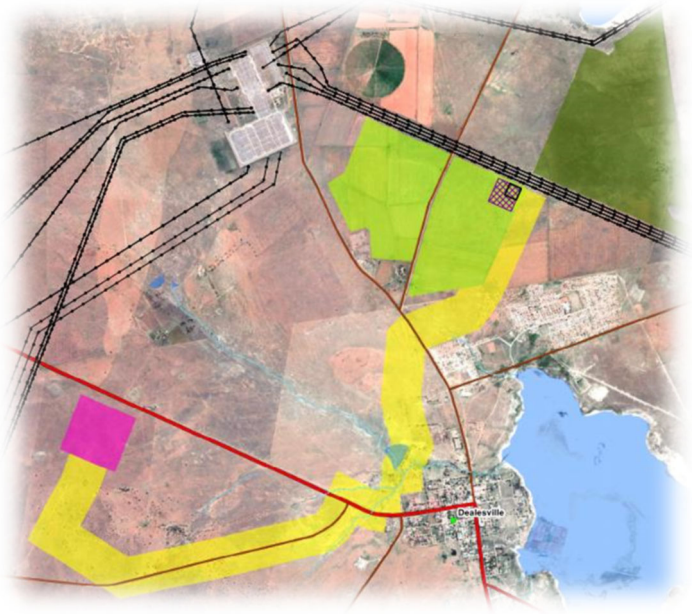

DRAFT BASIC ASSESSMENT REPORT FOR PUBLIC CONSULTATION FOR THE PROPOSED GOOD HOPE 132KV OVERHEAD POWER LINE (OHPL) AND ASSOCIATED INFRASTRUCTURE TO CONNECT THE AUTHORISED GOOD HOPE SOLAR PARK TO THE NATIONAL GRID, TOKOLOGO LOCAL MUNICIPALITY, FREE STATE

APPLICANT: ANTLIA ENERGY (PTY) LTD

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31 March 2023

APPLICABLE LEGISLATION	COMPETENT AUTHORITY REFERENCE NUMBER/S
NEMA EIA Regulations (2017) (as amended)	An application for environmental authorisation will be submitted to the DFFE for activities listed in LN1 & 3
WULA in terms of Section 21 of the National Water Act (Act No. 39 of 1998)	A Water Use Licence Application will be submitted to the DWS for Section 21(c) and (i) water uses.
National Heritage Resource Act (NHRA)	A Heritage Impact Assessment will be submitted to Heritage Western Cape (HWC)

Report Title	**DRAFT BASIC ASSESSMENT REPORT FOR PUBLIC CONSULTATION FOR THE PROPOSED GOOD HOPE 132KV OVERHEAD POWER LINE (OHPL) AND ASSOCIATED INFRASTRUCTURE TO CONNECT THE AUTHORISED GOOD HOPE SOLAR PARK TO THE NATIONAL GRID, TOKOLOGO LOCAL MUNICIPALITY, FREE STATE**
Reviewer & Author	-Natasha Williams (Terramanzi Group (Pty) Ltd) EAPASA (2019/1458) -Kristen Shaw (Terramanzi Group (Pty) Ltd) Candidate EAP registration in Process (2022/4741)
Specialist Sub-Consultants	Town Planning Report – (Warrant Petterson) Warren Petterson Planning cc Agricultural Impact Assessment – Francois Knight (Agri Informatics) Terrestrial Biodiversity Assessment – Sean Altern (NCC Environmental Services) Avifaunal Impact Assessment – Luke Verbugt (Enviro-Insight cc) Freshwater Assessment – S van Staden (Scientific Aquatic Services) Archaeology and Heritage Assessment – Wouter Fourie (PGS Heritage) Visual Impact Assessment – Stephen Stead (Visual Resource Management Africa) Traffic Impact Assessment - Christoff Krogscheepers (ITS Innovative Transport Solutions) Social Impact Assessment - Tony Barbour (Tony Barbour Environmental Consulting)
Client	Antlia Energy (Pty) Ltd
Report Version	Draft Basic Assessment Report for Public Comment
Submission Date	

Please use the following as a reference for this Report:
Terramanzi Group Project Number: 230203
Project Title: DRAFT BASIC ASSESSMENT REPORT FOR PUBLIC CONSULTATION FOR THE PROPOSED GOOD HOPE 132KV SUBSTATION AND 132KV OVERHEAD POWER LINE (OHPL) TO CONNECT THE AUTHORISED GOOD HOPE SOLAR PARK TO THE NATIONAL GRID, TOKOLOGO LOCAL MUNICIPALITY, FREE STATE

Purpose of this Document:

The 200 MW Good Hope Solar Photovoltaic Energy Facility (PVSEF), consisting of the 100 MW Good Hope 1 Solar PVSEF and 100 MW Good Hope 2 PVSEF, was environmentally authorised in June 2022 (DFFE Reference: 14/12/16/3/3/1/2484 and EA:14/12/16/3/3/1/2485) in June 2022. The Good Hope PVSEF will be located approximately 3 km to the north of the town of Dealesville in the Tokologo Local Municipality, in the Lejweleputswa District Municipality, Free State Province.

Antilia Energy (Pty) Ltd is proposing to develop a 132 kV back-to-back substation and 132kV Overhead Power Line (Good Hope OHPL) within a 400 m wide corridor to connect the Good Hope PVSEF to the authorised Eskom Artemis 400 kV Substation to feed the power generated by the Good Hope PVSEF into the Eskom National Grid. The substation will occupy approximately 1.5 ha of a 7 ha site which is located within the footprint of the Good Hope PVSEF. The Good Hope OHPL will be approximately 8.6km in length and will traverse 4 land parcels. It will be constructed using monopoles and/or lattice structures and will have an associated servitude of 31 metres (approximately 15,5 metres on each side of the centre line).

The Applicant has also reiterated that this is a SIP Project and that should the Competent Authority decide to authorize this Application that it is imperative that the EMPR and corridor layout be approved as assessed and presented for approval to allow the SIP Project to comply with the requirements of the REIPPPP and reach financial close. Based on the findings of the professional team and the EAP and as presented in this BA Report, it is reasonable to suggest that the Competent Authority can approve both the EMPR and corridor layout as applied for.

The proposed 132 kV OHPL and 132 kV back-to-back substation trigger activities in Listing Notices 1 and 3 of the NEMA EIA Regulations (2014, as amended), therefore, an environmental authorisation is required to be issued by the competent authority (before development commences). A Basic Assessment (BA) is required to be carried out as part of the environmental authorisation process.

The proposed 7 ha site for proposed 132 kV Good Hope back-to-back Substation and proposed corridor for the Good Hope 132 kV OHPL have been assessed by independent specialists as part of this Environmental Authorisation Process to allow for the development of an Opportunities and Constraints Map, in accordance with the statutory requirements, to guide the Applicant and Professional Team with development considerations for the substation site and the OHPL corridor. This Opportunities and Constraints Map referred to as the overall sensitivity map will provide a clear and accountable record of areas that are immediately deemed suitable and those areas which are considered potentially problematic for the proposed developments. Based on the above, the Applicant will finalise the development footprints for the substation site and the OHPL to avoid avoiding sensitive environments. Based on the findings of the Basic Assessment process, including inputs received from the appointed Specialists, the Preferred substation development area and the OHPL corridor are deemed acceptable and implementable for this Environmental Authorisation Process.

