




ESKOM DISTRIBUTION FREE STATE REGION

PROPOSED CONSTRUCTION OF A 132KV DISTRIBUTION POWER LINE BETWEEN TWEESPRUIT SUBSTATION AND THE NEWLY PROPOSED WELROUX SUBSTATION, AND CONSTRUCTION OF THE DRIEDORP AND WEPENER SUBSTATIONS INCLUDING ALL ASSOCIATED INFRASTRUCTURE, WITHIN THE FREE-STATE PROVINCE

Draft Basic Assessment Report

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environmental affairs

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

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ESKOM DISTRIBUTION FREE STATE REGION

PROPOSED CONSTRUCTION OF A 132KV DISTRIBUTION POWER LINE BETWEEN TWEESPRUIT SUBSTATION AND THE NEWLY PROPOSED WELROUX SUBSTATION, AND CONSTRUCTION OF THE DRIEDORP AND WEPENER SUBSTATIONS INCLUDING ALL ASSOCIATED INFRASTRUCTURE, WITHIN THE FREE-STATE PROVINCE

DRAFT BASIC ASSESSMENT REPORT

Executive Summary

Eskom Distribution Free State Region (hereafter referred to as, Eskom) is proposing the construction of a 132kV double circuit power line from the existing Tweespruit Substation to the new proposed Welroux Substation (hereafter referred to as, the proposed development), Free State Province. The proposed development will also involve the construction of the new Wepener and Driedorp Substations along the proposed power line route. Finally, it is proposed that the Welbedacht Dam and Tweespruit Substations will be refurbished.

SiVEST Environmental Division has been appointed as independent Environmental Assessment Practitioner (EAP) by Eskom to undertake a Basic Assessment (BA) for the proposed project.

The proposed development requires environmental authorisation from the Department of Environmental Affairs (DEA). Provincial authorities have also been consulted i.e. The Department of Economic Development, Tourism and Environmental Affairs (DEDTEA). The BA for the proposed development will be conducted in terms of the 2010 Environmental Impact Assessment (EIA) Regulations promulgated in terms of section 24(5) and section 44 of the National Environmental Management Act (No. 107 of 1998) (NEMA), as amended, in Government Notice (GN) No. R543. In terms of these regulations, a Basic Assessment (BA) is required for the proposed project. All relevant legislations and guidelines were consulted during the BA process and will be complied with at all times.

Depending on the issuing date of the Environmental Authorisation (EA), should it be granted by Department of Environmental Affairs (DEA), it is proposed that Eskom will commence construction in July 2016. The construction period for the proposed power lines is estimated to be from 1 July 2016 to 30 September 2024. This includes the clearing of the servitude (where required), construction of the towers and substations, refurbishment of existing substations, stringing of the conductors and commissioning of the newly proposed lines and substations.

The power line will consist of four (4) sections of power line that will connect via the existing substations that will be refurbished (Tweespruit and Welbedachtdam Substation) as well as the three (3) newly proposed substations (Driedorp, Wepener and Welroux Substations). The power lines therefore are not separate power lines but rather connecting lines between the existing substations that will be refurbished and those that are being proposed along the greater power line network.

The tower types that are used will vary depending on the most appropriate structure, the terrain traversed, ground clearance requirements, geology, etc. the tower types may consist of the following:

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

The final tower types that will be used for the proposed 132kV power line will be determined once the routing has been negotiated and a servitude has been secured. The foundation depths will range from between 1.5-2m. Spanning lengths between tower structures will be between 225-250m. The tower type structures will vary in length from 18-24m in height. Finally, a Kingbird conductor is likely to be used.

It is proposed that route and locality alternatives will be investigated for the proposed development. Two (2) alternative corridor routes will be proposed for each section of the proposed power line. The corridors will be 1km wide (500m either side of the centre line). Two (2) alternative locations will be proposed for the new substation. A 500m assessment radius will be investigated for placement of the new proposed substation. The four sections of power lines include the following:

- Tweespruit_Driedorp Alternative 1 and 2 – approximately 54 km (pink and dashed pink, respectively) from existing Tweespruit Substation that will be refurbished to the newly proposed Driedorp Substation;
- Driedorp_Wepener Alternative 1 and 2 – approximately 41 km (light green and light green dashed, respectively) from the newly proposed Driedorp Rural Substation to the existing Welbedachtdam Substation that will be refurbished;
- Driedorp_Welbedachtdam Alternative 1 and 2 – approximately 22 km (dark green and dashed dark green, respectively) from the Driedorp Substation to the newly proposed Wepener Substation; and
- Welbedachtdam_Welroux Alternative 1 and 2 – approximately 29 km (purple and dashed purple, respectively) from the Welbedachtdam, Substation to the newly proposed Welroux Substation.

Eskom proposes to refurbish the existing Tweespruit and Welbedachtdam Substations. Furthermore, three (3) new substations will be built which includes:

- Construction of the new 88/22/11kV Driedorp Substation with 2x10MVA and 6 feederbays on MV side and 2 feeder bays on the 88kV side;
- Construction of the new 132/11kV 1X10MVA Wepener Substation; and
- Construction of the new 88/22kV 1X10MVA Welroux Substation.

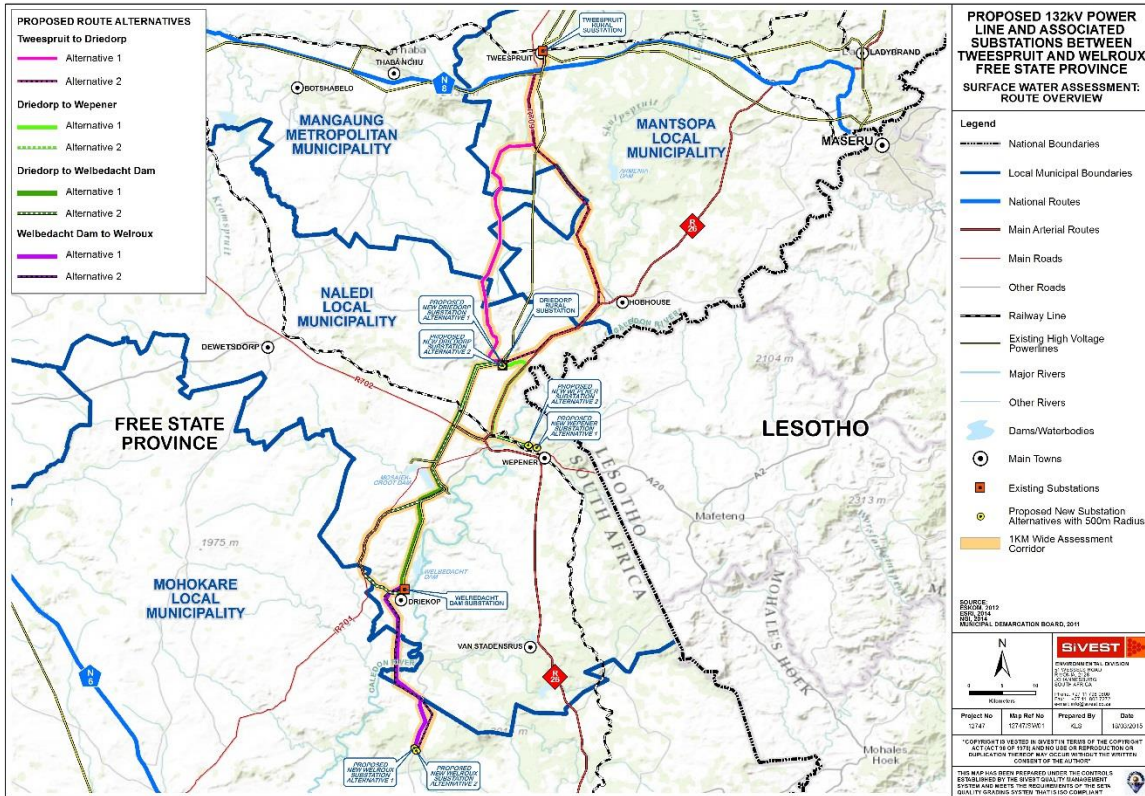


Figure i: Overview map of the proposed route corridor alternatives

The study area is located in the Free State Province within the Thabo Mofutsanyane and Xhariep District Municipalities. More specifically however, the proposed power line traverses three (3) local municipal areas and one metropolitan municipality. These include the Naledi, Mantsopa and Mohokare Local Municipalities and the Mangaung Metropolitan Municipality. The proposed power line originates from the town of Tweespruit and routes southwards towards the newly proposed Welroux Substation. The general study area intersects the N8, R709, R702, R701 and the R26.

Land uses in the area encompass predominantly vacant, cultivated, conservation and residential land. Agricultural activities present mainly comprise of grain and cattle farming. The landscape is predominantly rural in character with few isolated rural farmsteads and settlement areas in the vicinity of the study area.

Several specialist studies were conducted during the BA to identify the issues associated with the proposed development. These include:

- Biodiversity (fauna, flora and avifauna)
- Surface water
- Floodlines
- Agricultural potential and soil
- Visual Impact
- Heritage
- Socio-economic

Table i: Summary of findings

Environmental Parameter	Summary of major findings	Recommendations
Biodiversity	<ul style="list-style-type: none"> ▪ Significant parts of the study area consist of cultivated fields, especially in the northern parts. Natural vegetation is in relatively good condition. There are four regional vegetation types occurring in the study area, Eastern Free State Clay Grassland (listed as Vulnerable in the National List of Ecosystems that are Threatened and need of protection (GN1002 of 2011)), Aliwal North Dry Grassland, Besemkaree Koppies Shrubland and Basotho Montane Shrubland. ▪ There are three Declining plant species that could occur in habitats that are present in the study area. One species of protected tree (according to the National Forest Act, 1998) could potentially occur in the study area, and one protected plant species (according to the National Environmental Management: Biodiversity Act, 2004). ▪ There is one near threatened amphibian and one near threatened reptile species that have a 	<ul style="list-style-type: none"> ▪ The main recommendation to reduce impacts on natural habitats is to ensure that general mitigation measures are implemented. ▪ Power line Alternative 1 is preferred for the Tweespruit to Driedorp section. ▪ There are no particular preferences for any of the other power line sections. ▪ Driedorp Substation Alternative 2 is preferred. ▪ Welroux Substation Alternative 2 (south) is preferred. ▪ There is no particular preference for the Wepener Substation.

Environmental Parameter	Summary of major findings	Recommendations
	<p>geographical distribution that includes the study area. There are six (6) mammal species and twenty three (23) bird species of conservation concern that could potentially occur in the study area. The protected species including, Black Wildebeest, Cape Clawless Otter, Black-footed Cat, the Brown Hyaena, Spotted-necked Otter, Leopard, Cape Fox, Southern African Hedgehog, Giant Bullfrog, Kori Bustard, Ludwig's Bustard, Blue Crane, Martial Eagle, African Marsh Harrier, Southern Bald Ibis, Lesser Kestrel, African Grass Owl, Secretarybird, Black Stork and the Cape Vulture have a likelihood of occurring on site, but are all, except the Southern African Hedgehog, considered to be mobile animals that are unlikely to be significantly affected by the proposed development of the proposed infrastructure .</p>	
Surface Water	<p>Ultimately, it was found that there are a total of two hundred and ninety nine (299) surface water features, comprising of:</p> <ul style="list-style-type: none"> ▪ One-hundred and fifty-five (155) unchannelled valley-bottom wetlands; ▪ Twenty-eight (28) man-made impoundments; ▪ Fifty-five (55) hillslope seep wetlands; ▪ Three (3) floodplain wetlands; ▪ Ten (10) natural drainage lines, with one (1) artificial drainage line; ▪ Thirty (30) depression wetlands; 	<ul style="list-style-type: none"> ▪ It is highly recommended that the following proposed power line corridors are selected to minimise impacts to surface water resources: ▪ Alternative 2 for the Tweespruit to Driedorp power line section, ▪ Alternative 1 for the Driedorp to Wepener power line section, ▪ Alternative 2 for the Wepener to Welbedachtdam power line section, be used, ▪ No preference was found between Alternative 1 and 2 for the

Environmental Parameter	Summary of major findings	Recommendations
	<ul style="list-style-type: none"> ▪ Nine (9) channelled valley-bottom wetlands; ▪ Eight (8) rivers, namely: <ul style="list-style-type: none"> ○ Bokspoortspruit River ○ Caledon River ○ Klein-Leeu River and Furrow ○ Mokopu River ○ Rietspruit River ○ Sandspruit River ○ And three (3) unnamed rivers ▪ Additionally, a total of seven (7) erosion gullies were identified within the proposed development area. ▪ A 100m buffer was applied to the drainage lines, watercourses and associated riparian habitats, and a 50m buffer zone was applied to the wetlands. 	<p>Welbedacht dam to Welroux Power Line section.</p> <ul style="list-style-type: none"> ▪ Similarly, it is highly recommended that the proposed substation Western Alternative 2 for both the Driedorp and Wepener Substation locations be used, as this will reduce potential impacts on surface water resources to a minimum. No preference was found between Welroux Substation Alternative 1 and 2. ▪ As far as possible, the final proposed power line route and substation locations are to avoid surface water resources. ▪ A final wetland walk-down study is to be conducted once the final power line route has been planned. ▪ Consultation with the Department of Water and Sanitation will be required to determine the need for any authorisations (for example, a General Authorisation) or licenses (for example, a Water Use License) that will be required, once the final tower positions and substation locations have been determined and the wetland walk-down assessment has been undertaken.
Floodlines	<ul style="list-style-type: none"> ▪ The floodlines were determined for ten watercourses. ▪ The results showed that larger catchment areas gave rise to larger 1:100 year peak discharge results. Crossings 01 and 04 were found to have the largest 1:100 year peak 	<ul style="list-style-type: none"> ▪ Despite the low impact significance rating of the 1:100 year floods on the receiving environment (following the implementation of mitigation measures), cognizance of the extent of the inundation areas should be made when undertaking the

Environmental Parameter	Summary of major findings	Recommendations
	<p>discharge results (8 096.7 m³/s and 7 254.1 m³/s, respectively) due to their contributing catchment areas being the largest (16 451.4 km² and 13 447.6 km², respectively). The area inundated at these sites was comparatively large as a result of the design flood magnitude.</p> <ul style="list-style-type: none"> ▪ Crossings 09 and 10 had the smallest contributing catchment areas and, consequently, the lowest 1:100 year peak discharge values. The inundation extents at these two sites were also comparatively large. This was due to the low gradient of the surrounding floodplain at these two sites and the proximity of the crossing sites to the confluence of the Klein-Leeu River and its unnamed tributary. ▪ An evaluation of the specific attributes of the site indicated that the main impact of the assessed floods on the development site would be increased erosion rates. This impact would be greatest during the construction phase and mitigation measures will need to be implemented to reduce the impact severity. ▪ The impact was rated as medium negative according to the scoring. 	<p>development. This includes positioning of the pylons and other associated infrastructure. In so doing, factors such as increased erosion risk during the 1:100 year design flood event will be mitigated.</p> <ul style="list-style-type: none"> ▪ Tweespruit_Driedorp Alternative 2 is the preferred option; ▪ Driedorp_Wepener Alternative 1 is the preferred option; ▪ No preference was shown towards the Driedorp_Welbedachtdam and Welbedachtdam_Welroux Alternatives. ▪ No preference was shown for the Driedorp and Welroux Substation Alternatives. ▪ The Wepener Substation Western Alternative 2 was the preferred option.
<p>Agricultural potential and soils</p>	<ul style="list-style-type: none"> ▪ Agricultural impacts of the proposed development have low significance, and from an agricultural impact perspective the development can therefore proceed. ▪ Furthermore, the differences between route options in terms of their 	<ul style="list-style-type: none"> ▪ None.

Environmental Parameter	Summary of major findings	Recommendations
	<p>agricultural impact are very slight and agricultural impact is not therefore a significant factor in choosing between different route options.</p>	
Visual	<ul style="list-style-type: none"> ▪ Most of the study area has a natural or pastoral visual character No visually sensitive receptors were identified. ▪ The study area is not typically valued or utilised for its natural scenic value and therefore a low density of visually sensitive receptors were identified during the fieldwork. ▪ A desktop investigation revealed that several farmsteads are present within the study area which may perceive the power line to be an unwelcome intrusion. ▪ A visual impact analysis revealed that a high and moderate visual impact will be experienced within close proximity to the proposed power line in areas where potentially sensitive farmsteads are present, however most of the study area is classified into a zone of low or negligible visual impact. 	<ul style="list-style-type: none"> ▪ Tweespruit_Driedorp Alternative 1 and 2 are favourable. ▪ Driedorp_Wepener Alternative 2 is the preferred option. ▪ Driedorp_Welbedachtdam Alternative 1 and 2 are favourable. ▪ Welbedachtdam_Welroux Alternative 1 and 2 are favourable. ▪ Driedorp Substation Alternative 1 and 2 are favourable. ▪ Wepener Substation Alternative 1 is the preferred option. ▪ Welroux Substation Alternative 2 is the preferred option.
Heritage	<p>The background research and fieldwork has shown that the Eastern Free State area between Tweespruit, Wepener and the Caledon valley has a rich history spanning a vast timeframe from the Later Stone Age to the South African War. The survey yielded 35 heritage related sites:</p> <ul style="list-style-type: none"> ▪ Thirteen (13) cemeteries of which twelve (12) is situated in the study area; ▪ Twenty one (21) historical sites; and 	<p>Cemeteries</p> <ul style="list-style-type: none"> ▪ Adjust the development layout and demarcate site with at least a 20-meter buffer. In the case of T12 this buffer must be made at least 100 meters to keep the development away from the provincial monument. ▪ In the event that the sites cannot be excluded from the development footprint a grave relocation process as described in Section 5 of this reports needs to be implemented. <p>Historical</p>

Environmental Parameter	Summary of major findings	Recommendations
	<ul style="list-style-type: none"> ▪ One (1) provincial monument (T 12). 	<ul style="list-style-type: none"> ▪ Adjust Corridors and position of pylons to avoid these structures; ▪ Mitigation in the form of a watching brief and monitoring at these sites during construction if any construction is to take place closer than 100 meters from the site; ▪ All structure will require a destruction permit under Section 34 of the NHRA; ▪ The permit will entail initial documentation of the layout and condition of the structures and its structures with layout sketches and detailed photography, after which the destruction permit can be applied for with the backing of the documentary evidence; ▪ A qualified heritage practitioner must do this documentation. <p style="text-align: center;">Monument</p> <ul style="list-style-type: none"> ▪ Adjust Corridors and position of pylons to avoid the site; ▪ Mitigation in the form of a watching brief and monitoring at these sites during construction if any construction is to take place closer than 100 meters from the site; ▪ A buffer of at least 200 meters must be kept from the monument. This distance can however be negotiated with the Provincial Heritage Authority – Heritage Free State
Socio-economic	<ul style="list-style-type: none"> ▪ The power lines have a low impact on the socio-economic structure of the study areas in question. ▪ Similar to the substations, the major concern is in terms of the edge effects of the construction phase: 	<ul style="list-style-type: none"> ▪ If these activities could be strictly controlled, the mitigation will be highly effective, and the impact of the proposed power lines, irrespective of the alternative will be definitely low in the long-term.

Environmental Parameter	Summary of major findings	Recommendations
	<ul style="list-style-type: none"> - Unauthorised off-road driving or access to various land owners property. - Destruction of property, livestock on farms and/or the surrounding environment. - Disturbance to some land-owners property through construction and maintenance, as well as disturbance to some residents through construction of the Wepener substation and refurbishment of the Tweespruit substation. ▪ The positive impacts will generally be associated with a contribution to an increase in economic activities in the various areas in specific, and the national economy as a whole. ▪ With regard to the negative effects that are concerned with the proposed development, the major issues associated with the establishment of either of the power line alternatives and the associated infrastructure are the possible implications of having additional people moving in and out of the areas during the construction and maintenance phases. 	

An impact assessment was conducted to ascertain the level of each identified impact, as well as mitigation measures which may be required. The potential positive and negative impacts associated with the proposed development were evaluated and rated accordingly. The results of the specialist studies have indicated that no fatal flaws exist as a result of the proposed development.

Based on the findings of the specialist studies, the following were selected as the **preferred 132kV power line corridor options**:

- Tweespruit_Driedorp Alternative Corridor 1.
- Driedorp_Wepener Alternative Corridor 1.
- Driedorp_Welbedachtdam Alternative Corridor 1.
- Welbedachtdam_Welroux Alternative Corridor 1.

Based on the findings of the specialist studies, the following were selected as the **preferred substation location options**:

- Driedorp Substation Alternative Radius 2.
- Wepener Substation Alternative Radius 2.
- Welroux Substation Alternative Radius 2.

The preferred route alignment and substation positions, according to the specialist findings, are indicated in Figure ii to Figure v.

