council for Geoscience, Northern Cape Unit: For attention : Dr DI Cole, Senior Specialist Scientist

MUNICIPALITIES

Gamagara Local Municipality, Municipal Manager: Mr Clement Itumiling (PA: Ingrid de Koker) (Wards 1 & 3)
Gamagara Local Municipality, Director: Basic Services & Infrastructure, Mr Kagiso Ositang
Gamagara Local Municipality FOR ATTENTION: Councillor for Ward 1 - Ms Henriette du Plessis Councillor for Ward 3 – Ms Monica Orpen
John Taolo Gaetsewe District Municipality, The Acting Municipal Manager: Mr T H Matlhare
John Taolo Gaetsewe District Municipality, Director: Community Development Services: : T H Matlhare
John Taolo Gaetsewe District Municipality, Director: Basic Services & Infrastructure: Mr M W Molusi
John Taolo Gaetsewe District Municipality, for attention: Mr Gerrie van der Westhuizen
John Taolo Gaetsewe Districk Municipality, for attention Mr Johnny Swart

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.

Please note that a comprehensive Impact Assessment (with detailed mitigation measures) is supplied in Appendix F where the impacts are assessed in terms of the following criteria:

- Nature of the impact (what is being affected and how, is it positive or negative);
- Extent (site specific / local / regional / national / global);
- Duration (short / medium / long / permanent);
- Magnitude or intensity of the impact (would the impact be destructive or benign and rated as low / moderate / severe);
- Probability of impact occurring (unlikely / possible / probable / definite)

The mitigation measures as supplied in this Impact Assessment are also included in the Environmental Management Plan.

The **Significance Rating** of an impact is assessed before and after mitigation measures has been applied and refers to the following:

Significance of impact	Explanation of Significance
None	There is no impact at all
Low	Impact is negligible or is of a low order and is likely to have little real effect
Moderate	Impact is real but not substantial
High	Impact is substantial
Very high	Impact is very high and can therefore influence the viability of the project

Please note that detail impact descriptions and mitigation measures are supplied in the Impact Assessment (Appendix F). All mitigation measures are also included in the Environmental Management Plan (Appendix G).

Alternative 1 - Preferred Route Alternative		
Short impact description	**Significance before mitigation**	**Significance after mitigation**
Soils / Erosion Concrete foundations will be made for each pylon along the powerline route. Vegetation wil1l therefore be cleared and there may be an increase in surface water runoff which could lead to soil erosion.	Medium	Low
Fauna & Flora Loss of natural vegetation, habitat fragmentation (loss of landscape connectivity), impacts on species of special concern (sensitive plant communities), establishment of declared weeds and alien invasive plants and an increased risk for veld fires could impact on the flora within the study area. Disturbance to and/or destruction of habitat and illegal placement of snares could impact on the *Fauna & Flora* within the study area.	Medium	Low
Aquatic Ecosystems Activities that would be associated with the dismantling and the removal of the existing powerline will include the following: • Access to all the existing pylon structures; • Dismantling of structures; and • Removal of the material from site. Activities during the dismantling phase of the line could be expected to have a very *limited aquatic habitat disturbance due* to the fact that the existing line occurs within a servitude to the powerlines with an existing access road. A localised short term impact could be expected that would be associated with increased disturbance within the servitude with larger vehicles. The longer term impact could potentially be positive but of a very low significance if properly decommissioned and rehabilitated. The construction of the new power lines will not impact on any water resources.	Medium	Very low positive
Avifauna (birds) A risk for electrocution, birds colliding with powerlines and habitat destruction & disturbance could have an impact on the *avifauna* of the area.	Low	Low to very low
Cultural / Heritage Impacts During the survey no site of cultural heritage significance was identified on any of these. From a heritage perspective any of the proposed routes may be utilised. It should be noted that the subterranean presence of archaeological and/or historical sites, features or artifacts is always a distinct possibility. Due to the density of vegetation in certain areas along the routes, it also is possible that some sites may only become known later on. Operating controls and monitoring should therefore be aimed at the possible unearthing of such features. Care should therefore be taken when development commences that if any of these are discovered, a qualified archaeologist be called in to investigate the occurrence.	Low	Very low