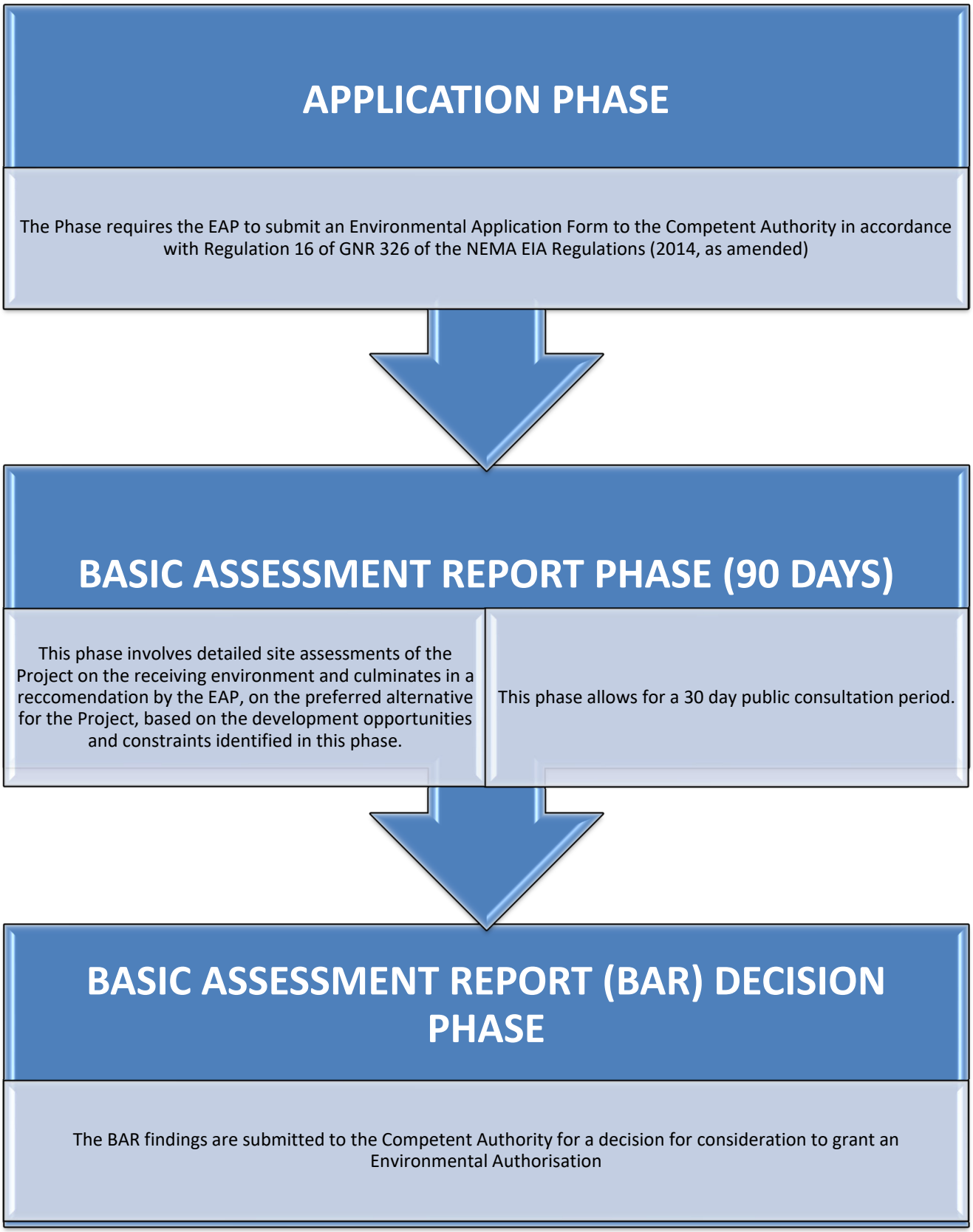
As per the requirements of the NEMA EIA Regulations (2014, as amended), this BAR has been issued for public participation in terms of GNR 326, Regulation 41(b).

This Draft BAR will be available for comment for 30 calendar days from 03 April 2023 to 08 May 2023, as stipulated by the NEMA 2014 EIA Regulations (as amended, 2017).

Summary of what this BAR addresses:

- Details of the Environmental Assessment Practitioner (EAP)
- Location of the proposed development
- Plan which locates the proposed activity or activities applied for at an appropriate scale
- Description of the scope of proposed activity
- Description of the policy and legislative context applicable to the proposed development
- A motivation for the need and desirability for the proposed development
- Full description of the process followed to reach the proposed preferred activity, site, and location within the site
- An Environmental Impact Assessment
- An Environmental Management Programme (EMPr)
- Undertakings under oath or affirmation by the EAP

An overview of the Basic Assessment Process is presented in the following diagram:



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1. DEFINITIONS AND TERMINOLOGY REFERRED TO IN THIS REPORT

PLEASE REFER TO APPENDIX H FOR THE ACRONYMS, DEFINITIONS AND TERMINOLOGY REFERRED TO IN THIS REPORT

2. PROJECT OVERVIEW AND ENVIRONMENTAL IMPACT STATEMENT

*In accordance with **Appendix 1 Regulation 3(l) of GN R. 326 of the NEMA EIA Regulations (2014, as amended)**:*

An environmental impact statement which contains:

***3(l) i** – A summary of the key findings of the environmental impact assessment.*

***3(l) ii** – A map at an appropriate scale which superimposes the proposed activity and its associated structures and infrastructure on the environmental sensitivities of the preferred site indicating any areas that should be avoided, including buffers; and*

***3(l) iii** - A summary of the positive and negative impacts and risks of the proposed activity and identified alternatives.*

2.1 PROJECT OVERVIEW

The Good Hope 132 kV back-to-back Substation and 132kV Overhead Power Line (OHPL) are proposed to be developed to connect the environmentally authorised (EA: 14/12/16/3/3/1/2484 and EA:14/12/16/3/3/1/2485) **Good Hope Photovoltaic Solar Energy Facility (PVSEF)** to the Eskom National Electricity Grid. The Good Hope PVSEF has been authorised to be constructed and operated on a site situated north of the town of Dealesville, in the Tokologo Local Municipality, in the Lejweleputswa District Municipality, Free State Province (see **Figure 1**).