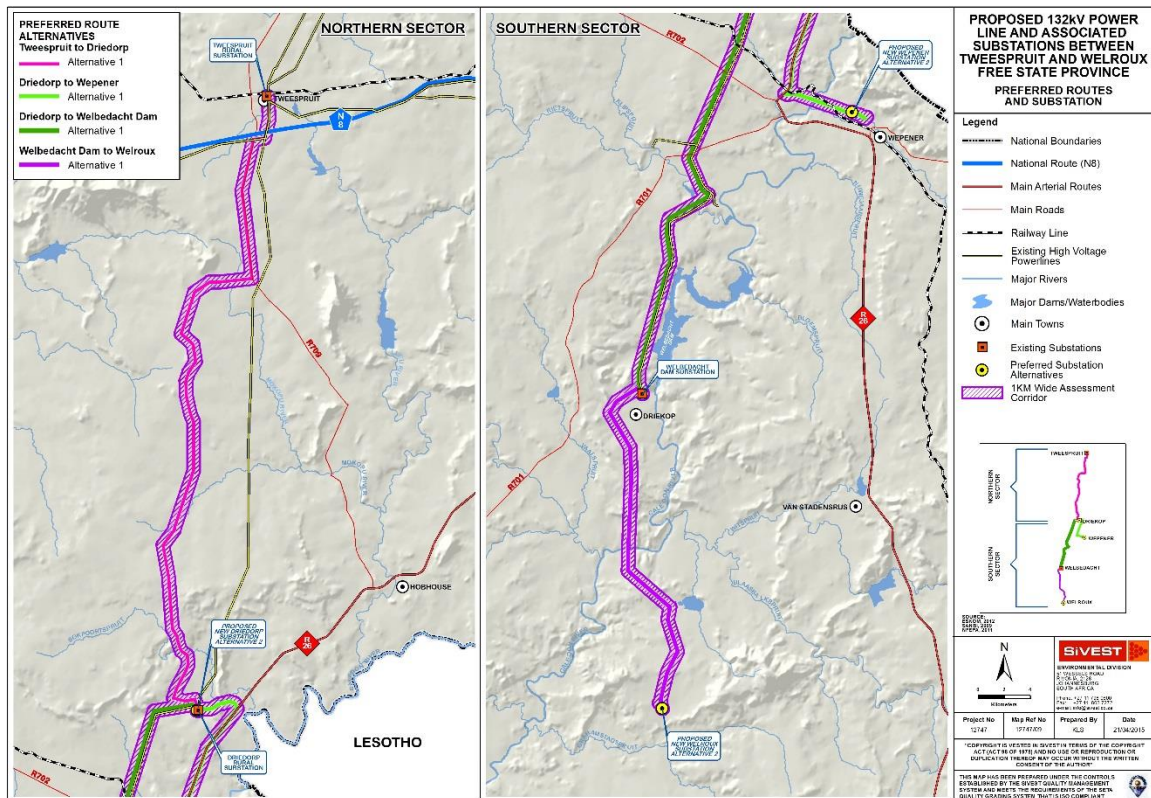


Figure ii: Preferred Route Alignment

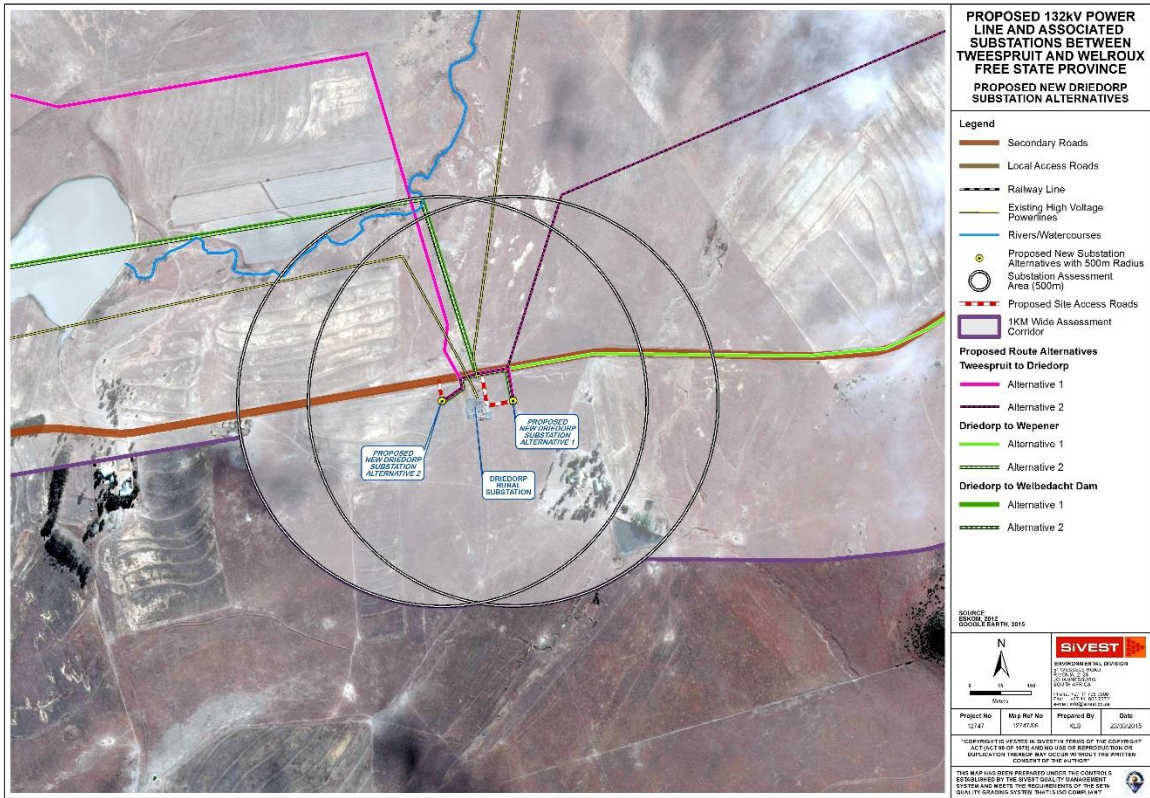


Figure iii: Preferred Driedorp Substation Radius 2

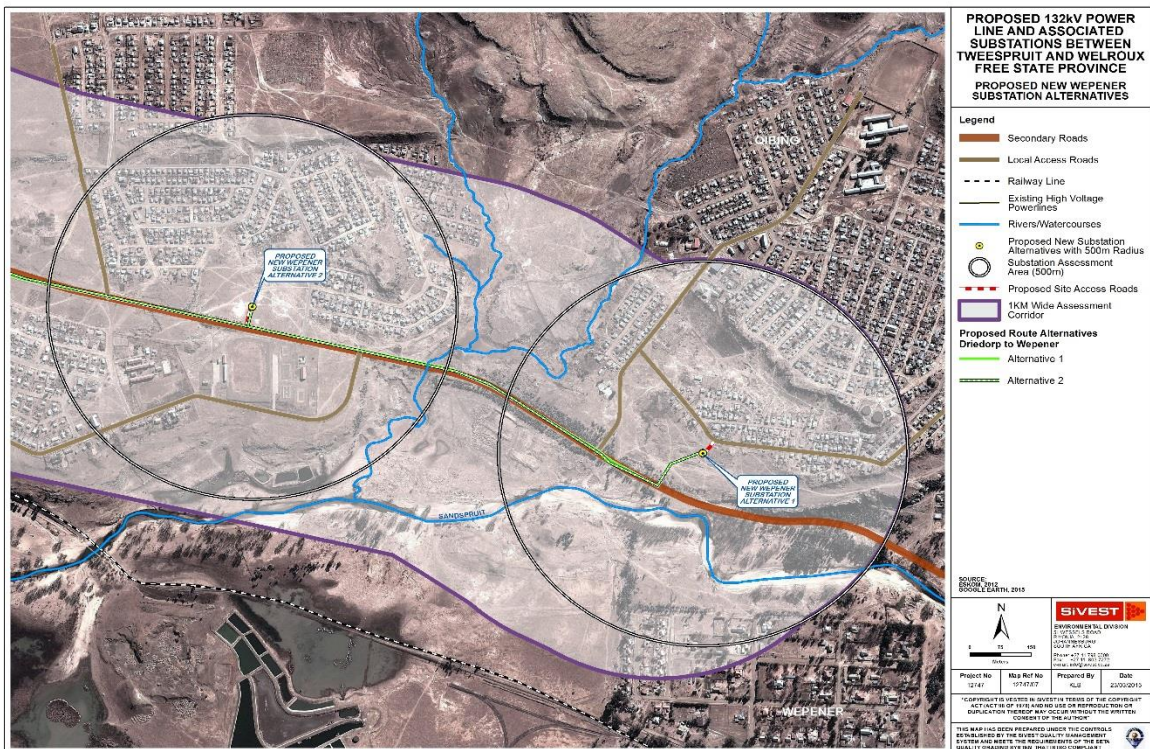


Figure iv: Preferred Wepener Substation Radius 2

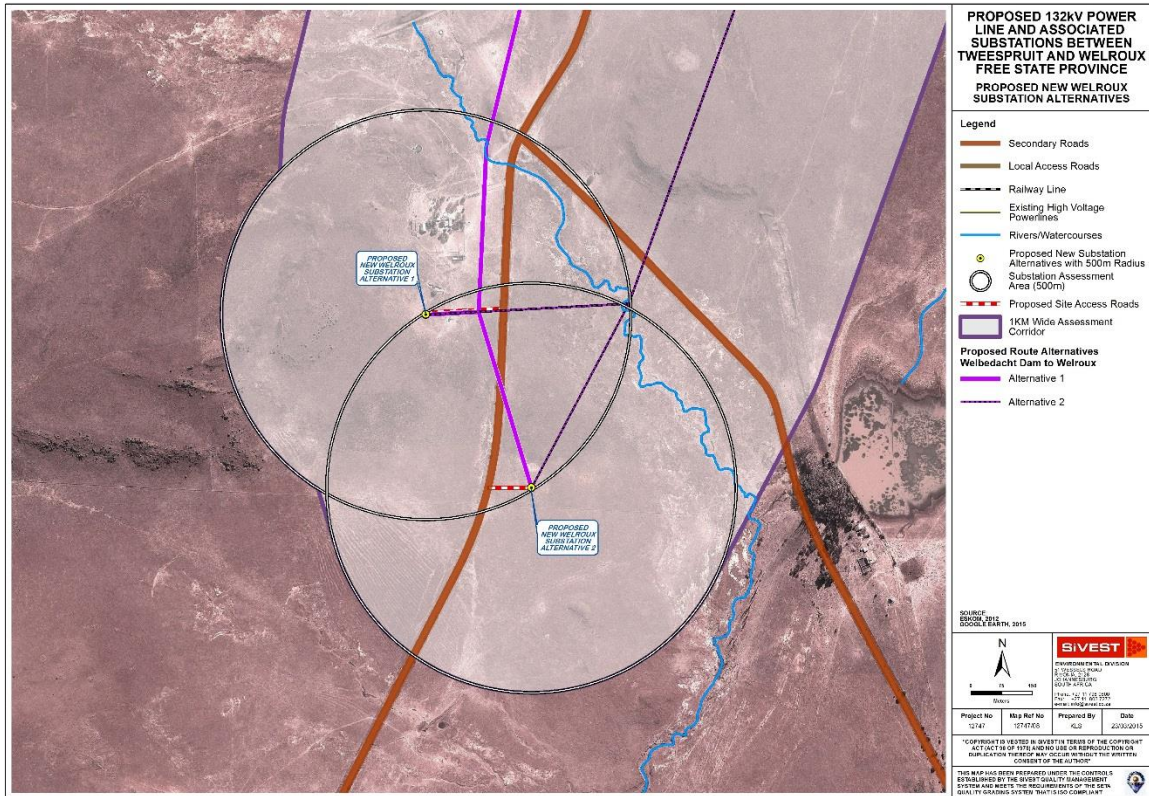


Figure v: Preferred Welroux Substation Radius 2

A thorough public participation process (PPP) was undertaken as part of the BA. During this process on-going consultation took place with various key stakeholders and organs of state, which include provincial, district and local authorities, relevant government departments, parastatals and NGO's.

It is the opinion of the EAP that the proposed project should be allowed to proceed provided that the recommended mitigation measures are implemented, and provided the following conditions are adhered to:

- All mitigation measures recommended by the various specialist should be strictly implemented.
- Final EMPr should be approved by DEA prior to construction.

ESKOM DISTRIBUTION NORTH WESTERN REGION

PROPOSED CONSTRUCTION OF A 132KV DISTRIBUTION POWER LINE BETWEEN TWEESPRUIT AND NEWLY PROPOSED WELROUX SUBSTATION, AND CONSTRUCTION OF THE WELROUX, DRIEDORP AND WEPENER SUBSTATIONS INCLUDING ALL ASSOCIATED INFRASTRUCTURE, WITHIN THE FREE-STATE PROVINCE

DRAFT BASIC ASSESSMENT REPORT

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Appendix D2: Surface Water Impact Assessment

Appendix D3: Agricultural Potential and Soils Assessment

Appendix D4: Heritage Impact Assessment

Appendix D5: Visual Impact Assessment

Appendix D6: Socio-economic Impact Assessment

Appendix D7: Floodline Assessment

Appendix D8: Specialist Terms of Reference

Appendix E: Public Participation Report

Appendix E1: Proof of Advertisements and Site Notices

Appendix E2: Proof of Written Notification to Stakeholders

Appendix E3: Comments and Response Report

Appendix E4: Proof of Written Notification to Authorities and Organs of State

Appendix E5: I&APs Database

Appendix E6: Correspondence and Meeting Minutes – Meeting Minutes will be included in FBAR

Appendix F: Impact Assessment

Appendix G: Environmental Management Programme (EMPr)

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Appendix J2: A3 Maps

Appendix J3: Coordinate Spreadsheets

Appendix J4: Property Description Spreadsheet

Appendix J5: Electric and Magnetic Fields (EMF) Report

Glossary of terms

Biodiversity: The variety of life in an area, including the number of different species, the genetic wealth within each species, and the natural areas where they are found.

Basic Assessment: The process of collecting, organising, analysing, interpreting and communicating information that is relevant to the consideration of the application.

Environmental Management Programme: A legally binding working document, which stipulates environmental and socio-economic mitigation measures that must be implemented by several

List of abbreviations

ATNS	Air Traffic Navigation Services
BA	Basic Assessment
BAR	Basic Assessment Report
C&RR	Comments and Response Report
DAFF	Department of Agriculture, Forestry and Fisheries
DETEA	Department of Economic Development, Tourism and Environmental Affairs
DWA	Department of Water Affairs
EAP	Environmental Assessment Practitioner
EIA	Environmental Impact Assessment
EMF	Electric and Magnetic Fields
EMPr	Environmental Management Programme
EWT	Endangered Wildlife Trust
GIS	Geographic Information System
GN	Government Notice
HIA	Heritage Impact Assessment
I&AP	Interested and Affected Party
IDP	Integrated Development Plan
kV	Kilovolt
NEMA	National Environmental Management Act, 1998 (Act No.107 of 1998)
NEMBA	National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004)
NFA	National Forests Act, 1998 (Act No. 84 of 1998)
NHRA	National Heritage Resources Act, 1999 (Act No. 25 of 1999)
NWA	National Water Act, 1998 (Act No. 36 of 1998)
PPP	Public Participation Process
SAHRA	South African Heritage Resources Agency
SANBI	South African National Biodiversity Institute
SANRAL	South African National Roads Agency SOC Limited
SDF	Spatial Development Framework
SG	Surveyor General
SKA	Square Kilometre Array
SOC	State Owned Company

ESKOM DISTRIBUTION FREE STATE REGION

PROPOSED CONSTRUCTION OF A 132KV DISTRIBUTION POWER LINE BETWEEN TWEESPRUIT AND THE NEWLOY PROPOSED WELROUX SUBSTATION, AND CONSTRUCTION OF THE WELROUX, DRIEDORP AND WEPENER SUBSTATIONS INCLUDING ALL ASSOCIATED INFRASTRUCTURE, WITHIN THE FREE-STATE PROVINCE

DRAFT BASIC ASSESSMENT REPORT

INTRODUCTION

Eskom Holdings SOC Limited (hereafter referred to as, Eskom) is proposing the construction of a double circuit 132kV power line from the existing Tweespruit Substation to the newly proposed Welroux substation. The power line will be approximately 145km in length and will consist of four sections of power line that will connect via the existing substations that will be refurbished (Tweespruit and Welbedachtdam Substation) and to the three newly proposed substations (Driedorp, Wepener and Welroux Substations). The power lines therefore are not separate power lines but rather connecting lines between the existing substations that will be refurbished and those that are being newly proposed along the greater power line network. The registered servitude width will be 31 metres (15.5 metres either side of the centre line). SiVEST Environmental Division has been appointed as independent Environmental Assessment Practitioner (EAP) by Eskom to undertake a Basic Assessment (BA) for the proposed project.

1. Project Description

Eskom is proposing the construction of a 132KV Distribution Power Line between Tweespruit and Welroux Substations, and the proposed construction of the Welroux Substation including all associated infrastructure, within the Mangaung Metropolitan Municipality, The Naledi, Mohokare and Mantsopa Local Municipalities, in the Free State Province.

The study area is located within the Free State Province within the Xhariep District Municipality. More specifically however, the proposed power line traverses three local municipal areas and one metropolitan municipality. These include the Naledi, Mantsopa and Mohokare Local Municipalities and the Mangaung Metropolitan Municipality. The proposed power line originates from the existing Tweespruit Substation in the town of Tweespruit and routes southwards towards the newly proposed Welroux Substation, located 6.36km southwest of Babel and 8.27km southeast of Bankkraal. The landscape is predominantly rural in character. Land uses for the greater part of the proposed power line encompass vacant land, agricultural farming activities and conservation area.

The project is for the proposed construction of a 132kV double circuit power line that will be approximately 145km in total length from the existing Tweespruit Substation to the newly proposed construction of the Welroux substation. The proposed power line will consist of four sections of power line that will connect via the existing substations that will be refurbished (Tweespruit and Welbedachtdam Substation) and to the three newly proposed substations (Driedorp, Wepener and Welroux Substations). The power lines therefore are not separate power lines but rather connecting lines between the existing substations that will be refurbished and those that are being proposed along the greater power line network. The registered servitude width will be 31 metres (15.5 metres either side of the centre line). The four sections of power lines include the following:

- Proposed construction of a double circuit 132kV power line from the existing Tweespruit Substation that will be refurbished to the newly proposed Driedorp Substation (approximately 54km in length);
- Proposed construction of a double circuit 132kV power line from newly proposed Driedorp Rural Substation to existing Welbedachtdam Substation that will be refurbished (approximately 41km in length);
- Proposed construction of a 132kV power line from the newly proposed Wepener Substation to the existing Welbedachtdam Substation (approximately 22km in length);
- Proposed construction of the 132kV power line from the Welbedachtdam Substation to newly proposed Welroux Substation (approximately 29km in length).

Additionally, Eskom proposes to refurbish the Tweespruit and Welbedachtdam Substations, construction of a new 88/22/11kV Driedorp Substation with 2x10MVA and 6 feederbays on the Medium Voltage (MV) side and 2 feeder bays on 88kV side (proposed location is next to the existing Driedorp Substation), the construction of a new 88/22/11kV substation at Wepener (2x10MVA), and a loop in and loop out power line from the existing Tweespruit-Driedorp power line to the new Wepener Substation.

2. Brief Description of the Receiving Environment

The study area is located in the Free State Province within the Thabo Mofutsanyane and Xhariep District Municipalities. More specifically however, the proposed power line traverses the three (3) local municipal areas and one metropolitan municipality. These include the Naledi, Mantsopa and Mohokare Local Municipalities and the Mangaung Metropolitan Municipality. The proposed power line originates from the town of Tweespruit and routes southwards towards the newly proposed Welroux Substation, located 6.36km southwest of Babe; and 8.27km southeast of Bankkraal. The general study area intersects the N8, R709, R702, R701 and the R26.

Land uses in the area encompass predominantly vacant, cultivated, conservation and residential land. Agricultural activities present mainly comprise of grain and cattle farming. The landscape is predominantly rural in character with few isolated rural farmsteads and settlement areas in the vicinity of the study area.

The study area falls within the Grassland bioregion (Mucina and Rutherford, 2006). Within a bioregion, smaller groupings of vegetation units are classified which contain a set of general but more local biophysical characteristics as opposed to the entire bioregion. The proposed development spans across Aliwal North Dry Grassland, Besemkaree Koppies Shrubland, Eastern Free State Sandy Grassland and Basotho Montane Shrubland vegetation units (Mucina and Rutherford, 2006).

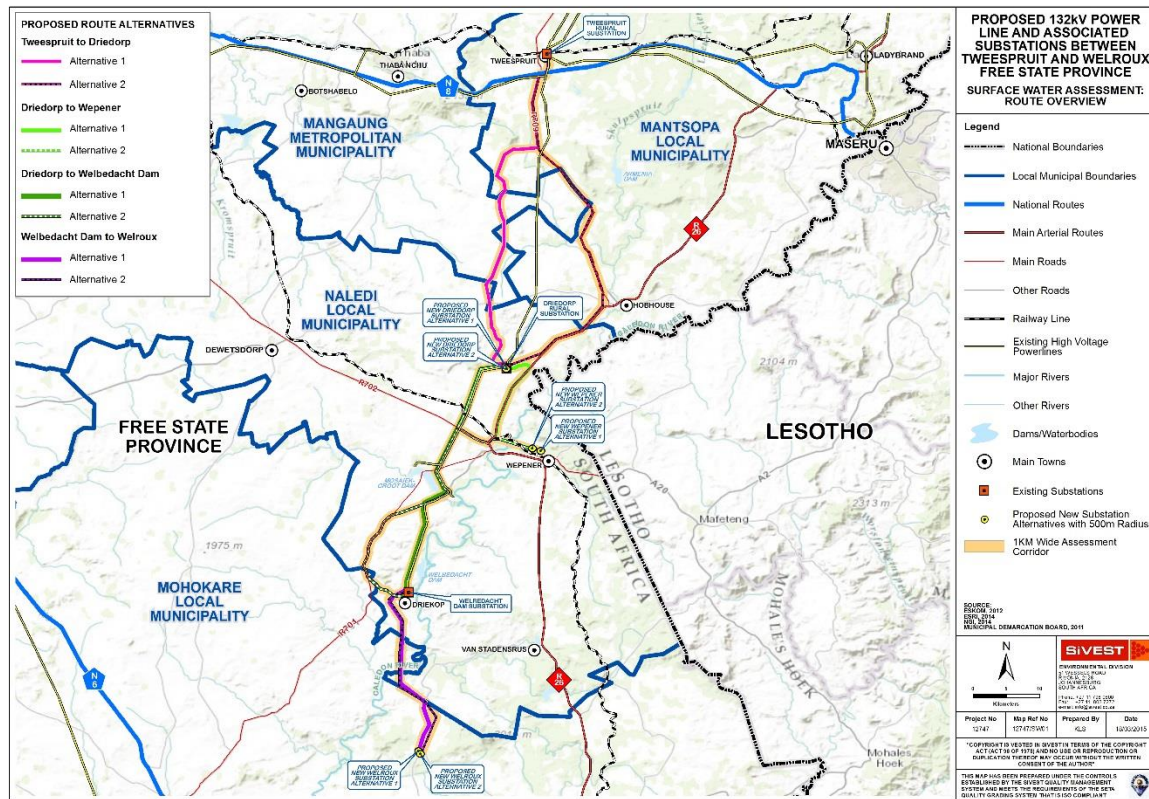


Figure 1: Route Overview Map

3. Expertise of Environmental Assessment Practitioner

Table 1: Environmental Consultants

SPECIALIST STUDY	SPECIALIST UNDERTAKING THE STUDY
Kelly Tucker, SiVEST	Project Leader
Shaun Taylor, SiVEST	Environmental Consultant
Alistair Fyfe, SiVEST	Junior Environmental Consultant
Biodiversity (Flora, Fauna and Avifauna)	David Hoare – David Hoare Consulting CC
Floodlines	Ryan Gray – Jeffares and Green
Surface Water	Shaun Taylor – SiVEST
Agriculture and Soils	Johann Lanz – Stellenbosch University
Visual Impact	Andrea Gibb – SiVEST

Heritage	Wouter Fourie – PGS Heritage
Socio-economic	Alexander Theodosiou – Urban Econ
Public Participation	Nicolene Venter – Zitholele Consulting
GIS and Mapping	Kerry Schwartz – SiVEST

Please refer to attached CV's for more information (See Appendix J1).

4. Authority Consultation

The Department of Environmental Affairs (DEA) is the competent authority on this application.

The following consultation took place with the DEA:

- An application was submitted to the DEA on 10th October 2014. The application was acknowledged on 18th November 2014 and the following reference numbers were allocated for the project. DEA Ref No: 14/12/16/3/3/1/1302

All authority consultation is included within Appendix J1.