Visual Impacts The main receptors that would use this landscape are limited to the N14 road users traveling in a north and south direction. Due to the strong vertical line element in the existing landscape created by the telecommunication poles in the immediate foreground, and existing Eskom lattice mast in the background, the contrast generated by the proposed monopoles is expected to be weak. The modified mining landscape forms in the background also further increase the VAC levels in this westerly view direction, resulting in less noticeable form contrast from the monopoles. Due to the higher VAC levels of the site, as well as the mining landscape context, the Extent of the visual impact is expected to remain contained to local levels. Although the structures are likely to become permanent features, Magnitude of this Preferred Alternative is rated Low due to the expected weak levels of visual contrast. Due to the already strongly modified mining landscape in the background (which will become more modified by the expansion of the proposed Sishen Tailings Dam), Cumulative Risks to the area from further landscape degradation are rated as Low. Without Mitigation, the proposed power line landscape modification is rated Medium and Low with Mitigation.	Medium	Low
Paleontological impacts The overlying Kalahari sands are most unlikely to contain any in situ fossils of significance. The underlying rocks are too old to contain any body fossils but there is a very small chance that stromatolites could occur far below the foundations for the towers, infrastructure and stations. If stromatolites are encountered then it is recommended that a small sample be sent to a palaeontologist to assess for microfossils (algae). It is concluded that the project may continue as far as the paleontology is concerned.	Low / very Low	Very low / None
Groundwater Potential for groundwater pollution always exists as a result of oil spills, etc. during the construction period.	Medium	Low
Community An influx of workers could result in an increased risk for crime and general safety.	Low	Very Low
Air quality Dust created by construction vehicles could impact on air quality during the construction period.	Low	Very Low
Noise Labourers and machinery could result in noise pollution during the construction period.	Low	Very Low

Alternative 2		
Short impact description	**Significance before mitigation**	**Significance after mitigation**
Impacts as described above for Preferred Route Alternative also apply to Route Alternative 1, with additional impacts as described below		
Visual impacts Due to the surrounding bushveld type landscape, the Extent of the visual impact is expected to be contained within the local levels. As the structures are likely to become permanent features, Magnitude has been rated Medium due to the expected Strong levels of visual contrast. As the eastern areas surrounding the proposed routing are rural, the probability of cumulative risks from landscape degradation are rated as Good, as landscape degradation and loss of property value could be expected. Without Mitigation, the proposed power line landscape modification is rated Medium to High, and Medium to Low with Mitigation. Due to the cumulative risks associated with landscape degradation resulting in property devaluation, this routing option is Not Recommended and should only be considered should the Preferred Routing be fatally flawed. Recommended mitigation is to use the Preferred Alternative	High-Medium	Low

Alternative 3		
Short impact description	Significance before mitigation	Significance after mitigation

Conclusion of Impact Significant Rating

All identified impacts that this Eskom project could have on the environment can be easily and reasonably mitigated to acceptable levels. There are no impacts that could influence the feasibility and viability of this project.

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.

Please note that a comprehensive Impact Assessment (with detailed mitigation measures) is supplied in Appendix F. The Impact Statement below is a summary of the conclusion of this Impact Assessment. *All mitigation measures are also included in the Environmental Management Plan (Appendix G).*

Alternative 1 (preferred alternative)

Conclusion on selecting an alternative

The route alternatives run on both sides of the N14 highway so it is to be expected that there is very little difference in the biophysical environment of the two route alternatives.

Public participation

No objection from the public was received to either the Preferred or Alternative Route options.

Specialist studies

The following specialist studies concluded that there is no specific preference to a route alternative:

- Fauna & Flora Impact Assessment
- Avifauna Impact Assessment
- Heritage Impact Assessment
- Palaeontological Impact Assessment

The Visual Impact Assessment concluded that Route Alternative 2 is not recommended due to the eastern areas surrounding the proposed route are rural and construction of the Alternative power line would increase the potential for cumulative risks from landscape degradation and the resultant loss of property and aesthetic value.

Technical considerations

- The Preferred Route is slightly shorter than Route Alternative 2
- Route Alternative 2 will entail the crossing of the N14 at two different points. This can add considerably to the construction costs of the powerline.