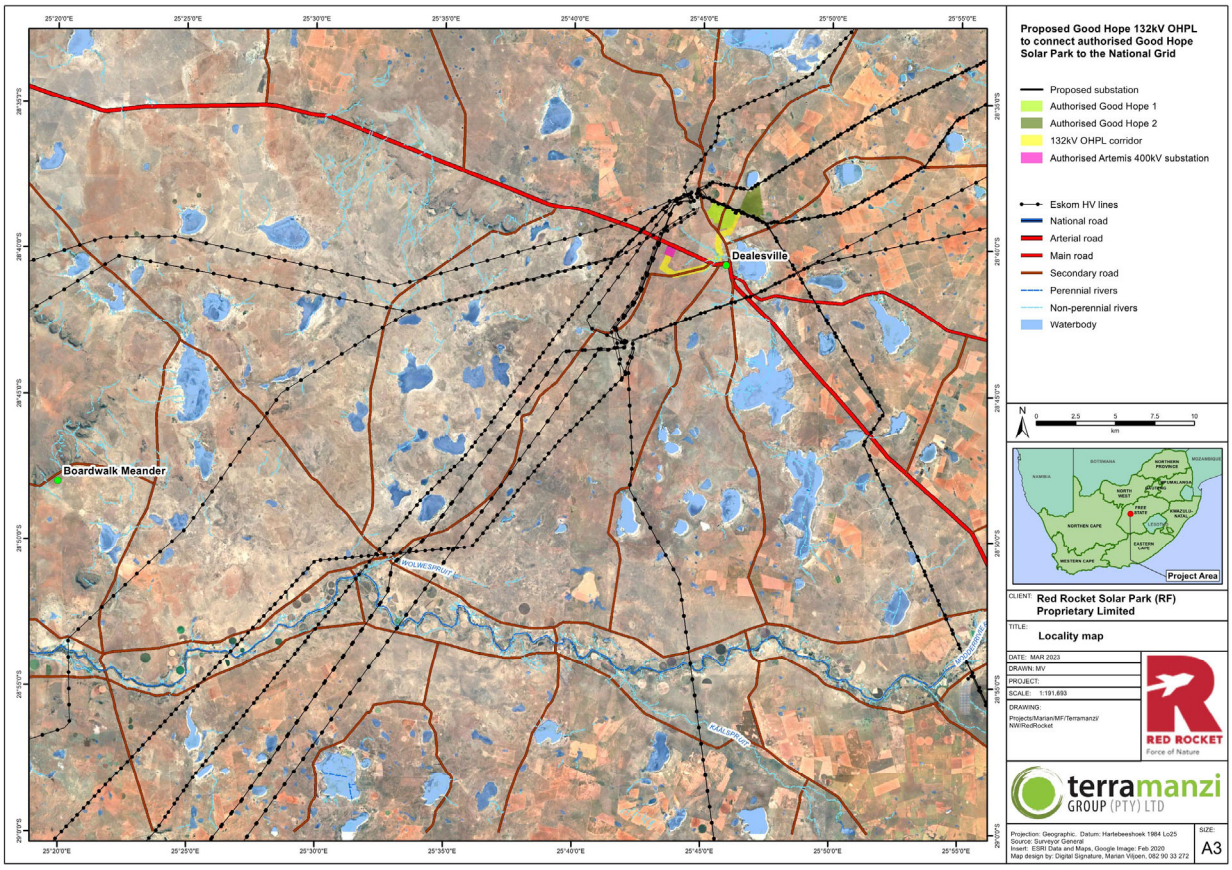


Figure 1: Regional Locality Plan for the proposed Good Hope 132 kV back-to-back Substation and 132 kV OHPL

The proposed substation site will occupy an approximate area of 1.5 ha within an available footprint area of 7.5 ha. The proposed OHPL will be approximately 8.6km in length and will be located within a 400 m corridor (see **Figure 2**).

Both the proposed substation development footprint and the OHPL corridor are located within the gazetted Kimberly Renewable Energy Development Zone (REDZ) and Central Transmission Corridor. The substation will be located within the authorised area for the Good Hope PVSEF while the OHPL will traverse 4 land parcels (farms). The OHPL will be constructed using monopoles and/or lattice structures (towers) and will have an associated servitude of 31 metres (approximately 15,5 metres on each side of the centre line).

The proposed developments trigger activities listed in Listing Notice 1 (GNR 327) and Listing Notice 3 (GNR 325) of the NEMA EIA Regulations (2014, as amended), therefore, an environmental authorisation is required to be issued by the Department of Fisheries, Forestry and Environment (DFFE, the Competent Authority, before developments can commence.

A Basic Assessment (BA) is required to be carried out as part of the environmental authorisation application process for activities listed in Listing Notice 1 (GNR 327) and Listing Notice 3 (GNR 325) of the NEMA 2014 EIA Regulations (as amended, 2017).

As part of this Basic Assessment Process, several assessments have been undertaken by independent specialists, as required in terms of the NEMA, 2014 EIA Regulations (as amended, 2017). The specialists assessed the proposed substation development footprint and the proposed corridor (400 m wide by 8600 m) for the development of the OHPL. The outcome of the assessments is intended to guide the Applicant with respect to development constraints. Specifically, the entire corridor and substation footprint have been assessed through this application and have been determined as developable throughout (except for the wetland complex which required specific mitigation measures spanning the complex) as they avoid sensitive areas.

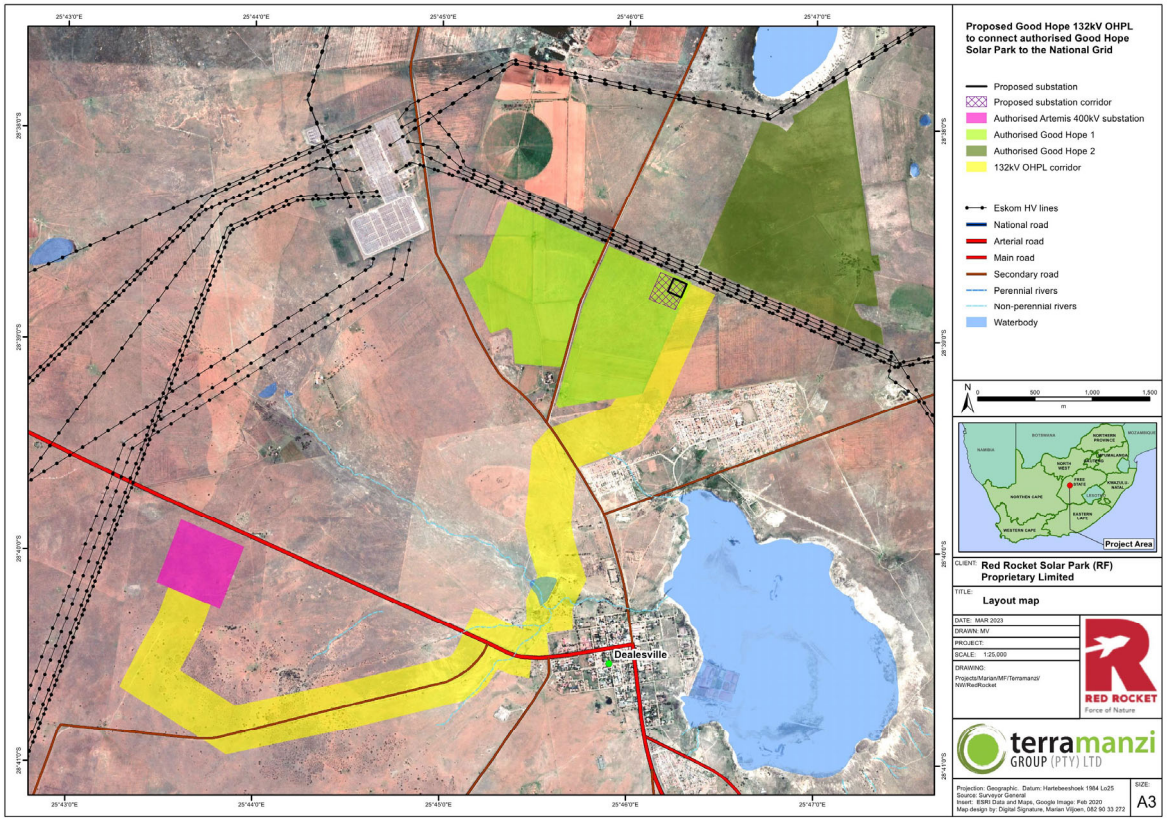


Figure 2: Preferred Good Hope 132 kV back-to-back Substation Development Footprint and 132 kV OHPL Corridor

The preferred substation development footprint and the preferred 132 kV OHPL corridor have been assessed in terms of potential environmental impacts along with the 'No-Go' Alternative within this Basic Assessment Report.

Based on the findings of the draft Basic Assessment Report, including inputs received from the appointed specialists, the proposed substation development footprint and proposed OHPL corridor are deemed acceptable and implementable for this Environmental Authorisation Process and that the final substation development site and the 132 kV OHPL alignment can be established within the fully assessed corridor with minimal negative impacts to the social and biophysical environment, provided the mitigation measures are implemented.

Micro-siting of the preferred OHPL alignment will determine optimal sizes and positions of the monopoles and/or lattice structures (**Figure 3**) should an Environmental Authorisation be granted.

	
This photo shows a typical OHPL comprising lattice structures (photo adapted from Haga Haga Overhead Powerline –Basic Assessment Report– August 2018 - Terramanzi Group (Pty) Ltd).	*This photo shows a typical 132kV monopole powerline route (photo adapted from Haga Haga Overhead Powerline –Basic Assessment Report– August 2018 - Terramanzi Group (Pty) Ltd).*

Figure 3: Photos of the tower structures that may be used for the proposed Good Hope 132 kV OHPL.

2.2 ENVIRONMENTAL AUTHORISATION PROCESS TO DATE

The development and operation of the Good Hope PVSEF, consisting of Good Hope 1 and Good Hope 2, were environmentally authorised by the Department of Fisheries, Forestry and Environment (DFFE) on 22 June 2022 (DFFE Reference: 14/12/16/3/3/1/2484 and 14/12/16/3/3/1/2485 – See **Appendix E**). The Good Hope PVSEF will have an electricity generating capacity of up to 200MW. The PVSEF is located near the town of Dealesville, in the Tokologo Local Municipality, in the Lejweleputswa District Municipality, Free State Province.