5. Basic Assessment Report Structure

This Draft Basic Assessment Report (FBAR) is structured as follows:

- **Section A** describes the activity and technical project components, including the proposed alternatives, location and physical size of the activity. This section also provides an activity motivation by describing the need and desirability for the proposed project. Section A expands on the legal ramifications applicable to the project and describes relevant development strategies and guidelines. Finally the section explains the infrastructural requirements of the proposed project such as waste, effluent, emission water use and energy efficiency.
- **Section B** provides a description of the site and region in which the proposed development is intended to be located. Although the chapter provides a broad overview of the region, it is also specific to the application.
- **Section C** describes the Public Participation Process (PPP) undertaken during the Basic Assessment and tables issues and concerns raised by Interested and Affected Parties (I&APs).
- **Section D** provides 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 of the proposed project. It also details the mitigation measures that may eliminate or reduce the potential impacts listed.
- **Section E** outlines the recommendations of the Environmental Assessment Practitioner (EAP).

6. Assumptions

The following assumptions and limitations have been taken into account when compiling this DBAR:

- It is assumed that all technical information provided by Eskom is technically acceptable and accurate.
- The scope of the study is limited to assessing the environmental impacts associated with the proposed development of a single double circuit 132kV power line.
- The project is still in the planning stages and therefore some of the specific details technical details are not available. Should these become available during the BA process, they will be included in the report before submission to the DEA.
- It is assumed that the information provided by the various specialists is unbiased and accurate.
- The following assumptions, uncertainties and gaps in knowledge were encountered by the various specialists:

Biodiversity

- Red List species are, by their nature, usually very rare and difficult to locate. Compiling the list of species that could potentially occur in an area is limited by the paucity of collection records that make it difficult to predict whether a species may occur in an area or not. The methodology used in this assessment is designed to reduce the risks of omitting any species, but it is always possible that a species that does not occur on a list may be unexpectedly located in an area.
- This study excludes invertebrates.

Heritage

- Not subtracting in any way from the comprehensiveness of the fieldwork undertaken, it is necessary to realise that the heritage resources located during the fieldwork do not necessarily represent all the possible heritage resources present within the area. Various factors account for this, including the subterranean nature of some archaeological sites and the current dense vegetation cover. As such, should any heritage features and/or objects not included in the present inventory be located or observed, a heritage specialist must immediately be contacted.
- Such observed or located heritage features and/or objects may not be disturbed or removed in any way until such time that the heritage specialist had been able to make an assessment as to the significance of the site (or material) in question. This applies to graves and cemeteries as well. In the event that any graves or burial places are located during the development the procedures and requirements pertaining to graves and burials will apply as set out below.
- The accessibility of the proposed alternative alignments was hampered by terrain and permissions to enter sections of the proposed alternatives. An effort was made to provide a good overview of the type of heritage resources that could be found in the study areas.
- It must be stressed that a heritage final walkdown will be required on the completion of the design of the final alignment.

Soil and Agricultural Potential

- Data on the spatial distribution of soil types is dependent on the resolution of sampling points. Investigations for different purposes will use different resolutions. These will record the degree of soil variation that occurs, at different levels of accuracy. The accuracy level of the land type data used in this study is considered completely adequate for achieving this study's aims. A more detailed soil investigation is not

considered likely to have added anything significant for determining the impact of the development on agricultural resources and productivity, and the soil data used is not, therefore seem as a limitation.

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Visual

- The identification of visual receptors has been based on a combination of desktop assessment as well as field-based observation. It should be noted that not all receptor locations would necessarily perceive the proposed development in a negative way. Due to the extensive area covered by the proposed power line that is being assessed during the Basic Assessment, not all receptor locations were visited during the fieldwork. As such, a number of broad assumptions have been made in terms of the visual intrusion of the proposed power line from each receptor location and the sensitivity of the receptor to the proposed development. It should be noted that not all receptors would necessarily perceive the proposed development in a negative way. This is usually dependent on the type of facility and standard use, which could not be established at a desktop level. An assessment of the visual impact from each potentially sensitive location is beyond the scope of this Basic Visual Impact Assessment. Homesteads / farmsteads in a largely natural setting were assumed to be likely to be more sensitive from a visual perspective than those in a more urbanised / industrial settings.
- For the purpose of this visual assessment, the study area is assumed to encompass a zone of 5km from the proposed power line alternatives. This area was used since distance is a critical factor when assessing visual impacts. Beyond 5km any degree of visual impact associated with the proposed development would be significantly diminished and thus the need to assess the impact on potential receptors beyond this distance would not be warranted.
- Due to the varying scales and sources of information as well as the fact that only 20m contours were available to establish the Digital Terrain Model (DTM); the viewsheds indicated on the maps may have minor inaccuracies. Viewsheds indicate the geographical area, relative to topographical screening, from where the proposed development would generally be visible and therefore any inaccuracies regarding the DTM would influence the viewshed generated.
- A viewshed analysis was undertaken for the proposed power line development based on the route information at the time of undertaking the visual study. A single viewshed analysis was undertaken from various points along the centre line of the proposed power line route corridor. The worst-case scenario, in which the power line towers would have a maximum height of 26.5m, was assumed when undertaking the analysis. At the time of undertaking the visual study no information was available regarding the height of the proposed substation, a height of 35m was therefore assumed when factoring the substation into the viewshed analysis. In addition, screening provided by

existing infrastructure and tall wooded vegetation were not factored into the analysis. As such, each viewshed provides an approximate indication of the geographical area from where the proposed power line and substation would be visible from.

- Visualisation modelling has not been undertaken for the proposed development due to budget limitations. Should the need for visualisation modelling be proven by stakeholder / I&AP feedback, then this will be able to be incorporated into this assessment. In addition, undertaking a perception survey falls outside of the scope of this VIA.
- Operational and security lighting will be required for the proposed substation at night. At the time of undertaking the visual study no information was available regarding the type and intensity of lighting required and therefore the potential impact of the substation lighting at night has not been assessed.
- No feedback regarding the visual environment has been received from the public participation process to date, however any feedback from the public during the review period of the Draft Basic Assessment Report (DBAR) will be incorporated into further drafts of this report.

Surface Water

- This study has only focused on the delineation of surface water resources within the proposed development area. Aquatic studies of fish, invertebrates, amphibians etc. have not been included in this report. Nor has a hydrological or groundwater study been included.
- Wetland and/or river health, ecosystem services and the ecological importance have also not been assessed for identified surface water resources in this report.
- In order to delineate wetlands, it is best practice to delineate the entire HGM unit. However, some HGM units can be relatively extensive (several km's long). Due to budget and time limitations as well as the number of wetlands within the study area, the delineation exercise was undertaken primarily at a desktop level but supplemented by detailed in-field analysis and 'ground-truthing' within the proposed alternative corridors and substation assessment areas. Beyond these locations, no delineation was undertaken. Moreover, the purpose of the surface water assessment was to identify and delineate surface water resources that will be affected by the proposed development. As such, a delineation of surface water resources in the wider area was not undertaken.
- Access to wetlands in some instances was limited due to inaccessible terrain. Reference conditions from similar wetlands or from the same wetland system further upstream or downstream were taken to inform the characteristics of wetlands that were inaccessible.

SECTION A: ACTIVITY INFORMATION

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

YES /

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 proposed project consists of the following main activities:

a) Power line

- Construction of a 132kV power line that will be approximately 145km in total length from the Tweespruit Substation to the newly proposed construction of the Welroux Substation.

The proposed power line will consist of four sections of power line that will connect via the existing substations that will be refurbished (Tweespruit and Welbedachtdam Substation) and to the three newly proposed substations (Driedorp, Wepener and Welroux Substations). The power lines therefore are not separate power lines but rather connecting lines between the existing substations that will be refurbished and those that are being newly proposed along the greater power line network. The registered servitude width will be 31 metres (15.5 metres either side of the centre line).

The four sections of power lines include the following:

- Proposed construction of a double circuit 132kV power line from the existing Tweespruit Substation that will be refurbished to the newly proposed Driedorp Substation (approximately 54km in length);
- Proposed construction of a double circuit 132kV power line from newly proposed Driedorp Rural Substation to existing Welbedachtdam Substation that will be refurbished (approximately 41km in length);
- Proposed construction of a 132kV power line from Welbedachtdam Substation to the newly proposed Wepener Substation (approximately 22km in length);
- Proposed construction of the 132kV power line from the Welbedachtdam Substation to Welroux Substation (approximately 29km in length).

The tower types that are used will vary depending on the most appropriate structure, the terrain traversed, ground clearance requirements, geology, etc. the tower types may consist of the following:

- Mono-pole guyed intermediate suspension structures;
- Mono-pole self-supporting intermediate suspension structures;
- Mono-pole angle suspension structures;
- Mono-pole strain structures;

- H-Pole structures; and
- 3 Pole strain structures.

The final tower types that will be used for the proposed 132kV power line will be determined once the routing has been negotiated and a servitude has been secured. The fountain depths will range between 1.5-2m. Spanning lengths between tower structures will be between 225-250m. The tower type structures will vary in length from 18-24m in height. Finally, a Kingbird conductor is likely to be used.

It should be noted that a 1km wide corridor has been proposed for each route alternative to allow flexibility when determining the final route alignment, however only a 31m wide servitude would be required for each proposed 132kV power line. As such, the 31m wide servitude would be positioned within the 1km wide corridor.

b) Substations

Eskom proposes to refurbish the existing Tweespruit and Welbedachtdam Substations. Three (3) new substations will also be built which includes:

- Construction of the new 88/22/11kV Driedorp Substation with 2x10MVA and 6 feeder bays on the Medium Voltage (MV) side and 2 feeder bays on the 88kV side;
- Construction of the new 132/11kV 1x10MVA Wepener Substation; and
- Construction of the new 88/22kV 1x10MVA Welroux Substation.

The new proposed substations will be 100m x 100m in extent each. Access roads to the substations will also be constructed. These access roads will stay as close as possible to existing roads remaining as gravel, with road widths of 4m to 6m within a road reserve of 8m to 12m respectively.

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

In terms of the Environmental Impact Assessment (EIA) Regulations 2010, Government Notice (GN) No. R543 promulgated in terms of section 24(5) and section 44 of the National Environmental Management Act (No. 107 of 1998) (NEMA), as amended, the following listed activities pertain to the development.

Listed activity as described in GN R.544 and 546	Description of project activity
Example: GN R.544 Item 11(3): The construction of a bridge where such construction occurs within a watercourse or within 32 metres of a watercourse, measured from the edge of a watercourse, excluding where such construction will occur behind the development setback line.	A bridge measuring 5 m in height and 10m in length, no wider than 8 meters will be built over the Orange river

<p>GN R.544 Item 10 The construction of facilities or infrastructure for the transmission and distribution of electricity –</p> <p>(i) Outside urban areas or industrial complexes with a capacity of more than 33 but less than 275 kilovolts</p>	<p>Eskom is proposing to develop 132 kilovolt power line, which is located outside of an urban area.</p>
<p>GN R.544 Item 11 The construction of:</p> <p>(xi) infrastructure or structures covering 50 square metres or more</p> <p>where such construction occurs within a watercourse or within 32 metres of a watercourse, measured from the edge of a watercourse, excluding where such construction will occur behind the development setback line.</p>	<p>Final tower and/or substations may need to be placed within 32 metres of a wetland/water course depending on the final selected preferred alternatives. However, overall, the proposed power line crosses several watercourses and wetlands along its length and will therefore be within 32 metres of a watercourse.</p>
<p>GN R.544 Item 18 The infilling or depositing of any material of more than 5 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock from</p> <p>(i) a watercourse;</p> <p>but excluding where such infilling, depositing, dredging, excavation, removal or moving</p> <p>(i) is for maintenance purposes undertaken in accordance with a management plan agreed to by the relevant environmental authority; or</p> <p>(ii) occurs behind the development setback line.</p>	<p>Construction activities may need to take place within a wetland / watercourse depending on final tower and substation locations. However, towers will need to be placed within the floodlines of several wetlands / watercourses.</p>
<p>GN R.546 Item 13(c) The clearance of an area of 1 hectare or more of vegetation where 75% or more of the vegetative cover constitutes indigenous vegetation, except where such removal of vegetation is required for:</p> <p>(1) The undertaking of a process or activity included in the list of waste management activities published in terms of section 19 of the National Environmental waste Act 2008 (Act no 59 of 2008), in which case the activity is regarded to be excluded from this list.</p>	<p>The proposed power line routes through the Caledon Nature Reserve with is classified as a protected area under NEMPAA.</p>

(2) the undertaking of a linear activity falling below the mentioned thresholds mention in Listing Notice 1.

(c) In Eastern Cape, Free State, KwaZulu-Natal, Limpopo, Mpumalanga, Northern Cape and Western Cape:

- i. In an estuary;
- ii. Outside urban areas, the following:
 - (aa) A protected area identified in terms of NEMPAA, excluding conservancies;
 - (bb) National Protected Area Expansion Strategy Focus areas;
 - (cc) Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as adopted by the competent authority;
 - (dd) Sites or areas identified in terms of an International Convention;
 - (ee) Core areas in biosphere reserves;
 - (ff) Areas within 10 kilometres from national parks or world heritage sites or 5 kilometres from any other protected area identified in terms of NEMPAA or from the core area of a biosphere reserve;
 - (gg) Areas seawards of the development setback line or within 1 kilometre from the high-water mark of the sea if no such development setback line is determined.
- iii. In urban areas, the following:

<p>(aa) Areas zoned for use as public open space;</p> <p>(bb) Areas designated for conservation use in Spatial Development Frameworks adopted by the competent authority or zoned for a conservation purpose;</p> <p>(cc) Areas seawards of the development setback line;</p> <p>Areas on the watercourse side of the development setback line or within 100 metres from the edge of a watercourse where no such setback line has been determined.</p>	
<p>GN R.546 Item 14 The clearance of an area of 5 hectares or more of vegetation where 75% or more of the vegetative cover constitutes indigenous vegetation, except where such removal of vegetation is required for:</p> <p>(1) purposes of agriculture or afforestation inside areas identified in spatial instruments adopted by the competent authority for agriculture or afforestation purposes;</p> <p>(2) the undertaking of a process or activity included in the list of waste management activities published in terms of section 19 of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) in which case the activity is regarded to be excluded from this list;</p> <p>the undertaking of a linear activity falling below the thresholds in Notice 544 of 2010.</p> <p>(a) In Eastern Cape, Free State, KwaZulu-Natal, Limpopo, Mpumalanga, Northern Cape, Northwest and Western Cape:</p> <p>i. All areas outside urban areas;</p>	<p>The natural indigenous vegetation will need to be cleared for each of the four sections of the proposed power lines as well as for the new proposed substations.</p>

2. Feasible and reasonable alternatives

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

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

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

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

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

a) Substation Site alternatives

Driedorp SS Alternative 1		
Description	Lat (DDMMSS)	Long (DDMMSS)
	29°36'49.16"S	26°58'54.18"E
Driedorp SS Alternative 2 (preferred alternative)		
Description	Lat (DDMMSS)	Long (DDMMSS)
	29°36'52.27"S	26°58'51.38"E
Wepener SS Alternative 1		
Description	Lat (DDMMSS)	Long (DDMMSS)
	29°43'27.30"S	27° 1'36.20"E
Wepener SS Alternative 2 (preferred alternative)		
Description	Lat (DDMMSS)	Long (DDMMSS)
	29°43'14.93"S	27° 0'55.23"E
Welroux SS Alternative 1		

Description	Lat (DDMMSS)	Long (DDMMSS)
	30° 7'44.47"S	26°51'42.02"E
Welroux SS Alternative 2 (preferred alternative)		
Description	Lat (DDMMSS)	Long (DDMMSS)
	30° 7'58.21"S	26°51'51.61"E
Alternative 3 (preferred)		
Description	Lat (DDMMSS)	Long (DDMMSS)
Alternative 4		
Description	Lat (DDMMSS)	Long (DDMMSS)

b) **Powerline Site alternatives**

In the case of linear activities:

Alternative:

Latitude (S):

Longitude (E):

Tweespruit_Driedorp Alternative 1 (preferred alternative)

▪ Starting point of the activity	29°11'21.43"	27° 57' 12.15"
▪ Middle/Additional point of the activity	29°23'17.72"	26°58'15.69"
▪ End point of the activity	29°36'49.04"	26°58'51.56"

Tweespruit_Driedorp Alternative 2

▪ Starting point of the activity	29°11'23.52"	27° 2'8.60"
▪ Middle/Additional point of the activity	29°25'3.44"	27° 5'22.65"
▪ End point of the activity	29°36'49.04"	26°58'51.56"

Driedorp_Wepener Alternative 1 (preferred alternative)

▪ Starting point of the activity	29°36'49.04"	26°58'51.56"
▪ Middle/Additional point of the activity	29°40'16.44"	26°58'27.25"
▪ End point of the activity	29°43'21.53"	27° 1'15.35"

Driedorp_Wepener Alternative 2

▪ Starting point of the activity	29°36'49.04"	26°58'51.56"
▪ Middle/Additional point of the activity	29°41'20.90"	26°54'59.90"
▪ End point of the activity	29°43'21.53"	27° 1'15.35"

Driedorp_Welbedachtdam Alternative 1 (preferred alternative)

▪ Starting point of the activity	29°36'49.04"	26°58'51.56"
▪ Middle/Additional point of the activity	29°45'14.33"	26°53'10.44"
▪ End point of the activity	29°54'55.16"	26°50'55.17"

Driedorp_Welbedachtdam Alternative 2

▪ Starting point of the activity	29°36'49.04"	26°58'51.56"
▪ Middle/Additional point of the activity	29°46'55.61"	26°53'56.76"
▪ End point of the activity	29°54'55.16"	26°50'55.17"

Welbedachtdam_Welroux Alternative 1 (preferred alternative)

▪ Starting point of the activity	29°54'55.16"	26°50'55.17"
▪ Middle/Additional point of the activity	30° 1'39.75"	26°50'13.96"
▪ End point of the activity	30° 7'50.64"	26°51'48.90"

Welbedachtdam_Welroux Alternative 2

▪ Starting point of the activity	29°54'55.16"	26°50'55.17"
▪ Middle/Additional point of the activity	30° 1'35.90"	26°50'10.23"
▪ End point of the activity	30° 7'50.64"	26°51'48.90"

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.

Please refer to Appendix J3 for the coordinates of the power line corridor alternatives taken every 250 meters along each alignment.

e) No-go alternative

The “no-go” alternative assumes that the proposed activity does not go-ahead, implying a continuation of the current situation or the status quo. In the case of this project, the no go alternative would result in no 132kV power line, no substations and no associated infrastructure being constructed.

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

3. Physical size of the activity

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

Alternative:

- Alternative 1¹ (preferred activity alternative)
- Alternative 2 (if any)
- Alternative 3 (if any)
- Alternative 4 (if any)

Size of the activity:

m ²
m ²
m ²
m ²

“Alternative 1-4.” refers to activity, process, technology or other alternatives.

or, for linear activities:

Alternative:

- Tweespruit_Driedorp Alternative 1 (preferred alternative)

Length of the activity:

55.4 km

Tweespruit_Driedorp Alternative 2	58.3 km
Driedorp_Wepener Alternative 1	22 km
Driedorp_Wepener Alternative 2	25.3 km
Driedorp_Welbedachtdam Alternative 1	41 km
Driedorp_Welbedachtdam Alternative 2	49.2 km
Welbedachtdam_Welroux Alternative 1	28 km
Welbedachtdam_Welroux Alternative 2	29.2 km

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

Alternative:	Size of the site/servitude:
Tweespruit_Driedorp Alternative 1 & 2 (preferred alternative)	31 m
Driedorp_Wepener 1 & 2	31 m
Driedorp_Welbedachtdam 1 & 2	31 m
Welbedachtdam_Welroux 1 & 2	31 m
Driedorp Substation Alternative 1 & 2 (preferred alternative)	10 000 m ²
Wepener Substation Alternative 1 & 2	10 000 m ²
Welroux Substation Alternative 1 & 2	10 000 m ²

4. Site Access

Does ready access to the site exist?

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

YES	
Access roads from existing main roads will be constructed for no longer than 500m.	

Describe the type of access road planned:

Existing access roads along the power line route will be used to access the servitude where possible. Access can be obtained via the N8, R709, R702, R701 and the R26. Access roads to the substations will also be constructed for very short sections. These access roads will stay as close as possible to existing roads, remaining gravel, with road widths of 4m to 6m, within a road reserve of 8m to 12m, respectively. The length of these roads will be no longer than 500m.

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).

An A3 locality map is included in Appendix A.

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.

A layout/route plan indicating the alternative route corridor alternatives is included in Appendix A.

7. Sensitivity map

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

- watercourses;
- the 1:100 year flood line (where available or where it is required by DWA);
- ridges;
- cultural and historical features;
- areas with indigenous vegetation (even if it is degraded or infested with alien species); and
- critical biodiversity areas.

The sensitivity map must also cover areas within 100m of the site and must be attached in Appendix A.

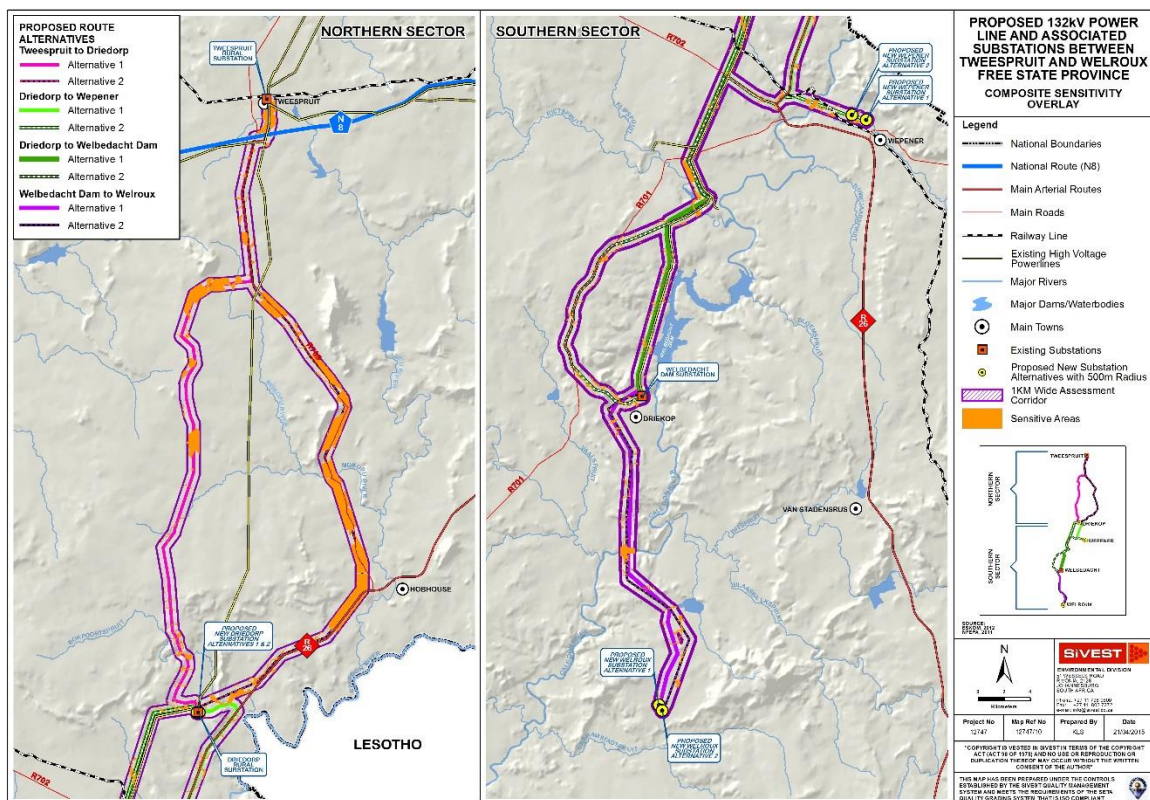


Figure 2: Composite Sensitivity Overlay Map

The sensitivity map indicating sensitive areas associated with the route alternatives is included 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.