Should all mitigation measures as proposed be followed and implemented by Eskom this environmental study concludes that the project and all its activities would not have an unacceptable negative impact on the biophysical and manmade environments. No impacts were identified that could not be mitigated to acceptable levels or that could influence the viability and feasibility of the proposed Eskom Houwhoek F1 Project.

This application is therefore recommended for Environmental Authorisation.

Alternative 2

Route Alternative 2 is not the preferred route alternative due to the following:

- The Visual Impact Assessment concluded that Route Alternative 2 is not recommended due to the eastern areas surrounding the proposed route are rural and construction of the Alternative power line would increase the potential for cumulative risks from landscape degradation and the resultant loss of property and aesthetic value.

- It is slightly longer than the Preferred Route
- The N14 will have to be crossed at two different points, making it less desirable from a costing point of view.

Mitigation is the selection of the Preferred Alternative.

Alternative 3

No-go alternative (compulsory)

The Sekgame Switching Station will be constructed close to the Ferrum Substation to provide in direct customers' (for example the mines within the macro area) requirements. Kumba mines specifically applied for the deviation of the Ferrum-Sishen 132kV Traction line as well as the Ferrum-Bulkop 132kV lines on their property.

The deviation applied for by Kumba will be addressed with this project: in other words the decommissioning of those lines and the construction of new lines in a different position.

The existing lines are furthermore old and are in need of refurbishment. This project will therefore help to upgrade the wider network in the Kathu area. This will then assist in less outages and a more reliable electricity supply.

If the no-go option is applied, it means that the status quo will remain, which is definitely not the preferred alternative for this project.

SECTION E. RECOMMENDATION OF PRACTITIONER

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

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

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

The Environmental Management Plan contains, amongst other, the mitigation measures as supplied in this report. It is therefore recommended that the implementation of the Environmental Management Plan must be a condition in the authorisation of the project.

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.

Susanna Nel

_____

NAME OF EAP

_____ ____19 January 2017_____

SIGNATURE OF EAP DATE

SECTION F: APPENDIXES

Appendix A: Maps

- Locality Map
- Route Map: Routes Originally Investigated
- Route Map: Preferred & Alternative Routes
- 250m coordinates of the Preferred Route
- Freshwater Constraints Map
- Ecological Sensitivity Map

Appendix B: Photographs

- Photo Report

Appendix C: Facility illustration(s)

- Typical 132 kV structures

Appendix D: Specialist reports (including terms of reference)

- Ecological Report on the Fauna & Flora - EnviroGuard Ecological Services
- Bird Impact Assessment - Chris van Rooyen Consulting
- Freshwater Impact Assessment - BlueScience
- Heritage Impact Assessment - Archaetnos Culture & Cultural Resource Consultants
- Visual Impact Assessment - Visual Resource Management Africa
- Palaeontological Impact Assessment and Palaeontological Survey - Prof Marion Bamford

Appendix E: Public Participation

- E1a – Proof of Placement of Advertisements: Newspaper
- E1b – Proof of Placement of Advertisements: Onsite Notices
- E3a – Background Information Document
- E3b – Proof of distribution of Background Information Document
- E3c – Proof of Notification of availability of the Draft BAR to all IAPs *(to be included in the Final BAR)*
- E4 – Comments & Reponses Report
- E5 – Complete register of Interested & Affected Parties
- E6 – Copies of Correspondence, notes and minutes of meetings
    - E6.1 Written comment received during the first phase notification period
    - E6.2 Minutes of meeting regarding the position of the proposed cemetery
    - E6.3 Written comment received on the Draft BAR (*to be included in the Final BAR*)

Appendix F: Impact Assessment

- Impact Assessment

Appendix G: Environmental Management Programme (EMPr)

- Environmental Management Programme

Appendix H: Details of EAP and expertise

- Landscape Dynamics Company Profile and Condensed CVs

Appendix I: Specialist's declaration of interest

- Prof Anton van Vollenhoven, Chris van Rooyen, Toni Belcher, Steve Stead, Prof Marion Bamford

Appendix J: Additional Information

- Not applicable