At the time of the applications for Environmental Authorisation were underway for the Good Hope PVSEF, it was anticipated that the PVSEF would be able to connect to the nearby Eskom Perseus Substation. However, the Perseus Substation has no available capacity. As such, Eskom is intending to construct the Artemis (440 KV) Substation, located to the west of Hydraperseus) to which the Good Hope PVSEF will now be required to connect.
This connection to the Artemis Substation will require the establishment and operation of a new 132 kV OHPL from the Good Hope PVSEF to the Eskom Artemis Substation. In addition, a 132 kV back-to-back substation will be required at the Good Hope PVSEF to connect to the new 132 kV OHPL. This basic assessment process is therefore currently being carried out to authorise the proposed Good Hope 132 kV back-to-back substation and the 132 kV OHPL which will connect the authorised Good Hope PVSEF to the National Grid for activities listed in Listing Notice 1 (GNR 327) and Listing Notice 3 (GNR 325) of the NEMA EIA Regulations (2014, as amended).

The proposed area for the development of the substation and the corridor for the proposed OHPL alignment have been informed by the appointed specialists' recommendations. Based on these recommendations and assessments undertaken by both the EAP and Professional Team, the proposed substation site and OHPL corridor has been assessed against the No-Go Alternative as part of the Basic Assessment Report. These Preferred Alternatives have been found to be feasible and reasonable, and a final substation layout can be located within the proposed development area and final route for the 132 kV OHPL can be located within the preferred is corridor without impacting negatively on the environment.

This draft Basic Assessment Report will be made available for the statutory 30-day Public Participation Process (PPP). The Public Participation Process will commence on **03 April 2023 and conclude on 08 May 2023**.

Comments received during the initial 30-day PPP will be recorded and will be addressed in a Comments and Response Report. The BAR will then be updated, and the Final BAR will be submitted to the Competent Authority for Decision.

2.3 SUMMARY OF SPECIALIST ASSESSMENTS UNDERTAKEN AS PART OF THIS BASIC ASSESSMENT REPORT

A list of the Specialist Assessments conducted to date are presented in **Table 1**.

Table 1: List of Specialist assessments carried out for the proposed Good Hope 132kV Overhead Powerline corridor and substation

Specialist Assessment	Specialist	Date
Town Planning Report	Warren Petterson Trading cc	March 2023
Agricultural Impact Assessment	Francois Knight (Agri Informatics Development Trust)	March 2023
Terrestrial Assessment	Sean Altern (NCC Environmental Services)	March 2023
Avifaunal Impact Assessment	Luke Verbugt (Enviro-Insight cc)	March 2023
Freshwater Assessment	S van Staden (Scientific Aquatic Services)	March 2023
Visual Impact Assessment	Stephen Stead (Visual Resource Management Africa)	March 2023
Archaeology and Heritage Assessment	Wouter Fourie (PGS Heritage)	March 2023
Social Impact Assessment	Tony Barbour (Tony Barbour Environmental Consulting)	March 2023
Traffic Impact Assessment	Christoff Krogscheepers (ITS Innovative Transport Solutions)	March 2023

Site Sensitivity Verification

To guide the level of assessment and reporting when applying for Environmental Authorisation (EA), the procedures for the assessment and minimum criteria for reporting on identified environmental themes in terms of Sections 24(5)(a) and (h) and 44 of the National Environmental Management Act, 1998, were promulgated. These procedures

are based on the outputs of the DFFE's web-based EIA Screening Tool, obligatory in all Environmental Impact Assessment (EIA) processes as of 04 October 2019

The Screening Report is a key output of the EIA Screening Tool and identifies the key environmental sensitivities of a proposed development on a proposed site. Regulations relating to the implementation of the Protocols and assessment criteria were published on 20 March 2020. Procedures to be followed are specified for each Environmental Theme and are aimed at confirming or disputing the current use of the land and the environmental sensitivity as identified by the screening tool through the use of motivating evidence (i.e., photographs, satellite imagery, site investigation etc) of either the verified or different use of the land and environmental sensitivity. Since this is a new Application for EA, specialist studies that were undertaken included site inspections to tie in to and verify the findings of the EIA Screening Tool Report (STR).

In terms of GN R960 (promulgated on 5 July 2019) and Regulation 16(1)(b)(v) of the 2014 EIA Regulations (as amended), the submission of a EIA Screening Tool Report generated from the national web based environmental screening tool is compulsory for the submission of BA applications in terms of Regulation 19 and 21 of the 2014 EIA Regulations. Specialist Assessments identified through the DFFE EIA Screening Tool for this Basic Assessment Process are summarised in this BAR and the specialist reports are presented in Appendix B.

The key finding of the specialist assessments are summarised as follows:

Town Planning Report – The town planner has identified the affected properties/ land parcels for the proposed Good Hope 132 kV OHPL in the preferred corridor. The land parcels are currently zoned for 'agriculture'. The town planner has not identified any fatal flaws with regards to town planning processes for the proposed Good Hope substation development area or the 132 kV OHPL development corridor.

Agricultural Impact Assessment - The development of the proposed OHPL and substation for the authorised Good Hope PVSEF within the proposed corridor and development site respectively supported, due to the following:

- The substation will be positioned within the authorised footprint of the authorised Good Hope 1 PVSEF, on land that has only been used for extensive grazing on natural veld.
- The expected negative impact on agricultural resources is low, as the soil potential for annual dryland production is low and the study area does not have access to irrigation water. After construction within the OHPL corridor, grazing can continue as at present.
- No specific constraints regarding the final alignment of the OHPL or the substation, within the preferred corridor and development site have been identified. However, placement of the OHPL towers as close as practically possible to field boundaries, will introduce less interference with farm equipment movement and is therefore preferred.
- The development of the proposed OHPL within the proposed corridor will have negligible negative impact on current agricultural production or food security, as current agricultural activities can continue under the powerline.

The Agricultural Specialist has not identified any fatal flaws with regards to agriculture for the proposed Good Hope substation development site or the 132 kV OHPL development corridor.

Terrestrial Biodiversity Impact Assessment: This assessment has identified the following:

- The 8.6km long and 400m wide OHPL corridor falls within area comprising a mixture of natural and agricultural commercial (crop and stock animal) land uses. Some of natural areas within the corridor are situated over the

mapped-out extent of a Critical Biodiversity Areas ("CBA1") area which is based on the historical and confirmed distribution of Endangered ("EN") grassland vegetation Vaal-Vet Sandy Grassland.

- Based on the presence of the listed EN vegetation type and the CBA status of some of these remnant CBA 1 areas have been assessed as having, very high Terrestrial Biodiversity.
- Impacts of the construction of the OHPL to the CBA 1 area can be avoided through micro-siting of the towers during the final alignment determination and as such will not have any significant, or unmitigable negative impacts on terrestrial biodiversity.
- Development of the substation in the preferred development area will also not have any significant or unmitigable impacts on terrestrial biodiversity It will also have no impact on current job opportunities. This is due to the fragmented and edge location of the remnant in which the substation is proposed, the small area of the proposed substation in in relation to the remaining areas of vegetation associated with the CBA1 of which it forms a part, as well as it the degraded naturel of the preferred development area.

The Terrestrial Biodiversity Specialist has not identified any fatal flaws with regards to terrestrial biodiversity for the proposed Good Hope substation development site or the 132 kV OHPL development corridor.