Site Photographs for the alternative substations are included in Appendix B.

9. Facility illustration


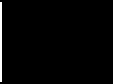



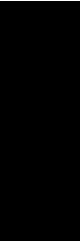
A detailed illustration of the activity must be provided at a scale of at least 1:200 as Appendix C for activities that include structures. The illustrations must be to scale and must represent a realistic image of the planned activity. The illustration must give a representative view of the activity.

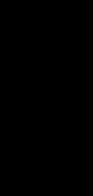





A schematic drawing of the proposed steel monopole tower type is included in Appendix C.

10. Activity motivation

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

1. Is the activity permitted in terms of the property's existing land use rights?	YES ✓		Please explain
The project in question is for the proposed construction of a 132kV power line, which will consist of servitude within the properties it will be traversing. A change in land use will not be required and the servitude will be considered as special use within the existing land use.			
2. Will the activity be in line with the following?			
(a) Provincial Spatial Development Framework (PSDF)	YES ✓		Please explain
The proposed project falls within the Free State Province. One of the main objectives of the Spatial Development Framework (SDF) is to facilitate the provision of electricity and to improve the network equitably for all people within the province (Free State Province – Provincial Spatial Development Framework 2013, Phase 1 Report). The SDF is one of the fundamental implementation instruments, which provides the spatial dimensions for achieving the strategies of the province. One such, strategy includes the growth and development goal, which seeks to fight poverty and unemployment by promoting economic growth (Free State Province – Provincial Spatial Development Framework 2013, Phase 1 Report). In this way, the proposed development is aligned with the provincial SDF as it would promote economic growth by improving the network in the area and supplying electricity to new households and customers.			
(b) Urban edge / Edge of Built environment for the area		NO ✓	Please explain
Majority of the proposed development would fall outside the urban edge. Although the proposed development does not entirely fit the surrounding area, majority of the proposed alternatives follow existing power lines and on or near the N8, R709, R702, R701 and the R26.			

<p>(c) Integrated Development Plan (IDP) and Spatial Development Framework (SDF) of the Local Municipality (e.g. would the approval of this application compromise the integrity of the existing approved and credible municipal IDP and SDF?).</p>	<p>YES ✓</p>		<p>Please explain</p>
<p>The proposed development is situated partly within the Mangaung Metropolitan Municipality, Naledi, Mohokare and Mantsopa Local Municipalities. The Integrated Development Plan (IDPs) for the Naledi, Mohokare and Mantsopa Local Municipalities have identified electricity as a service delivery need and have acknowledged various strategies to improve the electricity supply. The Mangaung Metropolitan Municipality delivery targets are to provide electricity in informal settlements and reconnect electricity to more households. The Naledi Local Municipality delivery targets are to improve the current insufficient power supply. The Mohokare and Mantsopa Local Municipalities delivery targets are to maintain electricity provision and to ensure an uninterrupted good quality electricity supply.</p> <p>In this way the proposed development is aligned with the municipal objectives and priorities for service delivery and infrastructural development in the area.</p>			
<p>(d) Approved Structure Plan of the Municipality</p>			<p>Please explain</p>
<p>The proposed development is for service infrastructure and therefore will not have any bearing on the Municipalities' Structure Plans.</p>			
<p>(e) An Environmental Management Framework (EMF) adopted by the Department (e.g. Would the approval of this application compromise the integrity of the existing environmental management priorities for the area and if so, can it be justified in terms of sustainability considerations?)</p>	<p>YES ✓</p>		<p>Please explain</p>
<p>The proposed development would not compromise the integrity of the environmental management priorities for the area.</p>			
<p>(f) Any other Plans (e.g. Guide Plan)</p>	<p>YES ✓</p>		<p>Please explain</p>
<p>The proposed development is aligned with Eskom's Integrated Strategic Electricity Planning (ISEP) process, which is intended to provide strategic projections of supply-side and demand-side options to be implemented in order to meet long-term load forecasts.</p>			
<p>3. Is the land use (associated with the activity being applied for) considered within the timeframe intended by the existing approved SDF agreed to by the relevant environmental authority (i.e. is the proposed development in line with the projects and programmes identified as priorities within the credible IDP)?</p>	<p>YES ✓</p>		<p>Please explain</p>
<p>As mentioned above, the Integrated Development Plan (IDPs) for the Mangaung Metropolitan Municipality, Naledi, Mohokare and Mantsopa Local Municipalities have identified electricity as a service delivery need and has acknowledged various strategies to improve the electricity supply. The Mangaung Metropolitan Municipality, Naledi, Mohokare and Mantsopa Local Municipalities delivery targets are to maintain electricity provision and to ensure an uninterrupted good quality electricity supply. In this way the proposed development is aligned with the priority projects and programmes identified within the IDPs for the local and district municipalities.</p>			

<p>4. Does the community/area need the activity and the associated land use concerned (is it a societal priority)? (This refers to the strategic as well as local level (e.g. development is a national priority, but within a specific local context it could be inappropriate.)</p>	<p>YES ✓</p>		<p>Please explain</p>
<p>The proposed development could improve the lives of the local communities by assisting the Local Government in providing and strengthening electricity to them. Local employment benefit would result during the construction of the power lines and substations. In addition education levels are extremely low within the surrounding area. The development would act as catalyst promoting economic growth, thus providing future opportunities for the surrounding communities by improving education and helping reverse urbanization.</p>			
<p>5. Are the necessary services with adequate capacity currently available (at the time of application), or must additional capacity be created to cater for the development? (Confirmation by the relevant Municipality in this regard must be attached to the final Basic Assessment Report as Appendix I.)</p>	<p>YES ✓</p>		<p>Please explain</p>
<p>Past experience from similar electricity project in the area have indicated that the necessary services and adequate capacity are available. All relevant local and district municipalities will be provided with the opportunity to comment on the proposed development as well as this DBAR.</p>			
<p>6. Is this development provided for in the infrastructure planning of the municipality, and if not what will the implication be on the infrastructure planning of the municipality (priority and placement of services and opportunity costs)? (Comment by the relevant Municipality in this regard must be attached to the final Basic Assessment Report as Appendix I.)</p>	<p>YES ✓</p>		<p>Please explain</p>
<p>The development will contribute to the service infrastructure of the municipality. All relevant local and district municipalities will be provided with the opportunity to comment on the proposed development as well as this DBAR.</p>			
<p>7. Is this project part of a national programme to address an issue of national concern or importance?</p>	<p>YES ✓</p>		<p>Please explain</p>
<p>Stable electricity provision in South Africa is a critical issue. It is impossible to create an economically sound country without a secure and reliable energy source. As mentioned above, the network in the area is currently unstable, therefore the proposed development will help regulate and improve the reliability of the network, thereby creating capacity for new customers in area.</p>			
<p>8. Do location factors favour this land use (associated with the activity applied for) at this place? (This relates to the contextualisation of the proposed land use on this site within its broader context.)</p>	<p>YES ✓</p>		<p>Please explain</p>
<p>Majority of the proposed development would fall outside the urban edge. Although the proposed development does not entirely fit the surrounding area, majority of the proposed alternatives follow existing power lines and on or near the N8, R709, R702, R701 and the R26.</p>			
<p>9. Is the development the best practicable environmental option for this land/site?</p>	<p>YES ✓</p>		<p>Please explain</p>

The proposed development is a suitable development and will conform to the typical visual character and pattern of elements that make up the landscape form.		
10. Will the benefits of the proposed land use/development outweigh the negative impacts of it?	YES ✓	Please explain
The absence of the proposed power line and substations would mean that the power supply in the area would not be strengthened. This will have negative implications on new customers in the area which will in turn have a negative impact on economic growth. The socio economic benefits of the proposed project are considered to outweigh the negative impacts identified, such as visual and biodiversity.		
11. Will the proposed land use/development set a precedent for similar activities in the area (local municipality)?	NO ✓	Please explain
Infrastructure for service provision, as proposed, would not set a precedent for similar activities in the area at large. Should additional power lines be required in the area in the future it may be beneficial to align them parallel in order to consolidate the impacts.		
12. Will any person's rights be negatively affected by the proposed activity/ies?	YES ✓	Please explain
The proposed development may impact on individuals where a proposed tower structure and/or substation is to be constructed on the land on which they are residing. The preferred use of the farmland, which is usually commercial, may be impacted upon in the future as the electricity servitude area will need to be considered in all aspects of development planning for the farm. For instance, Eskom does not allow development within their 31m servitude and no buildings can be constructed below a power line (however crops that do not encroach on clearance distances and affect the safety of the line can be planted under the line with permission). The land is usually sold on a once-off purchase, as a result chances of the landowner re-obtaining the land is improbable.		
13. Will the proposed activity/ies compromise the "urban edge" as defined by the local municipality?	NO ✓	Please explain
Infrastructure for service provision, as proposed, would not alter the urban edge.		
14. Will the proposed activity/ies contribute to any of the 17 Strategic Integrated Projects (SIPs)?	NO ✓	Please explain
The project will not contribute to SIPs, however the project seeks to improve and expand electricity transmission and distribution (Provincial and Local Government conference: A Summary of the Infrastructure Plan, 2012). In this way the proposed development would contribute this project by improving the electricity supply in the Free State.		
15. What will the benefits be to society in general and to the local communities?	Please explain	
The increased electricity strengthening and supply may encourage residential and urban development in the area, which in turn may provide job opportunities for local communities. In addition, the proposed development could improve the lives of the local community by assisting the Local Government in providing electricity to them. The development may act as catalyst promoting economic growth in the area, which may result in future opportunities for the surrounding communities by improving education and helping reverse urbanization. New applications for supply can be considered		
16. Any other need and desirability considerations related to the proposed activity?	Please explain	

As mentioned above the project is needed in order to improve the reliability of the electricity supply in the area, to promote economic growth and to stabilise the electricity supply in the area.

17. How does the project fit into the National Development Plan for 2030?	Please explain
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The National Development Plan sets out various goals in order to eliminate poverty and reduce inequality by 2030 (National Development Plan, 2011). It mentions the need to create 11 million more jobs and promote economic growth and development through the provision of quality, reliable and efficient energy services by 2030. In this way, the proposed power line project is aligned with the National Development Plan, as it will help promote economic growth by improving the reliability of the network and creating capacity for new customers in the area, which in turn could promote local job opportunities.

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

In terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA) the required BA and public participation process (PPP) was undertaken for the proposed development in order to investigate and assess any potential environmental impacts associated with the development prior to implementation. As part of the BA process several specialist studies were conducted to evaluate the actual and potential impact that the proposed development could have on the biophysical environment, socio-economic conditions and cultural heritage within the study area. In line with the general objectives of Integrated Environmental Management, the risks and consequences of the various corridor alternatives were assessed and mitigation measures were recommended by each specialist in order to minimise the negative impacts and maximise the benefits of the proposed project. In addition, a thorough PPP was undertaken as part of the BA, which involved consultation with various key stakeholders and organs of state, including provincial, district and local authorities, relevant government departments, parastatals and NGO's.

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

The principles of environmental management as set out in section 2 of the NEMA require that environmental management must place people and their needs at the forefront of development and that development must be socially, environmentally and economically sustainable. As described above; these principles have been taken into account by undertaking a thorough PPP in order to ensure that all Interested and Affected Parties (I&APs) are given the opportunity to be involved in the BA process and ultimately that their comments are taken into consideration by the DEA when reviewing the application. Several specialist studies were also undertaken to ensure that the development is sustainable and that disturbance to the environment is avoided where possible, minimised through appropriate mitigation measures and remedied via appropriate measures.

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
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Legislation			
National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA)	In terms of the NEMA the proposed development must be considered, investigated and assessed prior to implementation.	Department of Environmental Affairs (DEA)	1998
National Heritage Resources Act, 1999 (Act No. 25 of 1999)	In terms of section 38 of the NHRA, the responsible heritage resources authority can call for a Heritage Impact Assessment (HIA) where a power line is being proposed.	South African Heritage Resources Authority (SAHRA)	1999
National Water Act, 1998 (Act 36 of 1998)	If the development may need to take place within a 500m radius of a delineated wetland a water use license is likely to be required with regards to water uses (c) and (i) of the NWA.	Department of Water Affairs (DWA)	1998
National Environmental Management: Biodiversity Act, 2004 (Act No. of 2004)	Under the NEMBA the project proponent is required to take appropriate reasonable measures to limit the impacts on biodiversity, to obtain permits if required and to invite SANBI to provide commentary on any documentation resulting from the proposed development.	Department of Environmental Affairs (DEA) and South African National Biodiversity Institute (SANBI)	2004
National Environmental Management: Protected Areas Act, 2003 (Act No. 57 of 2003) (NEMPAA)	Under the NEMBA the project proponent is required to take appropriate reasonable measures to limit the impacts on ecologically viable areas that are representative of South Africa's natural biodiversity, and to invite SANParks to provide commentary on any documentation resulting from the proposed development.	Department of Environmental Affairs (DEA) and South African National Parks (SANParks)	2003
Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983) (CARA)	The construction of power lines may impact on agricultural resources and vegetation on the site. The	Department of Agriculture, Forestry and Fisheries (DAFF)	1983

	CARA prohibits the spreading of weeds and prescribes control measures that need to be complied with in order to achieve this.		
National Road Traffic Act, 1996 (No. 93 Of 1996)	All the requirements stipulated in the NRTA regarding traffic matters will need to be complied with during the construction and operational phases of the proposed power line.	South African National Roads Agency Limited (SANRAL)	1996
Regulations			
NEMA EIA 2010 Regulations	In terms of the EIA 2010 Regulations, a basic assessment process is required for this proposed project.	Department of Environmental Affairs (DEA)	2010
Guidelines			
Integrated strategic Electricity planning (ISEP), 2005	The ISEP provides a framework for Eskom to investigate a wide range of new supply-side and demand-side technologies with a view to optimising investments and returns.	Eskom	2005
Integrated Development Plan (IDP) Mangaung Metropolitan Municipality 2012-2017	Mangaung Metropolitan Municipality addresses pertinent issues and the proposed development should be aligned with the IDP.	Mangaung Metropolitan Municipality	2012
Integrated Development Plan (IDP): Naledi Local Municipality 2012-2017	Naledi Local Municipality addresses pertinent issues and the proposed development should be aligned with the IDP.	Naledi Local Municipality	2012
Integrated Development Plan (IDP): Mohokare Local Municipality 2012-2017	Mohokare Local Metropolitan Municipality addresses pertinent issues and the proposed development should be aligned with the IDP.	Mohokare Local Municipality	2012

Integrated Development Plan (IDP): Mantsopa Local Municipality 2012-2017	Mantsopa Local Metropolitan Municipality addresses pertinent issues and the proposed development should be aligned with the IDP.	Mantsopa Local Municipality	2012
Integrated Development Plan (IDP): Thabo Mofitsanyana District Municipality (2013-2014)	Thabo Mofitsanyana District Municipality addresses pertinent issues and the proposed development should be aligned with the IDP.	Thabo Mofitsanyana District Municipality	2013
Integrated Development Plan (IDP): Xhariep District Municipality (2014-2015)	Xhariep District Municipality addresses pertinent issues and the proposed development should be aligned with the IDP.	Xhariep District Municipality	2014

12. Waste, effluent, emission and noise management

a) Solid waste management

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

YES ✓

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

Approx. 10m³

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

All solid waste collected shall be disposed of at registered/licensed landfill site. Skip waste containers and waste collection bins will be maintained on site and the contractor will arrange for them to be collected regularly and transported to the landfill site.

Under no circumstances will waste be burned or buried on site.

Hazardous materials and contaminants will be stored carefully to prevent contamination until being disposed of at a licensed landfill site.

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

All solid waste will be disposed of at a registered landfill site.

Will the activity produce solid waste during its operational phase?

NO ✓

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

N/A

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

N/A

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

N/A

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

N/A

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

N/A

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

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

m³

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

Waste water will not be generated by the activity.

c) Emissions into the atmosphere

Will the activity release emissions into the atmosphere other than exhaust emissions and dust associated with construction phase activities?

<input type="checkbox"/>	<input checked="" type="checkbox"/> NO ✓
<input type="checkbox"/> YES	<input type="checkbox"/> NO

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

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:

Other than exhaust emissions and dust associated with construction phase activities, the activity will not release emissions into the atmosphere.

d) Waste permit

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

<input type="checkbox"/>	<input checked="" type="checkbox"/> NO ✓
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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?

<input checked="" type="checkbox"/> YES ✓	<input type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/> NO ✓

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

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

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

Noise will be generated during the construction phase. This impact is transient and is unlikely to be heard by many noise receptors due to the limited human habitation in the area. The impact of the project on noise does therefore not warrant a specialist noise impact assessment.

During the operational phase the power line and substations will generate a low hissing noise, known as corona. This noise will vary depending on the weather conditions and in dry conditions; the noise level will be comparative with the usual ambient noise level in the environment.

13. Water use

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

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

litres

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

A water use license may be required in terms of the NWA should construction need to take place inside any of the wetlands. Once the final alignment is established a final surface walk-down study will be conducted for accurate in-field delineation and to identify exactly which towers are located in water resources and if a water use license would be required subsequent to the BA process.

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

14. Energy efficiency

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

The proposed development would not consume power.

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

Energy efficiency measures are not applicable to this proposed project.

SECTION B: SITE/AREA/PROPERTY DESCRIPTION

Important notes:

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

Section B Copy No. (e.g. A): ████████

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

2. Has a specialist been consulted to assist with the completion of this section? YES / ████████

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.

A 'specialist declaration of interest' for each specialist is included in Appendix I and all specialist reports are contained in Appendix D.

Property description/physical address:

Province	
District Municipality	
Local Municipality	
Ward Number(s)	
Farm name and number	
Portion number	
SG Code	

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.

Refer to Appendix J4 for a full list of the properties (including farm names, numbers and Surveyor General (SG) codes) traversed by the proposed power line alternatives and substations alternatives. The province, district municipality, local municipality and ward numbers are also indicated.

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

Unknown

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? ████████ NO /

1. Gradient of the site

Indicate the general gradient of the site.

Power Line Alternatives

Tweespruit_Driedorp Alternative 1:

Flat J	1:50 – 1:20	1:20 – 1:15	1:15 – 1:10	1:10 – 1:7,5	1:7,5 – 1:5	Steeper than 1:5
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Tweespruit_Driedorp Alternative 2:

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

Flat	1:50 – 1:20 J	1:20 – 1:15	1:15 – 1:10	1:10 – 1:7,5	1:7,5 – 1:5	Steeper than 1:5
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Driedorp_Wepener Alternative 2:

Flat	1:50 – 1:20 J	1:20 – 1:15	1:15 – 1:10	1:10 – 1:7,5	1:7,5 – 1:5	Steeper than 1:5
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Driedorp_Welbedacht dam Alternative 1:

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

Driedorp_Welbedacht dam Alternative 2:

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

Welbedacht dam_Welroux Alternative 1:

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

Welbedacht dam_Welroux Alternative 2:

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

Driedorp SS Alternative 1:

Flat J	1:50 – 1:20	1:20 – 1:15	1:15 – 1:10	1:10 – 1:7,5	1:7,5 – 1:5	Steeper than 1:5
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Driedorp SS Alternative 2:

Flat J	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
------------------	-------------	-------------	-------------	--------------	-------------	------------------

Wepener SS Alternative 1:

Flat	1:50 – 1:20 J	1:20 – 1:15	1:15 – 1:10	1:10 – 1:7,5	1:7,5 – 1:5	Steeper than 1:5
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Wepener SS Alternative 2:

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

Flat ✓	1:50 – 1:20	1:20 – 1:15	1:15 – 1:10	1:10 – 1:7,5	1:7,5 – 1:5	Steeper than 1:5
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Welroux Alternative 2:

Flat ✓	1:50 – 1:20	1:20 – 1:15	1:15 – 1:10	1:10 – 1:7,5	1:7,5 – 1:5	Steeper than 1:5
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Large portions of the northern region of the proposed development are flat in nature, however, the southern portions comprise predominantly of more moderate undulating slopes. An A3 Slope Classification Map and Topography Map are included in Appendix J2.

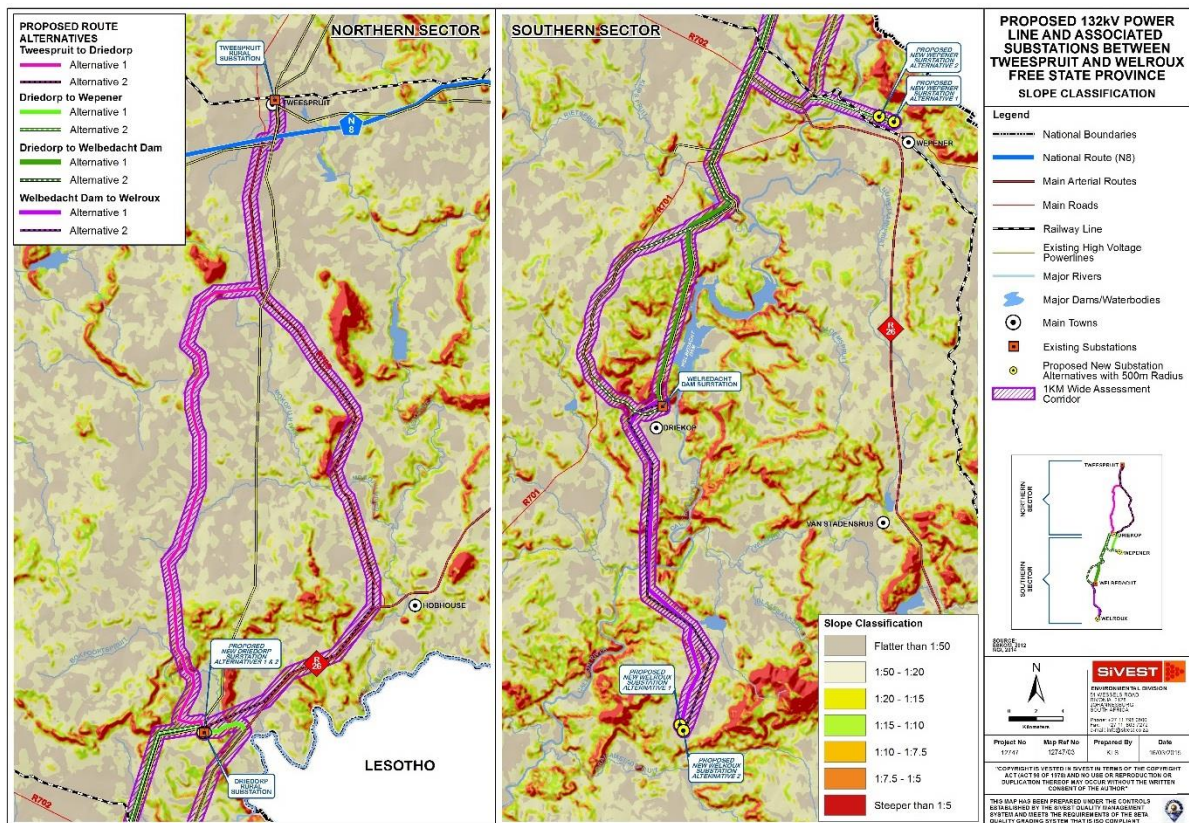


Figure 3: Slope Classification Map

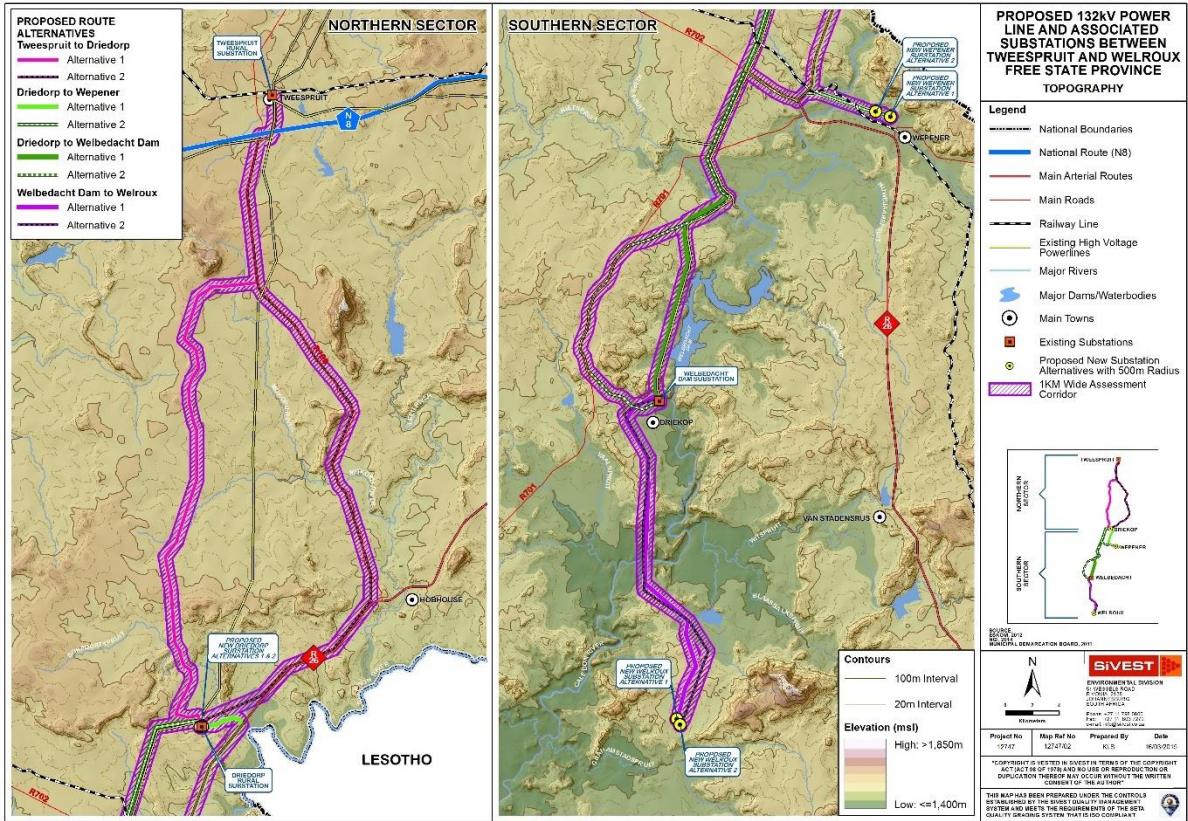


Figure 4: Topography Map

2. Location in landscape

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

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

3. Groundwater, Soil and Geological stability of the site

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

	Alt 1A		Alt 1B		Alt 2A		Alt 2B		Alt 3A		Alt 3B		Alt 4A		Alt 4B	
Shallow water table (less than 1.5m deep)	Y		Y		Y		Y		Y		Y		Y		Y	
	e		e		e		e		e		e		e		e	
	s		s		s		s		s		s		s		s	
Dolomite, sinkhole or doline areas	N		N		N		N		N		N		N		N	
	o		o		o		o		o		o		o		o	
Seasonally wet soils (often close to water bodies)	Y		Y		Y		Y		Y		Y		Y		Y	
	e		e		e		e		e		e		e		e	
	s		s		s		s		s		s		s		s	
Unstable rocky slopes or steep slopes with loose soil	N		N		N		N		Y		Y		Y		Y	
	o		o		o		o		e		e		e		e	
	s		s		s		s		s		s		s		s	
Dispersive soils (soils that dissolve in water)	Y		Y		Y		Y		Y		Y		Y		Y	
	e		e		e		e		e		e		e		e	
	s		s		s		s		s		s		s		s	
Soils with high clay content (clay fraction more than 40%)	Y		Y		Y		Y		Y		Y		Y		Y	
	e		e		e		e		e		e		e		e	
	s		s		s		s		s		s		s		s	

Any other unstable soil or geological feature	N o		N o		N o		N o		N o	
An area sensitive to erosion	Y e s		Y e s		Y e s		Y e s		Y e s	

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.

A specialist geotechnical study was not undertaken although a wetland study was undertaken where soil samples were drawn. Additionally, a floodline assessment was undertaken which identified areas susceptible to erosion at watercourses. See Appendix D.

4. Groundcover

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

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

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

5. Surface water

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

Perennial River	YES ✓	
Non-Perennial River	YES ✓	
Permanent Wetland	YES ✓	
Seasonal Wetland	YES ✓	
Artificial Wetland	YES ✓	

Estuarine / Lagoonal wetland

NO ✓

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

A specialist surface water study was undertaken by SiVEST and is included in Appendix D2.

6. Land use character of surrounding area

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

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

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

- **Railway line^N** – A railway runs from Bloemfontein to Burgersdorp. The route corridor alternatives Driedorp_Wepener Alt 1 and 2, Driedorp_Welbedachtdam Alt 1 and 2 would traverse the aligned railway line. Transnet Freight Rail has been notified of the proposed power line development in order to provide them with the opportunity to raise any issues and concerns which they may have in this regard.

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:

Informal residential ^A – Informal settlements are located partially within Corridor alternative Tweespruit_Driedorp 1 and 2, and Driedorp_Wepener 1 and 2. The proposed project may affect these settlements; as such, the power line should be routed in such a way that it avoids this area. The communities will be consulted in the public participation process.

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:

All the proposed alternatives traverse open agricultural areas for the vast majority of their alignments. Where possible, the alternatives run parallel to major and minor roadways, farm boundaries, existing power lines and along the outer periphery of urban areas. The dominant built-up areas in the study area include the town of Tweespruit, Wepener and Welbedacht. An A3 Land Use Map is included in Appendix J2.

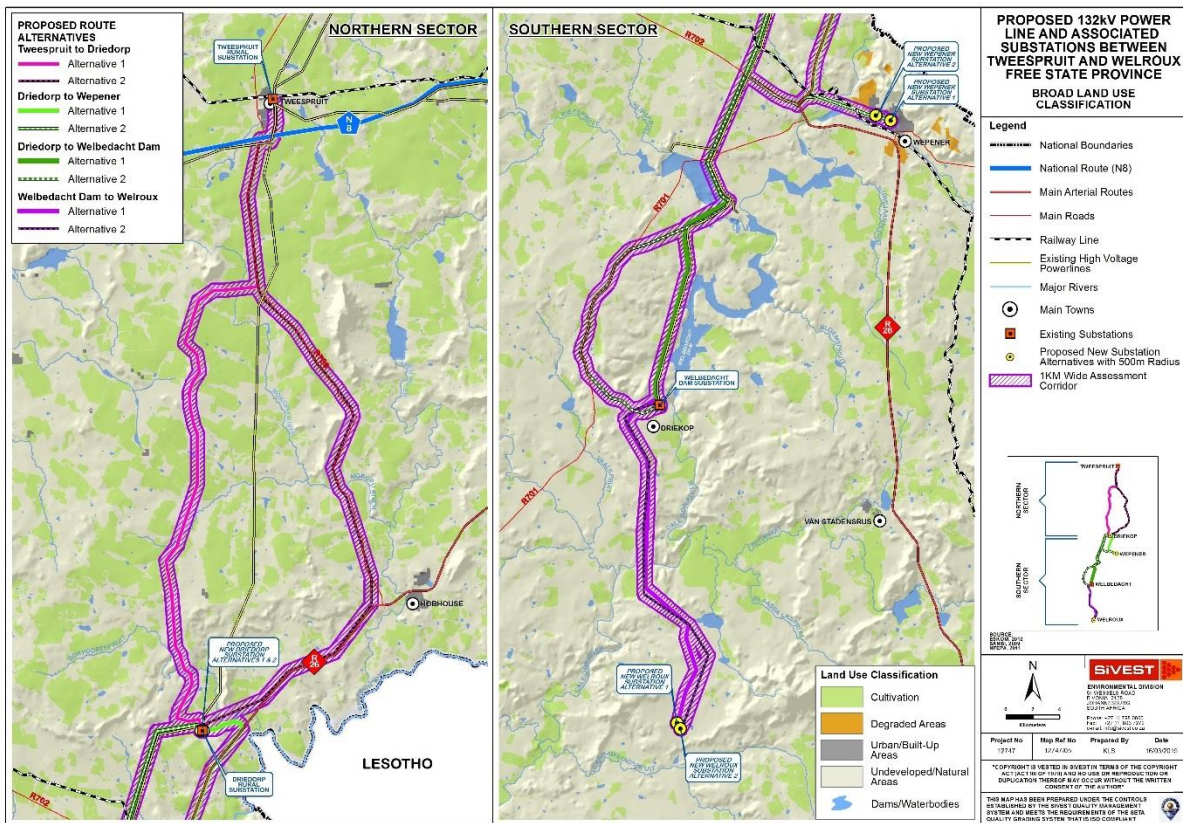


Figure 5: Land Use Map

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

Critical Biodiversity Area (as per provincial conservation plan)		NO ✓
Core area of a protected area?	YES ✓	
Buffer area of a protected area?		NO ✓
Planned expansion area of an existing protected area?	YES ✓	

Existing offset area associated with a previous Environmental Authorisation?		NO ✓
Buffer area of the SKA?		NO ✓

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

A map indicating the protected areas is included in Appendix A.

7. Cultural/Historical Features

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

YES ✓

A Heritage Assessment was conducted by Wouter Fourie in order to assess the impact of the proposed project on heritage resources in the study area. The only sites, features and/or objects of cultural significance that were identified were thirteen (13) graveyard, twenty (21) historical sites and one (1) provincial monument sites.

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:

The survey yielded 35 heritage related sites:

- Thirteen (13) cemeteries of which twelve (12) is situated in the study area;
- Twenty one (21) historical sites; and
- One (1) provincial monument (**T 12**).

The following recommendation focussed on specific heritage finds types must be implemented

Cemeteries

- Adjust the development layout and demarcate site with at least a 20-meter buffer. In the case of T12 this buffer must be made at least 100 meters to keep the development away from the provincial monument.
- In the event that the sites cannot be excluded from the development footprint a grave relocation process as described in Section 5 of this reports needs to be implemented.

Historical Structures

- Adjust Corridors and position of pylons to avoid these structures;
- Mitigation in the form of a watching brief and monitoring at these sites during construction if any construction is to take place closer than 100 meters from the site;
- **All** structure will require a destruction permit under Section 34 of the NHRA;
- The permit will entail initial documentation of the layout and condition of the structures and its structures with layout sketches and detailed photography, after which the destruction permit can be applied for with the backing of the documentary evidence;
- A qualified heritage practitioner must do this documentation.

Monument

- Adjust Corridors and position of pylons to avoid the site;
- Mitigation in the form of a watching brief and monitoring at these sites during construction if any construction is to take place closer than 100 meters from the site;
- **A buffer of at least 200 meters must be kept from the monument. This distance can however be negotiated with the Provincial Heritage Authority – Heritage Free State**

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

Possibly

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

Possibly

Building and structures to be verified within the Heritage Walk-down study

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

8. Socio-economic character

a) Local Municipality

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

Level of unemployment:

Large portions, namely 42.9%, 31.2%, 23.0% and 28.6%, of the economically active population is unemployed within the Mohokare LM, Naledi LM, Mangaung Metropolitan Municipality and Mantsopa LM, respectively (Statistics SA, 2015).

Economic profile of local municipality:

The following social and economic profile was extrapolated from Statistics SA, (2015):

- The total population is approximately 42 475, 26 376, 738 340 and 59 158 people within the Mohokare LM, Naledi LM, Mangaung Metropolitan Municipality and Mantsopa LM, respectively.
- There is extreme poverty throughout the Xhariep District Municipality with a majority earning R1 600 or less a month);
- The economic growth for the Xhariep District has decreased from 3% in 2003 to 2.5% in 2013.
- Access to electricity has improved but it has been identified as one of many priorities to upgrade and improve this service.
- Health and sanitation services have been noted as a challenged area.

Level of education:

The education levels within the area are extremely low.

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 ✓	
Is the activity a public amenity?		NO ✓
How many new employment opportunities will be created in the development and construction phase of the activity/ies?	Unknown	
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?	Unknown
What is the expected current value of the employment opportunities during the first 10 years?	Unknown – It should be noted however that most of the employment and income generated by this project is short-term
What percentage of this will accrue to previously disadvantaged individuals?	Unknown

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.

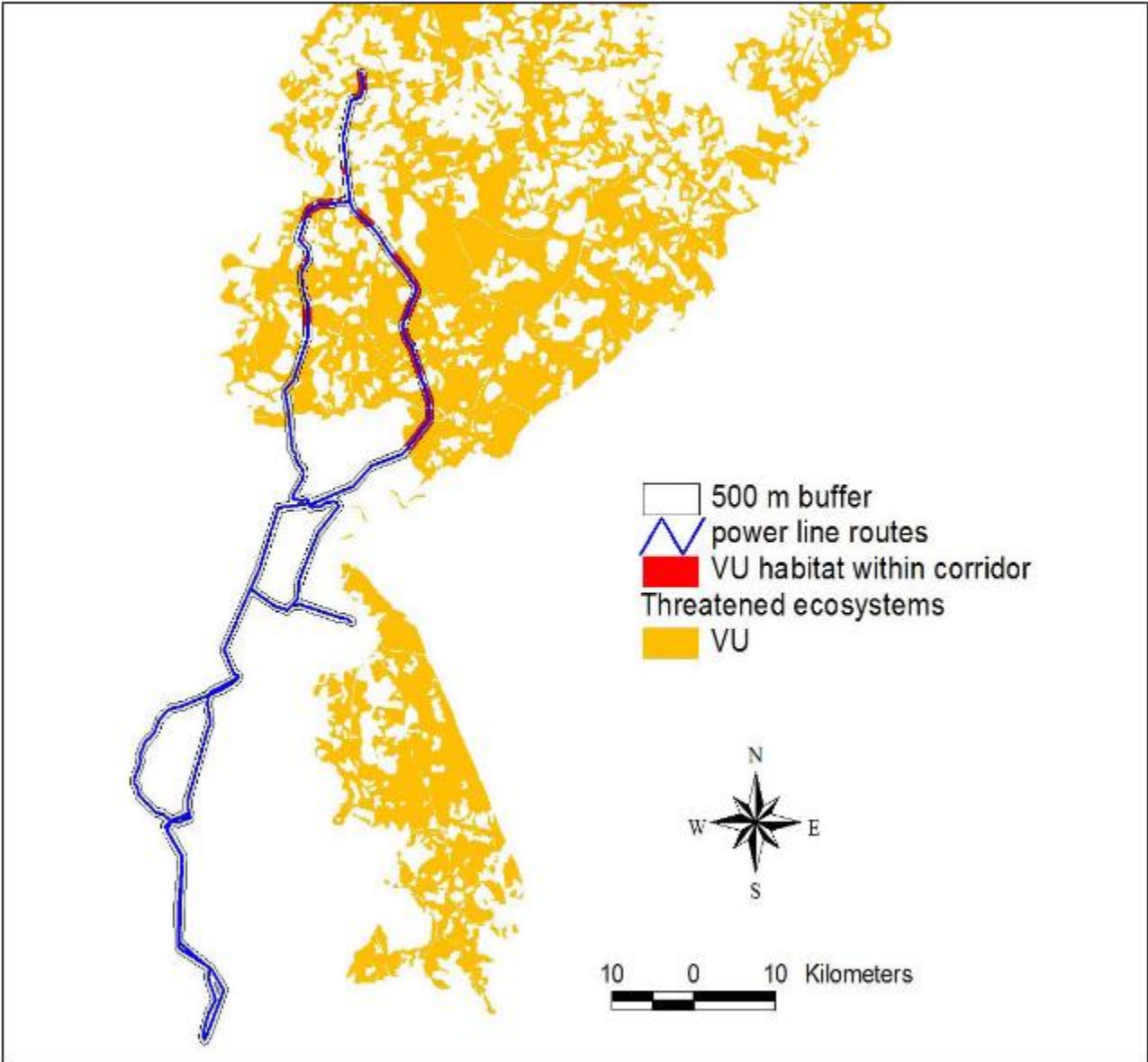


Figure 9: Remaining areas of VU habitat in the study area.

Figure 6: Vulnerable Areas Map

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)	According to the South African National Biodiversity Institute (http://bgis.sanbi.org), there is no fine-scale Biodiversity Conservation Plan for Free State Province.

b) Indicate and describe the habitat condition on site

Tweespruit_Driedorp Alternative 1		
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 practices, presence of quarries, grazing, harvesting regimes etc).
Natural	35%	Grassland, small pans and some wetlands.
Near Natural (includes areas with low to moderate level of alien invasive plants)	5%	Degraded grassland. Heavily eroded areas. Disturbed areas.
Degraded (includes areas heavily invaded by alien plants)	5%	Alien trees. Secondary grassland in previously cultivated areas.
Transformed (includes cultivation, dams, urban, plantation, roads, etc)	55%	Mostly cultivated lands.

Tweespruit_Driedorp Alternative 2		
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 practices, presence of quarries, grazing, harvesting regimes etc).
Natural	40%	Grassland, small pans and some wetlands.
Near Natural (includes areas with low to moderate level of alien invasive plants)	10%	Degraded grassland. Heavily eroded areas. Disturbed areas.
Degraded (includes areas heavily invaded by alien plants)	15%	Alien trees. Secondary grassland in previously cultivated areas.
Transformed (includes cultivation, dams,	35%	Mostly cultivated lands.

urban, plantation, roads, etc)		
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Driedorp_Wepener Alternative 1		
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 practices, presence of quarries, grazing, harvesting regimes etc).
Natural	60%	Grassland and some wetlands.
Near Natural (includes areas with low to moderate level of alien invasive plants)	9%	Degraded grassland. Disturbed areas.
Degraded (includes areas heavily invaded by alien plants)	1%	Alien trees. Secondary grassland in previously cultivated areas.
Transformed (includes cultivation, dams, urban, plantation, roads, etc)	30%	Cultivated lands, urban areas.

Driedorp_Wepener Alternative 2		
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 practices, presence of quarries, grazing, harvesting regimes etc).
Natural	70%	Grassland and some wetlands.
Near Natural (includes areas with low to moderate level of alien invasive plants)	5%	Degraded grassland. Disturbed areas.
Degraded (includes areas heavily invaded by alien plants)	0%	Alien trees. Secondary grassland in previously cultivated areas.
Transformed	25%	Cultivated lands, urban areas.

(includes cultivation, dams, urban, plantation, roads, etc)		
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Driedorp_Welbedachtdam Alternative 1		
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 practices, presence of quarries, grazing, harvesting regimes etc).
Natural	90%	Grassland and some wetlands.
Near Natural (includes areas with low to moderate level of alien invasive plants)	1%	Degraded grassland. Disturbed areas.
Degraded (includes areas heavily invaded by alien plants)	1%	Alien trees.
Transformed (includes cultivation, dams, urban, plantation, roads, etc)	8%	Cultivated lands.

Driedorp_Welbedachtdam Alternative 2		
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 practices, presence of quarries, grazing, harvesting regimes etc).
Natural	90%	Grassland and some wetlands.
Near Natural (includes areas with low to moderate level of alien invasive plants)	1%	Degraded grassland. Disturbed areas.
Degraded	1%	Alien trees.

(includes areas heavily invaded by alien plants)		
Transformed (includes cultivation, dams, urban, plantation, roads, etc)	8%	Cultivated lands.

Welbedacht_dam_Welroux Alternative 1		
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 practices, presence of quarries, grazing, harvesting regimes etc).
Natural	95%	Grassland and some wetlands.
Near Natural (includes areas with low to moderate level of alien invasive plants)	2%	Degraded grassland. Eroded areas.
Degraded (includes areas heavily invaded by alien plants)	0%	Alien trees.
Transformed (includes cultivation, dams, urban, plantation, roads, etc)	3%	Cultivated lands.

Welbedacht_dam_Welroux Alternative 2		
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	95%	Grassland and some wetlands.
Near Natural (includes areas with low to moderate	2%	Degraded grassland. Eroded areas.

level of alien invasive plants)		
Degraded (includes areas heavily invaded by alien plants)	0%	Alien trees.
Transformed (includes cultivation, dams, urban, plantation, roads, etc)	3%	Cultivated lands.

c) Complete the table to indicate:

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

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

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

Significant parts of the study area consist of cultivated fields, especially in the northern parts. Natural vegetation is in relatively good condition. There are four regional vegetation types occurring in the study area, Eastern Free State Clay Grassland (listed as Vulnerable in the National List of Ecosystems that are Threatened and need of protection (GN1002 of 2011)), Aliwal North Dry Grassland, Besemkaree Koppies Shrubland and Basotho Montane Shrubland.

The National List of Ecosystems that are Threatened and need of protection (GN1002 of 2011), published under the National Environmental Management: Biodiversity Act (Act No. 10, 2004), lists national vegetation types that are afforded protection on the basis of rates of transformation. The thresholds for listing in this legislation are higher than in the scientific literature, which means there are fewer ecosystems listed in the National Ecosystem List versus in the scientific literature.

Eastern Free State Clay Grassland vegetation type is listed in the National List of Ecosystems that are Threatened and need of protection (GN1002 of 2011) as Vulnerable. None of the other vegetation types are listed according to this legislation.