Avifauna Impact Assessment: This assessment has identified the following:

- A total of 165 bird species are expected to occur in the vicinity of the proposed Good Hope OHPL, 118 of which were observed from 2272 individuals during the summer survey.
- Nine species of conservation concern (SCC; threatened and near-threatened) are expected to interact with the Good Hope OHPL, 4 of which were observed during the survey.
- The main anticipated impacts to avifauna SCC are from potential collisions and electrocutions with the OHPLs and from habitat loss, particularly breeding habitat of Secretarybird.
- The proposed Good Hope OHPL is located relatively near to the large pan east of Dealesville, which is heavily utilised by both Lesser and Greater Flamingos and which are susceptible to colliding with OHPLs, particularly when they migrate long distances during the night. Should this mitigation measure prove problematic with the Civil Aviation Authority, then a suitable alternative mitigation measure will be designed in consultation with the Avifaunal Specialist;
- The proposed Good Hope OHPL corridor occurs on LOW and VERY LOW Site Ecological Importance (SEI) but there are a few HIGH SEI areas across the preferred OHPL corridor which cannot easily be avoided without significantly altering the current OHPL alignment;
- However, following appropriate application of the recommended minimisation mitigation measures, all anticipated impacts can be reduced to LOW.
- An essential mitigation measure is that Bird flight diverters need to be closely spaced (<15 m) and must glow in the dark or have a light source to make the transmission lines more visible in the sensitive avifauna area indicated. This is specifically to prevent collisions by flamingos that migrate at night;
- An essential mitigation measure is that Bird flight diverters need to be closely spaced (<15 m) and must glow in the dark or have a light source to make the transmission lines more visible in the sensitive avifauna area indicated. This is specifically to prevent collisions by flamingos that migrate at night;
- The Avifauna Specialist has not identified any fatal flaws with regards to avifauna biodiversity and protection for the proposed Good Hope substation development site or the 132 kV OHPL development corridor.

Freshwater Impact Assessment: Specialist: This assessment has identified the following:

- The site assessment confirmed the presence of numerous Hydrogeomorphic (HGM) units within the preferred corridor for the OHPL, namely: Two (2) Hillslope seep wetlands; Three (3) depression wetlands; Two (2) Episodic Drainage Lines (EDLs); and A Wetland complex (comprising Channelled Valley Bottom, Unchannelled Valley

Bottom, Hillslope seep and EDL HGM units). These units have been assessed as 'Seriously Modified' and 'Largely Modified.

- No freshwater ecosystems are associated with the proposed substation development area.
- Assuming that strict enforcement of cogent, well-developed mitigation measures takes place, the significance of impacts arising from the proposed OHPL activities in the preferred corridor are likely to be reduced during the construction and operational phases
- It is, therefore, the opinion of the freshwater ecologist that the proposed OHPL and associated substation development be considered favourably provided that all mitigation measures as set-out in the specialist report are implemented.
- The proposed development of the OHPL in the preferred corridor can be considered for authorisation by means of registration of a General Authorisation in terms of GN509 of 2016 as guided by the new draft regulation on Section 21 c & i water uses published on 10 March 2023 for comment .
- The Aquatic Specialist has not identified any fatal flaws with regards to freshwater resources for the proposed Good Hope substation development site or the 132 kV OHPL development corridor.

Heritage Impact Assessment: This assessment has identified the following:

- Three heritage sites (**GH-OHL-001** to **003**) and three low heritage significance findspots (**GH-OHL-004** to **006**) were identified within the lesser disturbed southern section of the corridor.
- *The heritage site sensitivity has been confirmed as LOW.*
- Two historical rock engravings (**GH-OHL002** and **003**) dating to 1956 and a potential Early Farmer Community Stock stone-built kraal (**GH-OHL001**) were located within the proposed OHPL corridor. As a result, the proposed development could impact upon this site by destruction during the construction phase.
- The impact assessment has assessed the overall impact significance pre-mitigation as LOW (-36) with medium confidence. Post- mitigation, the impact is seen as Very Low with and overall impact rating of (-1).
- The Heritage Specialist has not identified any fatal flaws with regards to heritage resources for the proposed Good Hope substation development site or the 132 kV OHPL development corridor.

Visual Impact Assessment: This assessment has concluded the following:

- The current rural agricultural land uses of the property do add to the regional sense of place to some degree, but are on the whole, negatively influenced by the multiple powerline routings in the area converging on the Perseus MTS.
- It is the recommendation that the proposed grid infrastructure development should be authorised WITH MITIGATION for the following key reasons:
    - The identified benefits from the proposed landscape outweigh the limited loss of the landscape resources along the routing.
    - No tourism related activities making use of visual resources were identified within the project ZVI.
    - While there are receptors in the High Exposure distance zone, the potential for mitigation within the corridor is available such that the placement of the monopoles will be 50m from the residential receptors.
- The Visual Impact Specialist has not identified any fatal flaws with regards to visual impacts for the proposed Good Hope substation development site or the 132 kV OHPL development corridor.

Social Impact Assessment: This assessment concluded the following:

- The energy security related benefits associated with the proposed Good Hope PVSEF are dependent upon being able to connect the Good Hope SEF via the establishment of grid connection infrastructure.
- The findings of the SIA indicate that the significance of the potential negative social impacts for both the construction and operational phase of the proposed 132 kV Good Hope overhead power line are **Low Negative**

with mitigation. The potential negative impacts can therefore be effectively mitigated if the recommended mitigation measures are implemented.

- The project is also located within the Kimberly Renewable REDZ and Central Transmission Corridor. The area has therefore been identified as suitable for the establishment of renewable energy facilities and associated infrastructure.
- The establishment of proposed 132 kV Good Hope overhead power line and substation are supported by the findings of the SIA.
- The Social Specialist has not identified any fatal flaws with regards to socio-economic impacts for the proposed Good Hope substation development site or the 132 kV OHPL development corridor.

Traffic Impact Assessment: This assessment concluded the following:

- Existing Traffic Conditions: The current demand on the existing road network in the site vicinity is low and the road network and intersections operate at acceptable levels of service.
- Access and Powerline Road Crossings: Access to the different sites is possible via the existing road network. The specific access positions should be confirmed with the Road Authority during the design phase. The crossings over the public roads are along straight sections of the road and no sight distance issues are expected. These are low volume roads and only minor disruptions are expected due to road closures during construction. Specific traffic management plans should be confirmed with the road authority prior to stringing conductor across public roads.
- The construction phase will generate less than 10 vehicle trips per day.
- The substation site will not employ more than people and hence the expected increase in vehicle trips per day during the operational phase will be minimal.
- Based on this evaluation, the existing road network has sufficient capacity to accommodate the traffic volumes associated with the proposed substation development in the preferred development area and the proposed OHPL in the preferred corridor.

2.4 SUMMARY OF THE IDENTIFICAITON AND ASSESSMENT OF THE POTENTIAL IMPACTS

The potential impacts are summarised in Tables I and Table II

Table I: Planning & Design/ Construction / Decommissioning Phase Impact Assessment Summary (Post-mitigation)

Impact Type	Applicable to:	Significance Ranking - Post Mitigation	
		Preferred Alternative	'No Go' Alternative
Agricultural Impacts: Loss of grazing land Loss of croplands	Substation and OHPL	Low –'ve Low –'ve	Low –'ve Low –'ve
Terrestrial Biodiversity Impacts: Loss of Indigenous Vaal- Vet Sandy Grassland Vegetation (En) Loss of portion of Critical Biodiversity Area 1 Loss of Faunal Habitat/Forage areas Loss of Provincially Protected Flora Loss of Provincially Protected Fauna	Substation and OHPL	Medium –'ve Low –'ve Low –'ve Low –'ve Low –'ve Low –'ve	Low –'ve Low –'ve Low –'ve Low –'ve Low –'ve Low –'ve

Impact Type	Applicable to:	Significance Ranking - Post Mitigation	
		Preferred Alternative	'No Go' Alternative
Establishment and spread of NEMBA listed Invasive Alien Plants Ecological Impact - Soil Erosion		Low –'ve	Low –'ve
Avifaunal Impacts Direct loss of avifaunal habitat Mortality through collision and electrocution Sensory disturbance Attraction of birds	Substation and OHPL	 Low –'ve Low –'ve Low –'ve Low –'ve	 Low –'ve Low –'ve Low –'ve Low –'ve
Freshwater/Aquatic Impacts Loss of freshwater ecosystem vegetation and associated disturbance of soil.	Substation and OHPL	Low –'ve	Low –'ve
Heritage Impacts potential destruction of a heritage sites	OHPL	Low –'ve	Low –'ve
Social Impacts Creation of Local Employment/ Business Opportunities Impact of construction workers on local communities Risk to safety, livestock, and farm infrastructure Increased risk of grass fires Nuisance Impacts Impacts associated with loss of farmland	Substation and OHPL	 Low +'ve Low –'ve Low –'ve Low –'ve Low –'ve	 Low –'ve Low –'ve Low –'ve Low –'ve 0 Low –'ve
Visual Impact Change in sense of place	Substation and OHPL	Low –'ve	Low –'ve
Waste Management Impacts	Substation and OHPL	Low –'ve	Low –'ve
Dust Impacts	Substation and OHPL	Low –'ve	Low –'ve
Noise Impacts	Substation and OHPL	Low –'ve	Low –'ve
Fire Impacts	Substation and OHPL	Low –'ve	Low –'ve
Overall Impact Ranking		Low –'ve	Low –'ve

Table II: Operational Phase Impact Assessment Summary (Post-mitigation)

Impact Type	Applicable to:	Significance Ranking - Post Mitigation	
		Preferred Alternative	'No Go' Alternative
Agricultural Impacts:	Substation and OHPL	None	None
Terrestrial Biodiversity Impacts: Loss of vegetation due to OHPL servitude management	Substation and OHPL	Low –'ve	Low –'ve
Avifaunal Impacts Mortality through collision and electrocution	Substation and OHPL	Low –'ve	Low –'ve

Impact Type	Applicable to:	Significance Ranking - Post Mitigation	
		Preferred Alternative	'No Go' Alternative
Sensory disturbance		Low –'ve	Low –'ve
Attraction of birds		Low –'ve	Low –'ve
Freshwater/Aquatic Impacts Spills or leaks of chemicals and hydrocarbons during maintenance activities	Substation and OHPL	Low –'ve	Low –'ve
Heritage Impacts potential destruction of a heritage sites	OHPL	Low –'ve	Low –'ve
Social Impacts	Substation and OHPL		
Creation of Local Employment		Low +'ve	Low –'ve
Generate income for affected landowners		High +'ve	Low –'ve
Impact on tourism		Low –'ve	None
Impact on farming operations during maintenance		Low –'ve	None
Visual Impact	Substation and OHPL		
OHPL visual impact – sense of place		Low –'ve	None
Substation visual impact – sense of place		Low –'ve	None
Renewable Energy Impacts	Substation and OHPL	High +'ve	Low –'ve
Overall Impact Ranking		Low –'ve	Low –'ve

2.5 OVERALL FINDINGS FOR THIS BASIC ASSESSMENT REPORT

Based on the information presented in this BAR, as informed by the statutory requirements, and the associated independent specialist studies, the findings of this draft Basic Assessment indicate that the Project, in the form of the preferred substation development area and the preferred OHPL corridor, (read strictly in conjunction with the mitigation measures stipulated in Section 18.2 of this Draft Basic Assessment Report as well as the attached EMPr, which must form part of the Conditions of the Environmental Authorisation) will not result in unacceptable negative social or environmental impacts.

The Preferred Alternative for this Project is described as follows:

- From the assessment of the selected route and corridor, the Preferred Layout is deemed a reasonable and feasible site alternative, which can be implemented on the site.
- Micro-siting of the preferred route will determine optimal sizes and positions of the monopoles and/or lattice structures should an Environmental Authorisation be granted.
- The development of the substation and the OHPL connecting the Good Hope PVSEF to the Artemis Substation addresses a national and regional need for the generation of clean, renewable energy and greater access to electricity through the construction of necessary infrastructure. This goal is reflected in national plans and policies as well as regional SDF's, IDP's and Development Programmes.

The substation and OHPL Alternatives are the most feasible and reasonable alternatives and has been comparatively assessed against the no-go alternative in this Report.

Therefore, the **Preferred Alternative** for the purposes of this Report refers to a Project alternative that takes into consideration and implements the findings and recommendations of the professional team, which have been noted

above in terms of operational, layout and technology alternatives considered to date, and which have all been informed through independent expert assessments.

In conclusion and based on:

i. the Specialist Study Findings undertaken by the Professional Team appointed to this this Project and represented in Section 8 of this Basic Assessment Report;
ii. the assessment undertaken by the EAP in conjunction with the Specialist Findings and represented in Sections 8 and 12 of the Basic Assessment Report;
iii. the motivation of Alternatives in Section 9.

It is reasonable to suggest the overall impact associated with the substation development area and the OHPL corridor will be mitigated to an acceptable environmental level. In the opinion of the EAP the proposed project as described in this Basic Assessment Report is not fatally flawed and all potential negative impacts can be mitigated to an acceptable level. It is **therefore it is reasonable to suggest that there is no reason why the Competent Authority should not authorise the preferred alternative.** The following should form specific clauses in the environmental authorisation to be issued by DFFE:

3. GENERAL PROJECT INFORMATION

3.1 APPLICATIONS RELATED TO THIS PROJECT

COMPETENT AUTHORITY REFERENCE NUMBER	COMPETENT AUTHORITY
14/12/16/3/3/1/2484	Department of Forestry, Fisheries and Environment
14/12/16/3/3/1/2485	Department of Forestry, Fisheries and Environment

3.2 OVERVIEW OF THE BASIC ASSESSMENT PROCESS

The **Basic Assessment process** can be broadly broken down into the key phases presented in the image below. The process proposed is in keeping with the requirements stipulated in the NEMA EIA Regulations, 2014 (as amended) (GN No. R. 326 refers):

The phases highlighted in grey above illustrate phases already completed. The phase highlighted in yellow is currently underway and the phases highlighted in green are pending. The application requirements as set out in Notice Nos R. 326, R. 327 and R. 324, promulgated in terms of Section 5 of the NEMA and the requirements of the Department of Forestry, Fisheries and the Environmental (DFFE) have been followed in the preparation of this draft BAR.

The draft BAR is made available for 30-day review and comment period.

The review and comment on the Draft BAR will commence on **03 April 2023** and will conclude on **08 May 2023.** Once this commenting and review period has concluded, the draft BAR will be updated based on comments received.

The final BAR will then be submitted to the Competent Authority (DFFE) for decision making.

3.3 CONTENT OF THE BASIC ASSESSMENT REPORT

This draft BAR, which is made available for a 30-day review and comment period, contains all necessary information to enable an appropriate understanding of the project. Information includes the scope of the assessment, alternatives, and the consultation process to be undertaken throughout the BA Environmental Authorisation Process.

Appendix 1 Regulation 3 of GN R. 326 of the NEMA EIA Regulations, 2014 (as amended) stipulates that a BAR must contain the information necessary for the Competent Authority to make an informed decision.

The summarised content of this BAR, as prescribed by NEMA EIA Regulations, 2014 (as amended) is presented in **Table 2**.

Table 2: Requirements of the NEMA EIA Regulations, 2014 (as amended).