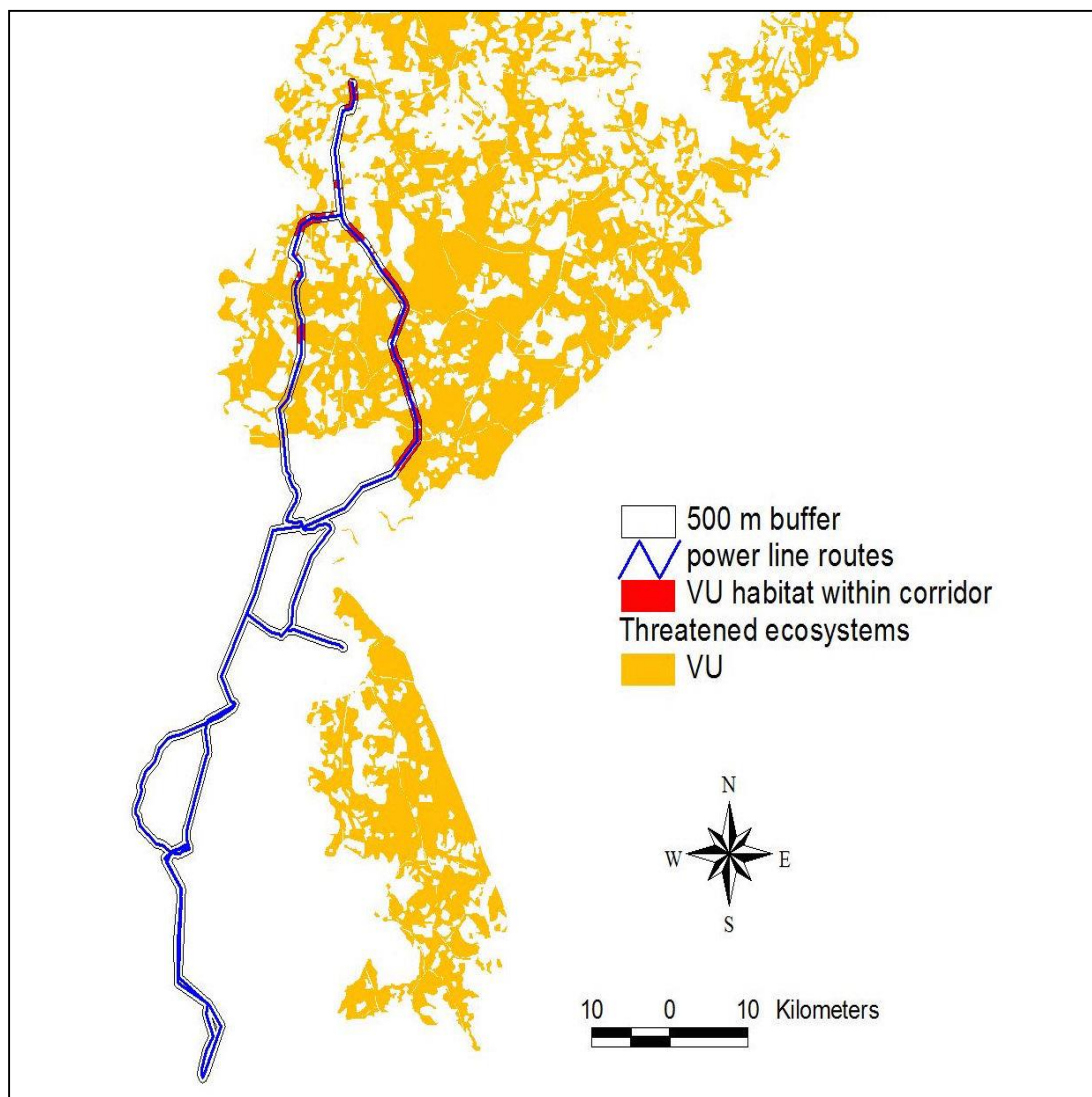


Figure 9: Remaining areas of VU habitat in the study area.

There are three Declining plant species that could occur in habitats that are present in the study area. One species of protected tree (according to the National Forest Act, 1998) could potentially occur in the study area, and one protected plant species (according to the National Environmental Management: Biodiversity Act, 2004).

There is one near threatened amphibian and one near threatened reptile species that have a geographical distribution that includes the study area. There are six (6) mammal species and twenty three (23) bird species of conservation concern that could potentially occur in the study area. The protected species including, Black Wildebeest, Cape Clawless Otter, Black-footed Cat, the Brown Hyaena, Spotted-necked Otter, Leopard, Cape Fox, Southern African Hedgehog, Giant Bullfrog, Kori Bustard, Ludwig's Bustard, Blue Crane, Martial Eagle, African Marsh Harrier, Southern Bald Ibis, Lesser Kestrel, African Grass Owl, Secretarybird, Black Stork and the Cape Vulture have a likelihood of occurring on site, but are all, except the Southern African Hedgehog, considered to be mobile animals that are unlikely to be significantly affected by the proposed development of the proposed infrastructure .

SECTION C: PUBLIC PARTICIPATION

A Public Participation has been and will be undertaken for the proposed development. The Public Participation information is included in Appendix E.

1. Advertisement and Notice

Newspaper Publication name	Bloemfontein Courant	
Date published	22 January 2015	
Site notice position (Tweespruit SS Site)	Latitude	Longitude
	29°11'23.69"S	27° 2'7.85"E
Date placed	19 January 2015	
Site notice position (Driedorp SS)	Latitude	Longitude
	29°36'48.81"S	26°58'51.25"E
Date placed	19 January 2015	
Site notice position (Wepener SS)	Latitude	Longitude
	29°43'21.06"S	27° 1'15.66"E
Date placed	19 January 2015	
Site notice position (Welbedacht dam SS)	Latitude	Longitude
	29°54'55.46"S	26°50'55.55"E
Date placed	20 January 2015	
Site notice position (Welroux SS)	Latitude	Longitude
	30° 7'51.11"S	26°51'49.44"E
Date placed	20 January 2015	

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

Proof of the Advertisements and Site notices are included in Appendix E1

2. Determination of appropriate measures

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

Refer to Appendix E for further details of the measures taken to notify all potential I&APs of the proposed project.

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

Title, Name and Surname	Affiliation/ status	key stakeholder	Contact details (tel number and/ e-mail address)
Mr Fanit Hattingh	Landowner		

Mr Neels Botha	Landowner	To be requested directly from SiVEST (Pty) Ltd.
Mr Meender Cruywagen	Landowner	
Me Jossie Bekker	Landowner	
Mr Olof Wilken	Landowner	
Mr Dave Hayter	Caledon Nature Reserve	
Mr. Moses Leeuw	Caledon Nature Reserve	
Mrs. Minette Brink	Landowner	
Ms. Jacomina Brink	Landowner	
Prof. Gerhard Cronje	Landowner	
Mr. Douglas Morgan Craig	Landowner	
Mr. HS Du Toit	Landowner	
Ms. Johanna Grobler	Landowner	
Ms. Carmen Hambridge	Landowner	
Mr. Wimpie Hamman	Landowner	
Mr. Schalk Jacobs	Landowner	
Mr. GAM Keikelame	Landowner	
Mr. Ketshotseesele	Landowner	
Ms. Ellie Knauff	Landowner	
Mr. Izak Marais	Landowner	
Mr. EM Mholo	Landowner	
Mr. Craig Morgan	Landowner	
Mr. Johan Opperman	Landowner	
Mr. David Orchison	Landowner	
Mr. Richard Osborne	Landowner	
Mr. Mathys Pretorius	Landowner	
Pyra Trustess	Landowner	
Ms. Sisinyane Seape	Landowner	
Ms. Sara Seape	Landowner	
Mr. Johannes Smit	Landowner	
Mr. H Steyn	Landowner	
Mr. JC Steyn	Landowner	
Ms. Nicky Steyn	Landowner	
Ms. Annelise Swiegers	Landowner	
Ms. Sheryl Templeton	Landowner	
Mr. Stephan Terblanche	Landowner	
Ms. Elizabeth Thubisi	Landowner	
Ms. Sune Van Den Berg	Landowner	
Mr. Daniel Van Tonder	Landowner	
Ms. Leoni Venter	Landowner	
Mr. Peter Venske	Landowner	
Mr. Jan Verster	Landowner	
Ms. Babsie Weber	Landowner	
Mr. Heinrich Woker	Landowner	

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

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

Proof that the key stakeholder received written notification of the proposed activities is included in Appendix E2.

3. Issues raised by interested and affected parties

Summary of main issues raised by I&APs	Summary of response from EAP
Security during construction of the power lines	Response to be included in FBAR
Fire and lightning hazard of the power lines on people, wildlife and domestic animals	Response to be included in FBAR
Erosion issues with substations	Response to be included in FBAR
Employment opportunities for local contractors	Response to be included in FBAR

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.

The Comments and Response Report (C&RR) is included in Appendix E3.

5. Authority participation

Authorities and organs of state identified as key stakeholders:

Authority/Organ of State	Contact person (Title, Name and Surname)	Tel No	e-mail	Postal address
Free State Department of Water Affairs	N/a	051 634 1893	N/a	PO Box 528
	Mr. Jase Bernard	051 405 9000	jaseb@dwa.gov.za	BLOMEFONTEIN 9300
South African National Roads	N/a	041 398 3200	N/a	PO Box 27230 GREENACRES 6057

Agency Limited (SANRAL)				
Department of Agriculture, Forestry and Fisheries	Paul Avenant	012 319 7548	paula@daff.gov.za	Private Bag X120 PRETORIA 0001
	Collett Anneliza	012 319 7548	annelizac@nda.agric.za	Private Bag X120 PRETORIA
Free State Department of Agriculture, Forestry and Fisheries	Mr. Life Mukoni	051 861 8400/8432	imukoni@fs.agric.za	Private Bag X02 BLOEMFONTEIN 9360
Department of Rural Development and Land Reform	Mr. Chief Setlogelo	083 240 4133	N/a	N/a
Mohokare Local Municipality	Mr. Malcolm De Jager	051 673 2033	malcolmeht@yahoo.com	PO Box 20 ZASTRON 9950
Transnet Freight Rail	Mr. Francis Rahlapane	051 408 2565	Francis.rahlapane@trasnet.net	PO Box 255 BLOEMFONTEIN 9300
Spoornet	Ms. Susan Finger	011 673 6011	Mojabuthof@spoor.net.co.za	222 Smit Street BRAAMFONTEIN 2000
Bloemwater	Roelf Jacobs	083 704 0740	Roelf.jacobs@vodmail.co.za	
Free State Department of Mineral Resources	Ms. Kewuti Kalipa	057 391 1300	Kalipa.kewuti@dmr.gov.za	Private Bag X33 WELKOM 9460
Mangaung Metropolitan Municipality	Ms. Mpolokeng Kolobe	051 405 8577	mpolokeng.kolobe@mangaung.co.za	PO Box 3704 BLOEMFONTEIN 9300
Naledi Local Municipality	Mr. Nonbulelo Mboyisi	053 928 2255	mboyisin@naledi.local.gov.za	PO Box 35 VRYBURG 8601
Free State Department of Economic Development, Tourism and Environmental Affairs	Ms. Grace Mkhosana	051 400 4812	mkhosana@detea.fs.gov.za	Private Bag X20801 BLOEMFONTEIN 9300

WESSA – Lowveld Region	Mr. Ricky Potts	083 630 1782	lowveldchair@wessa.co.za	PO Box 150 WHITE RIVER 1240
Mantsopa Local Municipality	Ms. Bridget Sebolai	051 924 0654	masentle@mantsopa.co.za	PO Box 64 LADYBRAND 9745
SA Civil Aviation Authority	Ms Lizelle Stroh	011 545 1232	strohl@caa.co.za	Private Bag X73 HALFWAY HOUSE 1685
	Mr Chris Isherwood			
SAHRA	Ms Colette Scheermeyer	021 462 4502	cscheermeyer@sa-hra.org.za	PO Box 4637 CAPE TOWN 8001
Telkom SA	Martin Potgieter	058 303 0571	PotgiMP@telkom.co.za	14 Koub Smit Street BETHLEHEM 9701
	Mrs. Heleen Van Den Heever	051 401 6829	VDHeevHD@telkom.co.za	Private Bag X20700 BLOEMFONTEIN 9300

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.

Proof that the Authorities and Organs of State received written notification of the proposed activities is included in Appendix E4.

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.

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

Full detail of the correspondence and minutes of meetings are included in Appendix E6.

SECTION D: IMPACT ASSESSMENT

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

1. Impacts that may result from the planning and design, construction, operational, decommissioning and closure phases as well as proposed management of identified impacts and proposed mitigation measures

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

Activity	Impact summary	Significance	Proposed mitigation
Tweespruit to Driedorp Alternative 1 (preferred alternative) Driedorp to Wepener Alternative 1 (preferred alternative) Driedorp to Welbedachtdam Alternative 1 (preferred alternative) Welbedachtdam to Welroux Alternative 1 (preferred alternative) Driedorp Substation Alternative 2 (preferred alternative) Wepener Substation Alternative 2 (preferred alternative) Welroux Alternative 2 (preferred alternative)			
Biodiversity	Direct impacts:		
	Loss, fragmentation or degradation of faunal habitat	Low negative impact	<ul style="list-style-type: none"> ▪ Avoid patches of indigenous vegetation if possible, or place infrastructure as close as possible to boundaries. ▪ Compile a rehabilitation programme. ▪ Compile an Alien Plant Management Plan. ▪ Undertake regular monitoring.
	Loss of indigenous natural vegetation	Medium negative impact	<ul style="list-style-type: none"> ▪ Avoid patches of indigenous vegetation if possible, or place infrastructure as close as possible to boundaries. ▪ Compile a rehabilitation programme.

Activity	Impact summary	Significance	Proposed mitigation
			<ul style="list-style-type: none"> ▪ Compile an Alien Plant Management Plan. ▪ Undertake regular monitoring.
	Damage to wetlands and riparian habitat	Medium negative impact	<ul style="list-style-type: none"> ▪ Avoid wetland systems, where possible, by spanning them completely. ▪ Undertake a wetland study to determine the boundaries of wetland systems. ▪ Prevent erosion impacts on wetland systems. ▪ Rehabilitate disturbance as quickly as possible. ▪ Prevent invasion by alien plants. ▪ Undertake monitoring to evaluate whether further measures would be required to manage impacts.
	Loss of individuals of protected plants	Low negative impact	<ul style="list-style-type: none"> ▪ It is a legal requirement to obtain permits for specimens that will be lost. A pre-construction walk-through survey will be required to locate any protected plants. Plants lost to the development can be rescued and planted in appropriate places in surrounding areas. This will reduce the irreplaceable loss of resources as well as the cumulative effect.
	Loss of individuals of protected areas	Low negative impact	<ul style="list-style-type: none"> ▪ It is a legal requirement to obtain permits for specimens that will be lost. A pre-construction walk-through survey will be required to locate any protected plants. Plants lost to the development can be rescued and planted in appropriate places in surrounding areas. This will reduce the irreplaceable loss of resources as well as the cumulative effect.
Indirect impacts:			

Activity	Impact summary	Significance	Proposed mitigation
	Displacement of mobile fauna	Low negative impact	<ul style="list-style-type: none"> No mitigation measures required.
	Mortality of individuals due to collisions with power lines	Low negative impact	<ul style="list-style-type: none"> Displacement of mobile fauna
	Establishment and spread of declared weeds	Low negative impact	<ul style="list-style-type: none"> Compile and implement an alien management plan. Undertake regular monitoring to detect alien invasions early so that they can be controlled.
	Cumulative impacts:		
	Low cumulative impacts		<ul style="list-style-type: none">
Surface Water	Direct impacts:		
	Impacts associated with the construction lay-down area directly in the surface water resource	Medium negative impact	<ul style="list-style-type: none"> Seasonal Scheduling of the Construction Process – It is important that construction activities must be scheduled to take place over the dry winter season when flows are low (June/July/August). Location of the Lay-down Area – The location of the lay-down area must not be in any of the identified surface water resources or the associated buffer zones. Where possible materials and machinery should be kept within the existing substation areas (Tweespruit/Welbedachtdam) where impacts have already taken place. Should it be necessary, a construction lay-down area can be designated outside of the delineated surface water resources and the associated buffer zone to avoid impacts. Preventing Fire Risks to Wetlands and People - Operational fire extinguishers

Activity	Impact summary	Significance	Proposed mitigation
			<p>are to be available in the case of a fire emergency. Given the dry seasons that the study site experiences, it is recommended that a fire management and emergency plan compiled by a suitably qualified health and safety officer be compiled and implemented for the proposed development.</p>
	<p>Vehicle and machinery degradation to the surface water resource and the associated buffer zones</p>	<p>Medium negative impact</p>	<ul style="list-style-type: none"> ▪ Preventing Physical Degradation of Wetlands – The surface water resource and the associated buffer zones are to be designated as “highly sensitive” and any impact must be limited to the minimum possible extent where construction is to take place in the wetland only if authorised. ▪ Construction workers are only allowed in the servitude area of the proposed power lines and not into the surrounding surface water resource system. The required construction areas in the surface water resource and the associated buffer zones are to be clearly demarcated and no access beyond these areas is to be allowed. ▪ A single access route or “Right of Way” (RoW) is to be established to the desired construction area in the wetland or other surface water resources type. The width of the RoW must be limited to the width of the vehicles required to enter the surface water resource (no more than a 3m width). An area around the location where the towers will

Activity	Impact summary	Significance	Proposed mitigation
			<p>be placed will be required in order for the towers to be erected. This too must be limited to the smallest possible area (no bigger than 20m²) to prevent unnecessary degradation.</p> <ul style="list-style-type: none"> ▪ The number and type of permissible vehicles or machinery into or near to the sensitive areas must be limited to the bare minimum. Preferably light vehicles are to be utilised where possible. ▪ Preventing Soil and Wetland Contamination - All vehicles and machinery are to be checked for oil, fuel or any other fluid leaks before entering the construction areas. All vehicles and machinery must be regularly serviced and maintained before being allowed to enter the construction RoW within the highly sensitive areas. No fuelling, re-fuelling, vehicle and machinery servicing or maintenance is to take place in the sensitive areas. The construction site is to contain sufficient safety measures throughout the construction process. These include, but are not limited to, oil spill kits to be available, fire extinguishers, fuel, oil or hazardous substances storage areas must be bunded to prevent oil or fuel contamination of the ground and/or nearby surface water resource or associated buffer zone.

Activity	Impact summary	Significance	Proposed mitigation
			<ul style="list-style-type: none"> ▪ No hazardous materials are to be stored or brought into the sensitive areas. Should a designated storage area be required, the storage area must be placed at the furthest location from the sensitive areas. Appropriate safety measures as stipulated above must be implemented.
	Human degradation of surface water resource flora and fauna	Low negative impact	<ul style="list-style-type: none"> ▪ Preventing Human Physical Degradation of Surface Water Resource Fauna – Construction workers are not allowed in the surface water resource unless authorised construction in these areas have been granted. ▪ No animals on the study site are to be hunted, captured, trapped, removed, harmed, killed or eaten. The appointed ECO is to be contacted should any of the above occur to fauna during the construction phase. ▪ Preventing Human Physical Degradation of Surface Water Resource Flora – No vegetation is to be damaged or removed unnecessarily in the surface water resource unless it is to be cleared as a result of being within the approved RoW areas during construction or within the servitude of the finalised proposed power line route during the operation phase. ▪ Where sensitive surface water resource vegetation is identified in the areas that have been approved for construction, the necessary plant removal permits are to be

Activity	Impact summary	Significance	Proposed mitigation
			<p>obtained prior to any removal, relocation or destruction of such vegetation.</p> <ul style="list-style-type: none"> ▪ No “long drop” toilets are allowed in the construction camp or construction areas. Suitable temporary chemical sanitation facilities must be provided. Temporary chemical sanitation facilities must be placed no closer than 100m from any delineated surface water resource. Temporary chemical sanitation facilities must be placed over a bunded or a sealed surface area and adequately maintained to prevent leakage or spillage of sanitary chemicals.
	Excavation impacts on the surface water resources	Medium negative impact	<ul style="list-style-type: none"> ▪ Preservation of Surface Water Resources – Where any soils are to be removed from surface water resource areas, these are to be stockpiled. Top soil must be stockpiled separately from the sub-soil types. All soil stockpiles from general construction activities in or within 100metres from the delineated surface water resource must be adequately bunded by suitable materials. Bunding materials can include a three brick layer boundary around the soil stockpile. Alternatively, wooden planks approximately 40-50cm high fixed with pegs can be used. This will prevent soil run-off and potential sedimentation pollution (environmental incident) impacts affecting the surface water resource.