Regulation		Scope of Assessment and Content of Basic Assessment Report	Relevant Section
A1 R3 (a)		**Details of:**	
	(i)	*The EAP who prepared the report; and*	Section 4.2
	(ii)	*The expertise of the EAP, including a curriculum vitae*	Section 4.2
A1 R3 (b)		***The location of the activity, including:***	
	(i)	*The 21 digit Surveyor General code of each cadastral land parcel;*	Section 4.3
	(ii)	*Where available, the physical address and farm name; and*	Section 4.3
	(iii)	*Where the required information in items (i) and (ii) is not available, the coordinates of the boundary of the property or properties.*	Section 4.3
A1 R3 (c)		***A plan which locates the proposed activity or activities applied for as well as the associated structures and infrastructure at an appropriate scale, or, if it is-***	
	(i)	*a linear activity, a description and coordinates of the corridor in which the proposed activity or activities is to be undertaken;*	Section 4.3
	(ii)	*on land where the property has not been defined, the coordinates within which the activity is to be undertaken;*	Section 4.3
A1 R3 (d)		***A description of the scope of the proposed activity, including:***	
	(i)	*All listed and specified activities triggered and being applied for; and*	Section 5.3
	(ii)	*A description of the associated structures and infrastructure related to the development*	Section 5.2
A1 R3 (e)		***A description of the policy and legislative context within which the development is proposed including:***	
	(i)	*An identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks, and instruments that are applicable to this activity and have been considered in the preparation of the report; and*	Section 6
	(ii)	*How the proposed activity complies with and responds to the legislation and policy context, plans, guidelines, tools frameworks, and instruments*	Section 6
A1 R3 (f)		***A motivation for the need and desirability for the proposed development, including the need and desirability of the activity in the context of the preferred location***	Section 7
A1 R3 (g)		***A motivation for the preferred development footprint within the approved site***	Section 9.2
A1 R3 (h)		***A full description of the process followed to reach the proposed development footprint within the approved site, including:***	
	(i)	*Details of the alternatives considered;*	Section 9.1
	(ii)	*Details of the public participation process undertaken in terms of regulation 41 of the Regulations, including copies of the supporting documents and inputs;*	Section 14

Regulation		Scope of Assessment and Content of Basic Assessment Report	Relevant Section
	(iii)	*A summary of the issues raised by interested and affected parties, and an indication of the manner in which the issues were incorporated, or the reasons for not including them;*	N/A
	(iv)	*The environmental attributes associated with the alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects;*	Section 8
	(v)	*The impacts and risks identified including the nature, significance, consequence, extent, duration and probability of the impacts, including the degree to which these impacts-*	Section 12
		(aa) Can be reversed	Section 12
		(bb) May cause irreplaceable loss of resources; and	Section 12
		(cc) Can be avoided, managed or mitigated	Section 12
	(vi)	*The methodology used in determining and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks with the alternatives;*	Section 11
	(vii)	*Positive and negative impacts that the proposed activity and alternatives will have on the environment and on the community that may be affected focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects;*	Section 12
	(viii)	*The possible mitigation measures that could be applied and level of residual risk;*	Section 12
	(ix)	*The outcome of the site selection matrix;*	Section 10
	(x)	*if no alternatives, including alternative locations for the activity were investigated, the motivation for not considering such; and*	Section 9
	(xi)	*A concluding statement indicating the preferred alternative development location within the approved site;*	Section 9.2
A1 R3 (i)		***A full description of the process undertaken to identify, assess and rank the impacts the activity will impose on the preferred location through the life of the activity, including-***	
	(i)	*A description of all environmental issues and risks that were identified during the environmental impact assessment process; and*	Section 12
	(ii)	*An assessment of the significance of each issue and risk and an indication of the extent to which the issue and risk could be avoided or addressed by the adoption of mitigation measures;*	Section 12
A1 R3 (j)		***An assessment of each identified potentially significant impact and risk, including-***	
	(i)	*Cumulative impacts;*	Section 12
	(ii)	*The nature, significance and consequences of the impact and risk;*	Section 12
	(iii)	*The extent and duration of the impact and risk;*	Section 12
	(iv)	*The probability of the impact and risk occurring;*	Section 12
	(v)	*The degree to which the impact and risk can be reversed;*	Section 12
	(vi)	*The degree to which the impact and risk may cause irreplaceable loss of resources; and*	Section 12
	(vii)	*The degree to which the impact and risk can be mitigated;*	Section 12
A1 R3 (k)		***Where applicable, a summary of the findings and recommendations of any specialist report complying with Appendix 6 to these Regulations and an indication as to how these findings and recommendations have been included in the final assessment report;***	Section 8
A1 R3 (l)		***An environmental impact statement which contains:***	
	(i)	*A summary of the key findings of the environmental impact assessment:*	Section 2
	(ii)	*Map at an appropriate scale which superimposes the proposed activity and its associated structures and infrastructure on the environmental sensitivities of the preferred site indicating any areas that should be avoided, including buffers; and*	Section 2

Regulation		Scope of Assessment and Content of Basic Assessment Report	Relevant Section
	(iii)	*A summary of the positive and negative impacts and risks of the proposed activity and identified alternatives;*	Section 2
A1 R3 (m)		***Based on the assessment, and where applicable, recommendations from specialist reports, the recording of proposed impact management objectives, and the impact management outcomes for the development for inclusion in the EMPr;***	Section 8
A1 R3 (n)		***Any aspects which were conditional to the findings of the assessment either by the EAP or specialist which are to be included as conditions of authorisation***	Not Applicable accommodated in the EMPr
A1 R3 (o)		***A description of any assumptions, uncertainties and gaps in knowledge which relate to the assessment and mitigation measures proposed;***	Section 17
A1 R3 (p)		***A reasoned opinion as to whether the proposed activity should or should not be authorised, and if the opinion is that it should be authorised, any conditions that should be made in respect of that authorisation;***	Section 18
A1 R3 (q)		***Where the proposed activity does not include operational aspects, the period for which the environmental authorisation is required and the date on which the activity will be concluded and the post construction monitoring requirements finalised;***	Section 18 – Not Applicable
A1 R3 (r)		***An undertaking under oath or affirmation by the EAP in relation to:***	
	(i)	*The correctness of the information provided in the reports;*	Section 19
	(ii)	*The inclusion of comments and inputs from stakeholders and I&APs;*	Section 19
	(iii)	*The inclusion of inputs and recommendations from the specialist reports where relevant; and*	Section 19
	(iv)	*Any information provided by the EAP to interested and affected parties and any responses by the EAP to comments or inputs made by interested or affected parties;*	Section 19
A1 R3 (s)		***Where applicable, details of any financial provisions for the rehabilitation, closure, and ongoing post decommissioning management of negative environmental impacts***	Not Applicable
A1 R3 (t)		***Any specific information that may be required by the Competent Authority***	Section 16
A1 R3 (u)		***Any other matters required in terms of Section 24(4)(a) and (b) of the Act***	This BAR has been written in accordance with Section 24(4) (a) and (b) of the Act.

3.4 OBJECTIVES OF THE BASIC ASSESSMENT PROCESS

In accordance with **Appendix 1 Regulation 2 of GN R. 326 of the NEMA EIA Regulations (2014, as amended)** the objective of the BAR is to, through a consultative process-

(a) determine the policy and legislative context within which the proposed activity is located and how the activity complies with and responds to the policy and legislative context;
(b) identify the alternatives considered, including the activity, location, and technology alternatives;
(c) describe the need and desirability of the proposed alternatives;
(d) through the undertaking of an impact and risk assessment process inclusive of cumulative impacts which focused on determining the geographical, physical, biological, social, economic, heritage, and cultural sensitivity of the sites and locations within sites and the risk of impact of the proposed activity and technology alternatives on these aspects to determine-
i. the nature, significance, consequence, extent, duration, and probability of the impacts occurring to; and
ii. the degree to which these impacts-
(aa) can be reversed;
(bb) may cause irreplaceable loss of resources; and
(cc) can be avoided, managed or mitigated; and
(e) through a ranking of the site sensitivities and possible impacts the activity and technology alternatives will impose on the sites and location identified through the life of the activity to-
i. identify and motivate a preferred site, activity and technology alternative;
ii. identify suitable measures to avoid, manage or mitigate identified impacts; and
iii. identify residual risks that need to be managed and monitored

4. PROJECT DETAILS

4.1 ENTITY RESPONSIBLE FOR DEVELOPMENT OF THE PROJECT

Table 3: This table depicts the Project Applicant Details

PROJECT APPLICANT DETAILS	
DEVELOPMENT ENTITY	
Applicant Name	Antlia Energy (Pty) Ltd
Responsible Person	Mr Matteo Giulio Luigi Brambilla
Address	14th Floor Pier Place Heerengracht Street Foreshore Cape Town 8001
Contact Details	+27 (0)21 418 3940 (T) +27 (0)72 212 1531 (C) Email: m.logan@redrocket.energy

4.2 EAP DETAILS, EXPERTISE AND INDEPENDENCE

In accordance with ***Appendix 1 Regulation 3(a) of GN R.326 of the NEMA EIA Regulations (2014, as amended)****:*

Details of-

i. The EAP that prepared the report, and
ii. The expertise of the EAP, including curriculum vitae

Terramanzi Group (Pty) Ltd (TMG), is the consulting firm appointed to undertake this Application for Environmental Authorisation (EA) on behalf of the Applicant.