Activity	Impact summary	Significance	Proposed mitigation
			<ul style="list-style-type: none"> ▪ Infilling of Excavation with Stockpiled Soils – As identified above, excavated surface water resource soils are to be used as infill in the locations where towers and/or foundations have been placed where appropriate. The order that the stockpiled soils are backfilled must be specific. The sub-soils are to be in-filled first. The top soil layer is then to be in-filled after on top of the sub-soils so as to reinstate the appropriate soil horizon order. It is recognised that infill of a different grade may be required to infill the excavations of the newly proposed towers in wetlands due to the potential degree of clay content and the instability associated thereof with these soils. This is permissible but only where absolutely necessary. All excess soils are to be removed from the construction areas upon completion construction. Areas that have been impacted by the soil stockpiles must be rehabilitated in accordance with the mitigation measures specified above with regards to vegetation and bank stabilisation rehabilitation procedures.
	<p>Vehicle damage to the surface water resources during maintenance</p>	<p>Medium negative impact</p>	<ul style="list-style-type: none"> ▪ Minimising Vehicle Damage to the Surface Water Resource – It is crucial that existing roads are used so that damage is limited. Where new access roads are required in the wetlands or drainage lines and the necessary authorisations

Activity	Impact summary	Significance	Proposed mitigation
			<p>and licences are obtained (i.e. water use licence and environmental authorisation), these roads must be limited in extent (i.e. go directly to the desired tower location) and will need to be maintained.</p> <ul style="list-style-type: none"> ▪ If dirt roads are required as the means of access, these will have to be regularly monitored and checked for erosion. Monitoring should be conducted on a weekly to monthly basis. Moreover, after short or long periods of heavy rainfall or after long periods of sustained rainfall the roads will need to be checked for erosion and the necessary rehabilitation measures will need to be employed. ▪ Where erosion begins to take place, this must be dealt with immediately to prevent severe erosion damage to the wetland. Should large scale erosion occur, a rehabilitation plan will be required. Input, reporting and recommendations from a suitably qualified wetland specialist must be obtained and implemented to address erosion impacts.
Indirect impacts:			
	Collision and electrocution impacts to avi-fauna	Medium negative impact	<ul style="list-style-type: none"> ▪ Preventing Avi-fauna Collisions with Power lines – During the construction phase, it is critical that the stretches of power lines that are within any of the wetlands, riparian habitats or associated buffer zones are fitted with flight deviators or bird anti-collision devices (whichever is more

Activity	Impact summary	Significance	Proposed mitigation
			<p>appropriate) to prevent impacts to avi-fauna. The fitment of the devices or deviators must take place on the ground before stringing the power lines takes place. Sufficient insulation must also be fitted to the towers structures in the wetlands, watercourses or associated buffer zones to prevent electrocution.</p> <ul style="list-style-type: none"> ▪ Finally, more bird friendly tower structures as per Eskom's designs can be considered to further mitigate collision and electrocution impacts.
Cumulative impacts:			
	<p>Erosion, increased storm water run-off and increased sedimentation impacting on the surface water resources</p>	<p>Medium negative impact</p>	<ul style="list-style-type: none"> ▪ Preventing Increased Run-off and Sedimentation Impacting on Surface Water Resources – Authorised vegetation clearing in the surface water resource (where required) must take place in a phased manner, only clearing areas that will be constructed on immediately. Vegetation clearing must not take place in areas where construction will only take place in the distant future (several weeks, months, years down the line). Vegetation must not be completely removed and must be undertaken according to standard Eskom vegetation clearance standards and policies. Vegetation clearance must be limited to the RoW only or servitude where applicable. ▪ An appropriate storm water management plan formulated by a suitably qualified professional must accompany the proposed development to

Activity	Impact summary	Significance	Proposed mitigation
			<p>deal with increased run-off and potential sedimentation impacts for the construction phase of the proposed development. Adequate structures must be put in place (temporary or permanent where necessary) to handle run-off and sediment volumes. All impacted areas must be adequately sloped to prevent onset of erosion.</p> <ul style="list-style-type: none"> ▪ Vegetation rehabilitation in the surface water resources (where required) will need to take place in the impacted areas following construction. The compacted soil and cleared vegetation areas in the RoW must be levelled, or appropriately sloped if on a hillslope and scarified to loosen the soil and allow seeds contained in the natural seed bank to re-establish. Preferably scarification is to take place before the spring and summer rainy season and not in the dry season. A medium term vegetation alien removal and rehabilitation monitoring programme is to be established
Floodlines	<p>Direct impacts:</p> <p>Increased erosion, localised stormwater runoff and sedimentation impacting on river channel and floodplain morphology.</p>	<p>Medium negative impact</p>	<ul style="list-style-type: none"> ▪ Construction related activities such as vegetation clearing should take place in the dry months. Clearing should also be undertaken in a phased manner to reduce the spatial extent at a given time. Vegetation clearing should take place in areas where construction will take place shortly after clearing is completed. Must be undertaken according to Eskom vegetation

Activity	Impact summary	Significance	Proposed mitigation
			<p>clearance standards and policies as and when required.</p> <ul style="list-style-type: none"> ▪ Adequate structures and stormwater management measures must be in place to manage runoff and sediment volumes. Silt fencing, sandbags, erosion control blankets and gabions can be used to prevent erosion in susceptible construction areas. The above listed measures are to be used where appropriate.
	Indirect impacts:		
	<ul style="list-style-type: none"> ▪ None identified 		
	Cumulative impacts:		
	<ul style="list-style-type: none"> ▪ None identified 		
Agricultural Potential & Soils	Direct impacts:		
	Loss of agricultural land use, caused by direct occupation of land by footprint of power line infrastructure, and having the effect of taking affected portions of land out of agricultural production.	Low negative impact	<ul style="list-style-type: none"> ▪ Plan the fine-scale positioning of pylons, access roads and construction camps to have minimal disturbance on agricultural activities and agricultural land. Pylons should be positioned on existing boundaries or edges of agricultural units of land wherever possible, so as not to interfere with agricultural activities within a unit.
	Disturbance to agricultural activities caused by construction activities taking place on site or by pylon footprint, for example pylons in maize fields can disturb cultivation practices such as planting and harvesting. Agricultural activities may be stopped, delayed or made more	Low positive impact	<ul style="list-style-type: none"> ▪ Plan the fine-scale positioning of pylons, access roads and construction camps to have minimal disturbance on agricultural activities and agricultural land. Pylons should be positioned on existing boundaries or edges of agricultural units of land wherever possible, so as not to interfere with agricultural activities within a unit. Plan the timing of construction not to coincide with important

Activity	Impact summary	Significance	Proposed mitigation
	difficult during construction.		agricultural activities such as planting or harvesting.
	Loss of topsoil caused by poor topsoil management (burial, erosion, etc) during construction related soil profile disturbance (levelling, excavations, disposal of spoils from excavations etc.) and having the effect of loss of soil fertility on disturbed areas after rehabilitation.	Low negative impact	<ul style="list-style-type: none"> ▪ Strip and stockpile topsoil from all areas where soil will be disturbed below surface. ▪ After cessation of disturbance, re-spread topsoil over the surface. ▪ Dispose of any sub-surface spoils from excavations where they will not impact on agricultural land (for example use as road surfacing), or where they can be effectively covered with topsoil.
Indirect impacts:			
	Soil Erosion by wind and water caused by alteration of run-off characteristics due to hard surfaces and access roads and disturbance of surface cover, and consequent exposure to wind erosion. Erosion has the effect of loss and deterioration of soil resources.	Low negative impacts	<ul style="list-style-type: none"> ▪ Implement an effective system of run-off control, where it is required, that collects and safely disseminates all potential accumulations of run-off water and thereby prevents potential down slope erosion. This should be in place and maintained during all phases of the development. ▪ Maintain where possible all vegetation cover and facilitate re-vegetation of denuded areas throughout the site to stabilize the soil against erosion.
	Degradation of grazing beyond the direct development footprint caused by trampling due to vehicle passage, and deposition of dust.	Low negative impact	<ul style="list-style-type: none"> ▪ Minimize road footprint and control vehicle access on roads only. ▪ Control dust as per standard construction site practice.
Cumulative impacts:			
Negligible cumulative impacts			
Heritage	<ul style="list-style-type: none"> ▪ Direct impacts: 		
	Discovery of previously unidentified heritage sites (archaeological, historical or grave sites)	Low negative impact	<ul style="list-style-type: none"> ▪ A heritage monitoring program that will identify finds during construction will be able to mitigate the impact on the finds

Activity	Impact summary	Significance	Proposed mitigation
			through scientific documentation of finds and provide valuable data on any finds made.
	Identified heritage sites and areas	Low negative impact	<ul style="list-style-type: none"> ▪ A heritage monitoring program that will identify finds during construction will be able to mitigate the impact on the finds through scientific documentation of finds and provide valuable data on any finds made.
	Destruction of graves	High negative impact	<ul style="list-style-type: none"> ▪ Adjust the Corridor layout and demarcate site with at least a 10-meter buffer. ▪ In the event that the sites cannot be excluded from the Corridor, a pylon placement and a grave relocation process as described in Section 5 of this reports needs to be implemented.
Indirect impacts:			
None identified.			
Cumulative impacts:			
No cumulative impacts.			
Visual	Direct impacts:		
	Visual impact of the proposed power line during construction	Low negative impact	<ul style="list-style-type: none"> ▪ Carefully plan to reduce the construction period. ▪ Locate construction camp and storage areas in zones of low visibility i.e. behind tall trees or in lower lying areas. ▪ Minimise vegetation clearing and rehabilitate cleared areas as soon as possible. ▪ Maintain a neat construction site by removing rubble and waste materials regularly. ▪ Make use of existing gravel access roads where possible. ▪ Ensure that dust suppression techniques are implemented on all access roads.

Activity	Impact summary	Significance	Proposed mitigation
	Visual impact of the proposed Driedorp substation during construction	Low negative impact	<ul style="list-style-type: none"> ▪ Carefully plan to reduce the construction period. ▪ Locate construction camp and storage areas in zones of low visibility i.e. behind tall trees or in lower lying areas. ▪ Minimise vegetation clearing and rehabilitate cleared areas as soon as possible. ▪ Maintain a neat construction site by removing rubble and waste materials regularly. ▪ Make use of existing gravel access roads where possible. ▪ Ensure that dust suppression techniques are implemented on all access roads.
	Visual impact of the proposed Wepener substation during construction	Low negative impact	<ul style="list-style-type: none"> ▪ Carefully plan to reduce the construction period. ▪ Locate construction camp and storage areas in zones of low visibility i.e. behind tall trees or in lower lying areas. ▪ Minimise vegetation clearing and rehabilitate cleared areas as soon as possible. ▪ Maintain a neat construction site by removing rubble and waste materials regularly. ▪ Make use of existing gravel access roads where possible. ▪ Ensure that dust suppression techniques are implemented on all access roads.
	Visual impact of the proposed Welroux substation during construction	Low negative impact	<ul style="list-style-type: none"> ▪ Carefully plan to reduce the construction period. ▪ Minimise vegetation clearing and rehabilitate cleared areas as soon as possible. ▪ Maintain a neat construction site by removing rubble and waste materials regularly. ▪ Make use of existing gravel access roads where possible.

Activity	Impact summary	Significance	Proposed mitigation
	Visual impact of the proposed power line during operation	Medium negative impact	<ul style="list-style-type: none"> ▪ Ensure that dust suppression techniques are implemented on all access roads. ▪ Align the power line as far away from potentially sensitive receptor locations as possible. ▪ Where possible, align the power line to run parallel to existing power lines and other linear impacts such as roads and the fences. ▪ Where possible, avoid crossing areas of high elevation, especially ridges, koppies or hills. ▪ Avoid areas of natural wooded shrubland vegetation where possible.
	Visual impact of the proposed Driedorp substation during operation	Low negative impact	<ul style="list-style-type: none"> ▪ Locate the substation as far away from potentially sensitive receptor locations as possible. ▪ Avoid sites in areas of localised higher elevation. ▪ Position the substation as close to the existing Driedorp rural substation as possible. ▪ Light fittings for security at the proposed substation at night should reflect the light toward the ground and prevent light spill.
	Visual impact of the proposed Wepener substation during operation	Medium negative impact	<ul style="list-style-type: none"> ▪ Locate the substation as far away from potentially sensitive receptor locations as possible. ▪ Avoid sites in areas of localised higher elevation. ▪ Position the substation site in zones of low visibility i.e. behind tall trees. ▪ Light fittings for security at the proposed substation at night should reflect the light toward the ground and prevent light spill.

Activity	Impact summary	Significance	Proposed mitigation
	Visual impact of the proposed Welroux substation during operation	Low negative	<ul style="list-style-type: none"> ▪ Locate the substation as far away from sensitive receptor locations as possible. ▪ Avoid sites in areas of localised higher elevation. ▪ Light fittings for security at the proposed substation at night should reflect the light toward the ground and prevent light spill.
Indirect impacts:			
None identified			
Cumulative impacts:			
Medium cumulative impacts.			
Socio-economic	Direct impacts:		
	Impact on production and GDP	Low positive impact	<ul style="list-style-type: none"> ▪ Where feasible, employ local contractors during the construction period and local suppliers to maximise the benefits to the local communities
	Impact on employment	Low positive impact	<ul style="list-style-type: none"> ▪ Where feasible, employ local contractors during the construction period and source from local suppliers to maximise the benefits to the local communities
	Negative changes to the sense of place	Low negative impact	<ul style="list-style-type: none"> ▪ Ensure mitigation measures by various specialist are implemented where feasible
	Impact on employment stimulus	Low positive impact	<ul style="list-style-type: none"> ▪ Residents of the local communities should be considered to maintain the servitude, if feasible. ▪ Possible training to local residents to insure maintenance of the power line and local job creation.
Impact on changes in sense of place	Low negative impact	<ul style="list-style-type: none"> ▪ Ensure that mitigation measure proposed by other specialists to reduce the effects on the sense of place are strictly adhered to and implemented 	

Activity	Impact summary	Significance	Proposed mitigation
	Impact on property of the affected land-owners and HHS	Low negative impact	<ul style="list-style-type: none"> ▪ Ensure that property owners are adequately compensated for use of their land for hosting power lines ▪ Ensure that the time and periods during which the maintenance of the servitude is undertaken are agreed upon with the land-owners ▪ Ensure that the rules associated with accessing the properties for maintenance of the servitude are agreed upon with the land-owner and communicated to the workers ▪ A pre-defined access route to the servitude should be chosen in consultation with the land-owner and should be strictly adhered to by all maintenance vehicles and maintenance crew; the chosen route should follow the existing roads as far as feasible ▪ Maintenance vehicles are to follow a safe speed and should mind animals inhabiting the farms ▪ Maintenance activity should be undertaken only during working hours
Indirect impacts:			
	Anticipated impact on local tourism activities - Tweespruit to Welroux Alternative 1 (Construction Phase)	Low negative impact	<ul style="list-style-type: none"> ▪ Ensure mitigation measures by various specialist are implemented where feasible
	Anticipated impact on local tourism activities - Tweespruit to Welroux Alternative 2 (Construction Phase)	Low negative impact	<ul style="list-style-type: none"> ▪ Ensure mitigation measures by various specialist are implemented where feasible

Activity	Impact summary	Significance	Proposed mitigation
	Impact on property of the affected land-owners and households	Low negative impact	<ul style="list-style-type: none"> ▪ Land-owners should be adequately compensated for any unforeseen damage to property or loss of assets such as livestock if it is proven to result from the construction activities ▪ Limit the movement between the construction site and the point of assembly by providing transportation ▪ Negotiate terms and conditions that would guide construction activities on the properties, as well as behaviour and conduct of the construction crew ▪ A pre-defined access route to the servitude should be chosen in consultation with the land owner and should be strictly adhered to by all construction vehicles and construction crew; the chosen route should follow the existing roads as far as feasible ▪ Site clearance activities should be limited to the minimum required area to minimise potential damages to the environment and property ▪ Construction vehicles are to follow a safe speed and should mind animals inhabiting the farms ▪ Construction activity should be undertaken only during working hours
	Impact on production and GDP stimulus	Low positive impact	<ul style="list-style-type: none"> ▪ Where feasible, employ local people to maintain the servitude to localise the benefits albeit small
	Impact of power lines on local tourism activities	Low negative impact	<ul style="list-style-type: none"> ▪ Ensure that mitigation measures proposed by the

Activity	Impact summary	Significance	Proposed mitigation
			visual specialist are implemented <ul style="list-style-type: none"> ▪ Ensure that the periods of maintenance of the servitude are negotiated with the land-owners beforehand to align it with the periods of the lowest tourist activity ▪ Ensure that property owners are adequately compensated for use of their land for hosting power lines
	Impact of power lines on land and business values	Low negative impact	<ul style="list-style-type: none"> ▪ Ensure that land owners are adequately compensated for use of their land for hosting power lines
Cumulative impacts:			
Negligible cumulative impacts.			
No-go option			
	Direct impacts:		
	Indirect impacts:		
	Cumulative impacts:		
	None anticipated.		

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

A complete impact assessment in terms of Regulation 22(2)(i) of GN R.543 is included in 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.

Twespruit_Driedorp Alternative 1 (Preferred)

Biodiversity	<ul style="list-style-type: none"> ▪ Both power line alternatives affect primarily cultivated lands. However, there are patches of remaining habitat within this section that fall within a Vulnerable ecosystem. The Twespruit to Driedorp
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	<p>Alternative 2 has a significantly higher amount of natural habitat remaining. Alternative 1 is therefore preferred. Both alternatives have acceptable access roads.</p> <ul style="list-style-type: none"> Due to the less amount of highly sensitive vegetation areas along this alternative, this is the main overriding factor that makes this the preferred alternative for the project.
Surface Water	<ul style="list-style-type: none"> There are a total of seventy-three (73) surface water resources that can be found along Alternative 1. Seventeen (17) of the surface water resources, namely twelve (12) unchannelled valley-bottom wetlands, four (4) watercourses, and one (1) channelled valley-bottom wetland will need to be spanned (as the wetland covers the full width of the corridor). These surface water resources do not exceed the spanning width of the power lines. No towers are therefore expected to be placed within the surface water resources stipulated above. Due to the greater potential of impact on surface water resources, in comparison to Alternative 2, Alternative 1 is viewed as a favourable option.
Floodlines	<ul style="list-style-type: none"> This alternative is generally further upstream compared to Alternative 2. This generally results in lower magnitude 1:100 year flood events on the crossing points. This alternative corridor is viewed as favourable.
Agricultural Potential and Soils	<ul style="list-style-type: none"> Route crosses dry land cultivation and grazing land. Does not follow an existing road. This alternative corridor is viewed as favourable.
Visual	<ul style="list-style-type: none"> Route Alternative 1 is highly inaccessible with some sections not even reachable on small farm roads. Although fewer potentially sensitive visual receptors would be exposed to power line Alternative 1, Meander Game Farm is located within 500m from this alternative. This alternative corridor is viewed as not preferred.
Heritage	<ul style="list-style-type: none"> This alternative corridor has the least amount of heritage resources identified. This alternative corridor is viewed as preferred.
Socio-economic	<ul style="list-style-type: none"> Although both alternatives have similar socio-economic impacts, Alternative 1 follows a less intrusive path through various land owners property. This in turn may lessen the visual and noise intrusions on these farms.

Tweespruit_Driedorp Alternative 2

Biodiversity	<ul style="list-style-type: none"> Both power line alternatives affect primarily cultivated lands. However, there are patches of remaining habitat within this section that fall within a Vulnerable ecosystem. The eastern alternative has a significantly higher amount of natural habitat remaining. Both alternatives have acceptable access roads. This alternative corridor is viewed as not preferred.
Surface Water	<ul style="list-style-type: none"> There are a total of one-hundred and nineteen (119) surface water resources that can be found along Alternative 2. Nineteen (19) of the surface water resources, namely thirteen (13) unchannelled valley-bottom wetlands, three (3) watercourses, and three (3) channelled

	<p>valley-bottom wetland will need to be spanned (as the wetland covers the full width of the corridor). As these surface water resources do not exceed the spanning width of the power lines, no towers are to be expected to be placed within the surface water resources. Despite the greater occurrence and number of surface water resources potentially required to be spanned, most can be avoided by routing the proposed power line adjacent to the existing roads (R709 and R26), thereby greatly reducing the degree of potential impact on these resources. If, this were the case, where the power line was to be routed adjacent to the R709 and R24, Alternative 2 is viewed as the preferred alternative.</p>
Floodlines	<ul style="list-style-type: none"> ▪ This alternative is situated further downstream and will result in higher magnitude 1:100 year design flood events compared to Alternative 1. The alternative is classed as “preferred” as it is thought that the impact of the 1:100 year design flood will not be high. This alternative corridor is viewed as not preferred.
Agricultural Potential and Soils	<ul style="list-style-type: none"> ▪ Route crosses dry land maize fields and grazing land but follows the road which is associated existing impacts. This alternative corridor is viewed as preferred.
Visual	<ul style="list-style-type: none"> ▪ Alternative 2 is aligned parallel to the R709 and the R26 and a large number of potentially sensitive receptors would therefore be affected by the power line, however neither of these roads are considered to be visually sensitive receptor roads. In addition, Alternative 2 is located further away from Meander Game Farm. This alternative corridor is viewed as preferred.
Heritage	<ul style="list-style-type: none"> ▪ Although more heritage resources has been identified, with mitigation and alignment this alternative could be utilised. This alternative corridor is viewed as favourable.
Socio-economic	<ul style="list-style-type: none"> ▪ Although both alternatives have similar socio-economic impacts, Alternative 1 follows a less intrusive path through various land owners property. This in turn may lessen the visual and noise intrusions on these farms. This alternative corridor is viewed as not preferred.

Driedorp_Wepener Alternative 1 (Preferred)

Biodiversity	<ul style="list-style-type: none"> ▪ This alternative is along an existing road. There is no preference between alternatives for this section of the proposed power line.
Surface Water	<ul style="list-style-type: none"> ▪ There are a total of twenty-four (24) surface water resources that can be found along Alternative 1. Nine (9) of the surface water resources, namely eight (8) unchannelled valley-bottom wetlands, and one (1) watercourse will need to be spanned (as the wetland covers the full width of the corridor). The watercourse exceeds the spanning distance of the proposed power lines, and even with strategic positioning of the power line routes, the watercourse is highly likely to have towers placed within it. Despite the higher number of surface water resources potentially required to be spanned, most can be

	<p>avoided by routing the proposed power line adjacent to the existing road (R26), thereby considerably reducing the degree of potential impact on these resources. Should the power line be routed adjacent to the R24, Alternative 1 is viewed as the preferred alternative.</p>
Floodlines	<ul style="list-style-type: none"> This alternative will have a low impact because there is only one major crossing. This alternative corridor is viewed as preferred.
Agricultural Potential and Soils	<ul style="list-style-type: none"> The alternative is shorter and therefore has a smaller footprint on agricultural land. This alternative corridor is viewed as preferred.
Visual	<ul style="list-style-type: none"> Alternative 1 is aligned parallel to the R26 and is therefore likely to impact on more potentially sensitive visual receptors than Alternative 2. However, the R26 is not considered to be visually sensitive receptor road. This alternative corridor is viewed as favourable.
Heritage	<ul style="list-style-type: none"> Least amount of cemeteries that could be impacted. However, this alternative corridor is viewed as preferred.
Socio-economic	<ul style="list-style-type: none"> This route follows an existing power line route, and may be easier accessible for construction and maintenance (less disturbance). This alternative corridor is viewed as preferred.

Driedorp_Wepener Alternative 2

Biodiversity	<ul style="list-style-type: none"> This alternative is adjacent to an existing power line, but is slightly longer. There is no preference for this alternative corridor.
Surface Water	<ul style="list-style-type: none"> There are a total of twenty-seven (27) surface water resources that can be found along Alternative 2. Seven (7) of the surface water resources, namely four (4) unchannelled valley-bottom wetlands, and three (3) watercourse will need to be spanned (as the water resources cover the full width of the corridor). One (1) of the watercourses exceeds the spanning distance of the proposed power lines, and even with strategic positioning of the power line routes, the watercourse is highly likely to have towers placed within it. Due to the greater potential of impact on surface water resources, in comparison to Alternative 1, Alternative 2 is viewed as a favourable option.
Floodlines	<ul style="list-style-type: none"> This alternative will have a high impact because there are three major crossings. This route is also longer than Alternative 1. This alternative corridor is viewed as not preferred.
Agricultural Potential and Soils	<ul style="list-style-type: none"> The route is longer. However, the impact is still relatively insignificant given that the impact of a power line on the type of agricultural activity in the study area is negligible. This alternative corridor is viewed as favourable.
Visual	<ul style="list-style-type: none"> Alternative 2 follows an existing power line for almost the entire route. Some portions of the route are also highly inaccessible. Therefore Alternative 1 would be visible from fewer potentially sensitive receptors and the route would result in less visual contrast, traversing zones of moderate contrast. This alternative corridor is viewed as preferred.

Heritage	<ul style="list-style-type: none"> Although more heritage resources has been identified, with mitigation and alignment this alternative could be utilised. This alternative corridor is viewed as favourable.
Socio-economic	<ul style="list-style-type: none"> Accessibility to some areas may be difficult or more intrusive in some cases but the general impact will be similar. Disturbances for long distances along main transportation routes may be associated to small impacts on business or tourism, however these disturbances will be of small significance. This alternative corridor is viewed as not preferred.

Driedorp_Welbedachtdam Alternative 1 (Preferred)

Biodiversity	<ul style="list-style-type: none"> This route is along an existing power line route, but crosses an area of rugged terrain with natural habitat at its southern end. There is not preference for this section of the power line from a biodiversity perspective.
Surface Water	<ul style="list-style-type: none"> There are a total of sixty-two (62) surface water resources that can be found along Alternative 1. Thirteen (13) of the surface water resources, namely ten (10) unchannelled valley-bottom wetlands, two (2) watercourses, and one (1) channelled valley-bottom wetland will need to be spanned (as the surface water resources cover the full width of the corridor). As these surface water resources do not exceed the spanning width of the power lines, not towers are to be expected to be placed within the surface water resources. Due to the greater potential of impact on surface water resources, in comparison to Alternative 2, Alternative 1 is viewed as a favourable option.
Floodlines	<ul style="list-style-type: none"> Both alternatives will result in similar impacts. Alternative 1 will be shorter. Though it is closer to the Welbedacht Dam.
Agricultural Potential and Soils	<ul style="list-style-type: none"> Alternative 1 is shorter and therefore has a smaller footprint of impact on agricultural land. This alternative corridor is viewed as preferred.
Visual	<ul style="list-style-type: none"> Alternative 1 follows an existing power line for the entire route and is highly inaccessible. Additionally, the topography to the east and west of Alternative 1 is steeply undulating which would limit the visibility of the power line. Alternative 1 is favourable as it would be visible from fewer potentially sensitive receptors and the route would result in less visual contrast, traversing zones of moderate visual. However, the power line alternative would be more visible from the Caledon Nature Reserve which is located in close proximity and partially within the corridor. There is no preference for this section of the power line from a floodline perspective.
Heritage	<ul style="list-style-type: none"> Least amount of heritage resources identified. This alternative corridor is viewed as preferred.
Socio-economic	<ul style="list-style-type: none"> Routes initially follow similar paths. Lack of access to certain sections of the route may require additional access to various land owners property. This alternative corridor is viewed as not preferred.

Driedorp_Welbedachtdam Alternative 2

Biodiversity	<ul style="list-style-type: none"> This route is adjacent to a gravel road and on comparatively flatter terrain, but is longer and introduces a new aerial obstacle for birds. There is no preference for this section of the power line from a biodiversity perspective.
Surface Water	<ul style="list-style-type: none"> There are a total of sixty-two (62) surface water resources that can be found along Alternative 2. Seventeen (17) of the surface water resources, namely fourteen (14) unchannelled valley-bottom wetlands, two (2) watercourses, and one (1) hillslope seep wetland will need to be spanned (as the water resources cover the full width of the corridor). As these surface water resources do not exceed the spanning width of the power lines, no towers are to be expected to be placed within the surface water resources. Although, in comparison to Alternative 1, Alternative 2 requires a far greater amount of surface water resources to be spanned, potential impacts on these resources would be greatly reduced if the power line were to be routed along the existing R701. Should this be undertaken, Alternative 2 would be viewed as the preferred alternative option.
Floodlines	<ul style="list-style-type: none"> Both alternatives will result in similar impacts. Alternative 1 will be shorter. There is no preference for this section of the power line from a floodline perspective.
Agricultural Potential and Soils	<ul style="list-style-type: none"> Although alternative 2 is longer, the impact is still relatively insignificant given that the impact of a power line on the type of agricultural activity in the study area is negligible. This alternative corridor is viewed as favourable.
Visual	<ul style="list-style-type: none"> Alternative 2 is aligned parallel to the R701 and a large number of potentially sensitive visual receptors would therefore be affected by the power line. However, the R701 is not considered to be visually sensitive receptor road. Alternative 2 is located further away from the Caledon Nature Reserve and is aligned parallel to an existing power for a large portion of the route. This alternative corridor is viewed as favourable.
Heritage	<ul style="list-style-type: none"> Although more heritage resources have been identified, with mitigation and alignment this alternative could be utilised. This alternative corridor is viewed as favourable.
Socio-economic	<ul style="list-style-type: none"> Majority of the route follows the road (R701), which may provide easier and less intrusive access for construction and maintenance purposes. This alternative corridor is viewed as preferred.
Welbedachtam_Welroux Alternative 1 (Preferred)	
Biodiversity	<ul style="list-style-type: none"> Both alignments follow a very similar route and affect very similar areas in terms of habitat and sensitivities. There is no preference for this section of the power line from a biodiversity perspective.
Surface Water	<ul style="list-style-type: none"> There are a total of thirty-five (35) surface water resources that can be found along Alternative 1. Eight (8) of the surface water resources, namely seven (7) unchannelled valley-bottom wetlands, and one (1) watercourse will need to be spanned (as the water resources cover

	<p>the full width of the corridor). As these surface water resources do not exceed the spanning width of the power lines, no towers are expected to be placed within the surface water resources. As there are no differences in the degree of potential impacts, due to the similar occurrence of surface water resources, no preference is shown to either alternative option.</p>
Floodlines	<ul style="list-style-type: none"> Both alternatives will result in similar impacts as the same river (Caledon) is crossed at the same point. There is no preference for this section of the power line from a floodline perspective.
Agricultural Potential and Soils	<ul style="list-style-type: none"> There is no difference in terms of any agricultural impacts between the alternatives as their routes are very similar and the land crossed has very similar agricultural characteristics. There is no preference for this section of the power line from an agricultural perspective.
Visual	<ul style="list-style-type: none"> The proposed route alternatives from Welbedacht Dam to Welroux have a highly similar routes and they are both equally favourable.
Heritage	<ul style="list-style-type: none"> Least amount of heritage resources identified. This alternative corridor is viewed as preferred.
Socio-economic	<ul style="list-style-type: none"> Both power lines follow a very similar route and affect very similar areas. There is no preference for this section of the power line from a socio-economic perspective.

Welbedachtdam_Welroux Alternative 2

Biodiversity	<ul style="list-style-type: none"> Both alignments follow a very similar route and affect very similar areas in terms of habitat and sensitivities. There is no preference for this section of the power line from a biodiversity perspective.
Surface Water	<ul style="list-style-type: none"> There are a total of thirty-five (35) surface water resources that can be found along Alternative 1. Eight (8) of the surface water resources, namely seven (7) unchannelled valley-bottom wetlands, and one (1) watercourse will need to be spanned (as the water resources cover the full width of the corridor). As these surface water resources do not exceed the spanning width of the power lines, not towers are to be expected to be placed within the surface water resources. As there are no differences in the degree of potential, due to the similar occurrence of surface water resources, no preference is shown to either alternative option
Floodlines	<ul style="list-style-type: none"> Both alternatives will result in similar impacts as the same river (Caledon) is crossed at the same point. Crossing 01 as identified in this study. There is no preference for this section of the power line from a floodline perspective.
Agricultural Potential and Soils	<ul style="list-style-type: none"> There is no difference in terms of any agricultural impacts between the alternatives as their routes are very similar and the land crossed has very similar agricultural characteristics. There is no preference for this section of the power line from an agricultural perspective.
Visual	<ul style="list-style-type: none"> The proposed route alternatives from Welbedacht Dam to Welroux have a highly similar routes and they are both equally favourable.

Heritage	<ul style="list-style-type: none"> Although more heritage resources has been identified, with mitigation and alignment this alternative could be utilised. This alternative corridor is viewed as favourable.
Socio-economic	<ul style="list-style-type: none"> Both power lines follow a very similar route and affect very similar areas. There is no preference for this section of the power line from a socio-economic perspective.

Driedorp SS Alternative 1

Biodiversity	<ul style="list-style-type: none"> This option is within natural grassland area, otherwise impacts are similar. This alternative substation is viewed as favourable.
Surface Water	<ul style="list-style-type: none"> There are a total of three (3) unchannelled valley-bottom wetlands identified within the proposed Eastern Alternative 1 option. Due to the close proximity of these surface water resources, and respective potential impacts of these systems, the Eastern Alternative 1 option is only viewed as a favourable option.
Floodlines	<ul style="list-style-type: none"> Both alternatives will result in similar impacts based on the power line alternative positions. The two alternatives are also not within the floodplain of any major rivers. There is no preference for this section of the power line from a floodline perspective.
Agricultural Potential and Soils	<ul style="list-style-type: none"> Agricultural impact is negligible and both alternatives impact land with largely identical agricultural characteristics. There is no preference for this section of the power line from an agricultural perspective.
Visual	<ul style="list-style-type: none"> The proposed alternative for the new Driedorp substation is located on the eastern side directly adjacent to existing Driedorp rural substation. The substation would therefore result in less visual contrast and is located in a zone of moderate contrast. There is no difference visually between either alternative. This alternative substation is viewed as favourable.
Heritage	<ul style="list-style-type: none"> Both buffer zones contain the same functioning farmstead. There is no preference for this section of the power line from a heritage perspective.
Socio-economic	<ul style="list-style-type: none"> Impacts are similar with little effect on surrounding properties and businesses. There is no preference for this section of the power line from a socio-economic perspective.

Driedorp SS Alternative 2 (Preferred)

Biodiversity	<ul style="list-style-type: none"> This option is within a previously cultivated area, otherwise impacts are similar. This alternative substation is viewed as preferred.
Surface Water	<ul style="list-style-type: none"> Only two (2) unchannelled valley-bottom wetlands were identified within the proposed location of the Western Alternative 2. As this alternative option contains fewer surface water resources, Western Alternative 2 is viewed as the preferred option.
Floodlines	<ul style="list-style-type: none"> Both alternatives will result in similar impacts based on the power line alternative positions. The two alternatives are also not within the floodplain of any major rivers. There is no preference for this section of the power line from a floodline perspective.

Agricultural Potential and Soils	<ul style="list-style-type: none"> ▪ Agricultural impact is negligible and both alternatives impact land with largely identical agricultural characteristics. There is no preference for this section of the power line from a agricultural perspective.
Visual	<ul style="list-style-type: none"> ▪ The proposed alternative for the new Driedorp substation is located on the western side directly adjacent to existing Driedorp rural substation. The substation would therefore result in less visual contrast and is located in a zone of moderate contrast. There is no difference visually between either alternative. This alternative substation is viewed as favourable.
Heritage	<ul style="list-style-type: none"> ▪ Both buffer zones contain the same functioning farmstead. Both buffer zones contain the same functioning farmstead. There is no preference for this section of the power line from a heritage perspective.
Socio-economic	<ul style="list-style-type: none"> ▪ Impacts are similar with little effect on surrounding properties and businesses. Impacts are similar with little effect on surrounding properties and businesses. There is no preference for this section of the power line from a socio-economic perspective.

Wepener SS Alternative 1

Biodiversity	<ul style="list-style-type: none"> ▪ Degraded area adjacent to a township. There is no preference for this section of the power line from a biodiversity perspective.
Surface Water	<ul style="list-style-type: none"> ▪ There are a total of three (3) surface water resources identified within the proposed Eastern Alternative 1, namely two (2) unchannelled valley-bottom wetlands, and the Sandspruit River (including associated riparian habitat). Due to the close proximity of these surface water resources, and respective potential impacts of these systems, the Eastern Alternative 1 option is only viewed as a favourable option.
Floodlines	<ul style="list-style-type: none"> ▪ This alternative is not preferred due to its proximity to the Sandspruit River. Therefore there is a risk of the site being within the 1:100 year floodplain. This alternative corridor is viewed as not preferred.
Agricultural Potential and Soils	<ul style="list-style-type: none"> ▪ Agricultural impact is negligible and both alternatives impact land with largely identical agricultural characteristics. There is no preference for this section of the power line from an agricultural perspective.
Visual	<ul style="list-style-type: none"> ▪ Alternative 1 is located within an urban area in a zone of low visual contrast. The alternative is positioned slightly further from the main access road into Wepener, and tall eucalyptus trees will offer partial screening from the road. This alternative substation is viewed as preferred.
Heritage	<ul style="list-style-type: none"> ▪ Both substation positions contain no heritage resources. However Alternative 1 is the closest to a cemetery (T14). This alternative substation is viewed as favourable.
Socio-economic	<ul style="list-style-type: none"> ▪ Alternative 1's area is more favorable to construction. Both areas are degraded portions of land opposite townships although Alternative 1

	would be less intrusive on local residents. This alternative substation is viewed as favourable.
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Wepener SS Alternative 2 (Preferred)

Biodiversity	<ul style="list-style-type: none"> Degraded area adjacent to a township. There is no preference for this section of the power line from a biodiversity perspective.
Surface Water	<ul style="list-style-type: none"> Only two (2) surface water resources were identified within the proposed location of the Western Alternative 2, namely one (1) unchannelled valley-bottom wetland, and the Sandspruit River (including associated riparian habitat). As this alternative option contains fewer surface water resources, Western Alternative 2 is viewed as the preferred option.
Floodlines	<ul style="list-style-type: none"> This alternative is preferred due to the site being further away from the Sandspruit River. This alternative corridor is viewed as preferred.
Agricultural Potential and Soils	<ul style="list-style-type: none"> Agricultural impact is negligible and both alternatives impact land with largely identical agricultural characteristics. There is no preference for this section of the power line from an agricultural perspective.
Visual	<ul style="list-style-type: none"> Alternative 2 is highly visible from the main road, however the alternative is located within an urban area in a zone of low visual contrast. This alternative substation is viewed as favourable.
Heritage	<ul style="list-style-type: none"> Both substation positions contain no heritage resources. However Alternative 2 is further away from the cemetery at T14. This alternative substation is viewed as preferred.
Socio-economic	<ul style="list-style-type: none"> Alternative 1's area is more favorable to construction. Both areas are degraded portions of land opposite townships although Alternative 1 would be less intrusive on local residents. This alternative substation is viewed as not preferred.

Welroux SS Alternative 1

Biodiversity	<ul style="list-style-type: none"> Site may possibly be a seepage area and slopes significantly. Alternative should only be considered if the site is shifted 100 m to the west, but access road would still pass through seep. This alternative substation is viewed as not preferred.
Surface Water	<ul style="list-style-type: none"> Only one (1) unchannelled valley-bottom wetland system was identified within close proximity to the proposed location of the Northern Alternative 1. As both the Northern and Southern alternatives contain the same wetland system, no difference in potential impact could be ascertain, and therefore no preference is shown to either alternative option.
Floodlines	<ul style="list-style-type: none"> Both alternatives will result in similar impacts based on the power line alternative positions. The two alternatives are also not within the floodplain of any major rivers. There is no preference for this section of the power line from a floodline perspective.
Agricultural Potential and Soils	<ul style="list-style-type: none"> Agricultural impact is negligible and both alternatives impact land with largely identical agricultural characteristics. There is no

	preference for this section of the power line from a agricultural perspective.
Visual	<ul style="list-style-type: none"> Alternative 1 is located on higher ground and is within 200m from an inhabited farm, and therefore potentially more visible. This alternative substation is viewed as not preferred.
Heritage	<ul style="list-style-type: none"> . This alternative is very close to an existing farmstead and will impact on the cultural landscape around the farmstead. This alternative substation is viewed as not preferred.
Socio-economic	<ul style="list-style-type: none"> Both alternatives will have little to no socio-economic impact to the area. There is no preference for this section of the power line from a socio-economic perspective.

Welroux SS Alternative 2 (Preferred)

Biodiversity	<ul style="list-style-type: none"> Habitat appears to be moderately overgrazed. Also close to road. This alternative substation is viewed as favourable.
Surface Water	<ul style="list-style-type: none"> Only one (1) unchannelled valley-bottom wetland system was identified within close proximity to the proposed location of the Northern Alternative 1. As both the Northern and Southern alternatives contain the same wetland system, no difference in potential impact could be ascertain, and therefore no preference is shown to either alternative option.
Floodlines	<ul style="list-style-type: none"> Both alternatives will result in similar impacts based on the power line alternative positions. The two alternatives are also not within the floodplain of any major rivers. There is no preference for this section of the power line from a floodline perspective.
Agricultural Potential and Soils	<ul style="list-style-type: none"> Agricultural impact is negligible and both alternatives impact land with largely identical agricultural characteristics. There is no preference for this section of the power line from a agricultural perspective.
Visual	<ul style="list-style-type: none"> Alternative 2 is lower in the landscape, further away from the inhabited farm (approximately 680m), and potentially less visible. This alternative substation is viewed as preferred.
Heritage	<ul style="list-style-type: none"> Contains no heritage resources and is removed from the farmstead located close to Alternative 1. This alternative substation is viewed as preferred.
Socio-economic	<ul style="list-style-type: none"> Both alternatives will have little to no socio-economic impact to the area. There is no preference for this section of the power line from a socio-economic perspective.

No-go alternative (compulsory)

The “no-go” alternative assumes that the proposed activity does not go-ahead, implying a continuation of the current situation or the status quo. The “no-go” or “no-action” alternative is regarded as a type of alternative that provides the means to compare the impacts of project alternatives with the scenario of a project not going ahead. In evaluating the “no-go” alternative it is important to take into account the implications of foregoing the benefits of the proposed project.

In the case of this project, the no go alternative would result in no 132kV power line being constructed. The absence of the new 132kV power line would mean that the reliability of the network in the greater Thabo Mofutsanyane and Xhariep District Municipality and the Mangaung Metropolitan Municipality area would not be improved.

Although the impacts identified, such as visual impacts, would not occur if the project did not go ahead, the socio economic benefit of the proposed project should not be overlooked. The No-Go alternative has thus been eliminated due to the fact that the identified environmental impacts can be suitably mitigated and that by not building the project, the socio-economic benefits would be lost.

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 ✓

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.

Recommendations of the Biodiversity Specialist

- Botanical walk-through survey to be undertaken to identify and locate all listed and protected species along final alignment and at substation locations..
- The main recommendation to reduce impacts on natural habitats is to ensure that general mitigation measures are implemented.

Recommendations of the Surface Water Specialist

- Consultation with the Department of Water and Sanitation will be required to determine the need for any authorisations (for example, a General Authorisation) or licenses (for example, a Water Use License) will be required once the final tower positions and substation locations have been determined. Given the above, a final surface water walk-down specialist assessment will need to be undertaken to inspect each tower position and substation location. Additionally, the walk-down assessment will need to include the present ecological status (PES), ecological importance and sensitivity (EISC), functional services (ecosystem services) and a risk assessment of any of the affected wetlands to satisfy the information requirements of a Water Use License should this be required.

Recommendations of the Agricultural Potential and Soils Specialist

- Plan the fine-scale positioning of pylons, access roads and construction camps to have minimal disturbance on agricultural activities and agricultural land. Pylons should be positioned on existing boundaries or edges of agricultural units of land wherever possible, so as not to interfere with agricultural activities within a unit. Plan the timing of construction not to coincide with important agricultural activities such as planting or harvesting.
- Implement an effective system of run-off control, where it is required, that collects and safely disseminates all potential accumulations of run-off water and thereby prevents potential down slope erosion. This should be in place and maintained during all phases of the development.

- Maintain where possible all vegetation cover and facilitate re-vegetation of denuded areas throughout the site to stabilize the soil against erosion.
- Minimize road footprint and control vehicle access on roads only.
- Control dust as per standard construction site practice.

Recommendations of the Heritage Specialist

- Heritage final walk-down of the final alignment is required prior to construction.

Cemeteries

- Adjust the development layout and demarcate site with at least a 20-meter buffer. In the case of T12 this buffer must be made at least 100 meters to keep the development away from the provincial monument.
- In the event that the sites cannot be excluded from the development footprint a grave relocation process as described in Section 5 of the heritage report needs to be implemented.

Historical Structures

- Adjust Corridors and position of pylons to avoid these structures;
- Mitigation in the form of a watching brief and monitoring at these sites during construction if any construction is to take place closer than 100 meters from the site;
- **All** structure will require a destruction permit under Section 34 of the NHRA;
- The permit will entail initial documentation of the layout and condition of the structures and its structures with layout sketches and detailed photography, after which the destruction permit can be applied for with the backing of the documentary evidence;
- A qualified heritage practitioner must do this documentation.

Monument

- Adjust Corridors and position of pylons to avoid the site;
- Mitigation in the form of a watching brief and monitoring at these sites during construction if any construction is to take place closer than 100 meters from the site;
- A buffer of at least 200 meters must be kept from the monument. This distance can however be negotiated with the Provincial Heritage Authority – Heritage Free State

Palaeontology

- It is recommended that a full Palaeontological Impact Assessment (PIA) be initiated during the pre-construction phase when the heritage walkdown of the final alignment will be done.

Recommendations of the Visual Specialist

- Adhere to all specialist recommendations as far as practically possible.

Recommendations of the Socio-economic

- Adhere to all specialist recommendations as far as practically possible.

Recommendations of the Floodline Specialist

- Cognisance of the extent of the inundation areas should be made when undertaking the development. This includes positioning of the pylons and other associated infrastructure as

far away from watercourses as possible out of the floodlines. In so doing, factors such as increased erosion risk during the 1:100 year design flood event will be mitigated.

General Recommendations of the EAP

- All mitigation measures recommended by the various specialist should be strictly implemented.
- Final EMPr should be approved by DEA prior to construction.

Is an EMPr attached?

YES

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.

The EMPr is included in Appendix G.

Details of the EAP who compiled the BAR are included in Appendix H.

The declaration of interest for each specialist is included in Appendix I.

Other information that is relevant to this application is included in Appendix J. This includes the following:

- Competent Authority Consultation (Appendix J1)
- A3 Maps (Appendix J2)
- Coordinate Spreadsheets (Appendix J3)
- Property Description Spreadsheet (Appendix J4)
- Electric and Magnetic Fields (EMF) Report (Appendix J5)

Shaun Taylor

NAME OF EAP



SIGNATURE OF EAP

24 April 2015

DATE

SECTION F: APPENDIXES

The following appendixes must be attached:

Appendix A: Maps

Appendix B: Photographs

Appendix C: Facility illustration(s)

Appendix D: Specialist reports (including terms of reference)

Appendix E: Public Participation

Appendix F: Impact Assessment

Appendix G: Environmental Management Programme (EMPr)

Appendix H: Details of EAP and expertise

Appendix I: Specialist's declaration of interest

Appendix J: Additional Information

REFERENCES

- Greater Taung Local Municipality, Budget, 2010/2011-2012/2012
- Naledi Local Municipality Final IDP & Budget, 2011/2012
- Maxim Planning Solutions, 2005. Spatial Development Framework: North West Province. North West Provincial Government, Mafikeng.
- National Planning Commission, 2011. National Development Plan: Vision for 2030.
- North West Provincial Spatial Development Framework. Support to Environment and Sustainable Development in the North West Province, September 2008
- North West thumps up National Development Plan, 7 November 2012. South African Government Information: Speeches and Statements (<http://www.info.gov.za/speech/>).
- Provincial and Local Government Conference: A Summary of the Infrastructure Plan. Friday, 13 April 2012. Presidential Infrastructure Coordinating Commission.