Natasha Williams is the independent EAP responsible for this report. Natasha was involved in the compilation and review of this draft report. Natasha is an environmental scientist with 29 years of experience. She is a registered EAP with the Environmental Assessment Practitioners Association of South Africa (EAPASA) (2019/1458). Natasha holds a BSc (Hons) in Microbiology & Waste Technology from the University of KwaZulu-Natal (UKZN).

Kristen Shaw is an environmental consultant and the Co-Author of this report. Kristen holds a Ba in Psychology, Geography and Environmental Management and a BSc (Hons) in Environmental Sciences from the North West University. She is a junior member of the Environmental Services Team at Terramanzi Group (Pty) Ltd and registered as a Candidate EAP with EAPASA (2022/4741), waiting on approval of registration.

TMG hereby declares that they have no conflicts of interest related to the work of this report. Specifically, TMG declares that they have no personal financial interests in the property and/or activity being assessed in this report, and that they have no personal or financial connections to the relevant property owners, developers, planners, financiers or consultants of the property or activity, other than fair remuneration for professional services rendered for this report to the Competent Authority. TMG declares that the opinions expressed in this report are independent and a true reflection of their professional expertise.

TMG is a **Level 4 Broad Based Black Economic Empowerment Company** and is **professionally accredited** with several relevant industry bodies, in line with the Preferential Procurement Policy Framework Act No. 5 of 2000 (PPPFA).

Please refer to Appendix G for the EAP's Curriculum Vitae

4.3 PROJECT LOCATION

In accordance with ***Appendix 1 Regulation 3(b) of GN R. 326 of the NEMA EIA Regulations (2014, as amended)****:*

3(b): *The location of the activity, including:*

- *i. The 21-digit Surveyor General Code of each cadastral land parcel;*
- *ii. Where available the physical address and farm name; and*
- *iii. Where the required information in terms (i) and (ii) is not available, the coordinates of the boundary of the property or properties.*

Antlia Energy (Pty) Ltd is proposing to obtain environmental authorisation to develop a 132 kV back-to-back substation and a 132kV Overhead Power Line (OHPL) to connect the authorised **Good Hope Photovoltaic Solar Energy Facility (PVSEF)** (with an electricity generating capacity of up to 200MW) to the National Grid at the Artemis 400 kV Substation. The project is located 3 km north of the town of Dealesville, in the Tokologo Local Municipality, in the Lejweleputswa District Municipality, Free State Province (**Figure 4**).

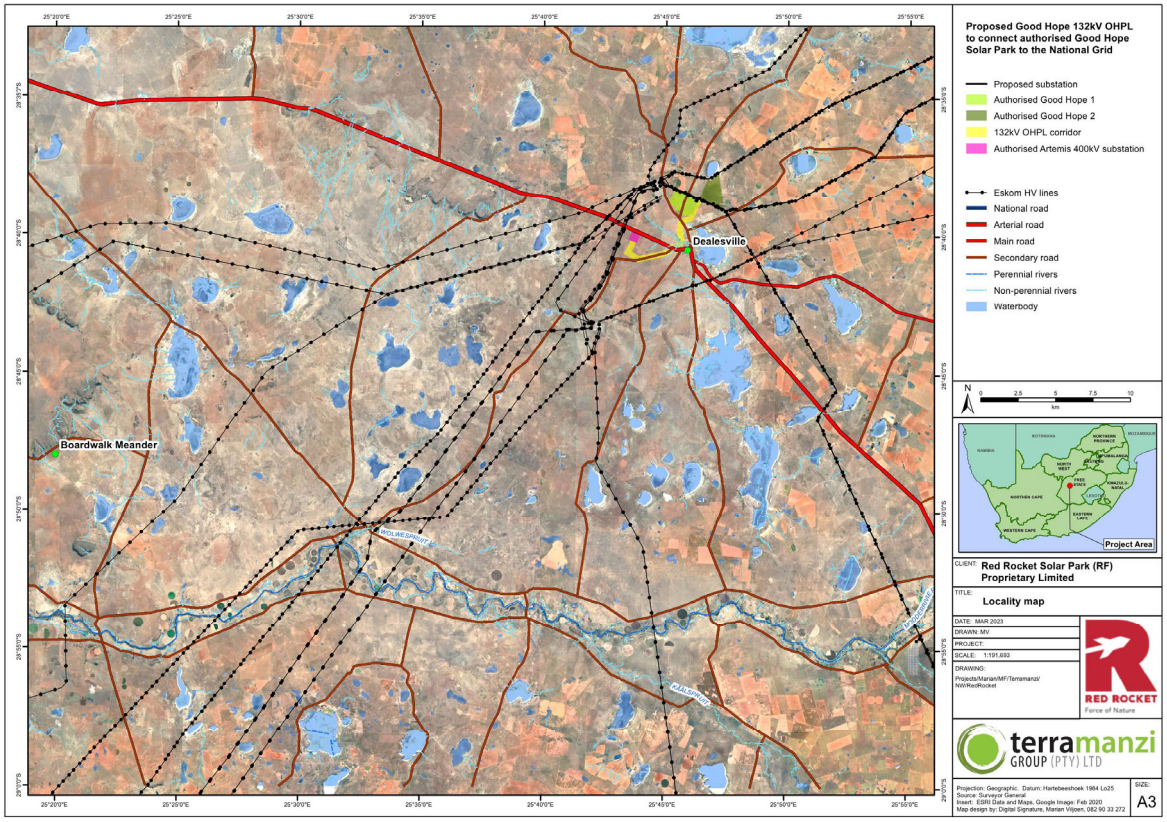


Figure 4: Regional Locality Plan

Eskom is intending to construct the Artemis (400 KV) Substation to which the Good Hope PVSEF will be required to connect to feed power generated at the PVSEF into the National Grid. This connection will require the establishment and operation of a new 132 kV Powerline from the Good Hope PVSEF to the Eskom Artemis Substation. A small 132 kV back-to-back substation will be constructed at the Good Hope PVSEF via which the power generated by the Good Hope PVSEF will be fed into the proposed Good Hope 132 kV OHPL.

The proposed OHPL corridor will traverses 5 land parcels (farm portions) to connect from the Good Hope PVSEF to the Artemis Substation. The details of the land parcels that the proposed OHPL corridor and powerline will

traverse, as well as the land parcel on which the substation will be located, are presented in **Table 4** and shown on **Figure 5**.

Table 4: Details of the land parcel(s) over which the proposed Good Hope OHPL will traverse and on which the substation will be located

Cadastral Land Parcel	SG Code	Approximate Co-ordinates of OHPL on land portion
Proposed Good Hope OHPL		
Portion 00000 of Farm 00001029 of Boshof Rd (Farm Gedenksrust)	F004/0000/00001029/00000	28°39'03"S, 25° 46'14"E
Portion 00000 of Farm 00000305 of Boshof Rd (Farm Klipfontein)	F004/0000/00000305/00000	28°40'24"S, 25° 45’ 16"E
Portion 00000 of Farm 00000535 of Boshof Rd, (Farm Klipkoppan)	F004/0000/00000535/00000	28°39'18"S, 25°45'59"E
Portion 00000 of Farm 00001216 of Boshof Rd (Farm Epsom Downs)	F004/0000/00001216/00000	28°38'59"S, 25°46'04"E
Proposed substation		
Portion 00000 of Farm 00001216 of Boshof Rd (Farm Epsom Downs)	F004/0000/00001216/00000	28°38'44"S, 25°46'15"E

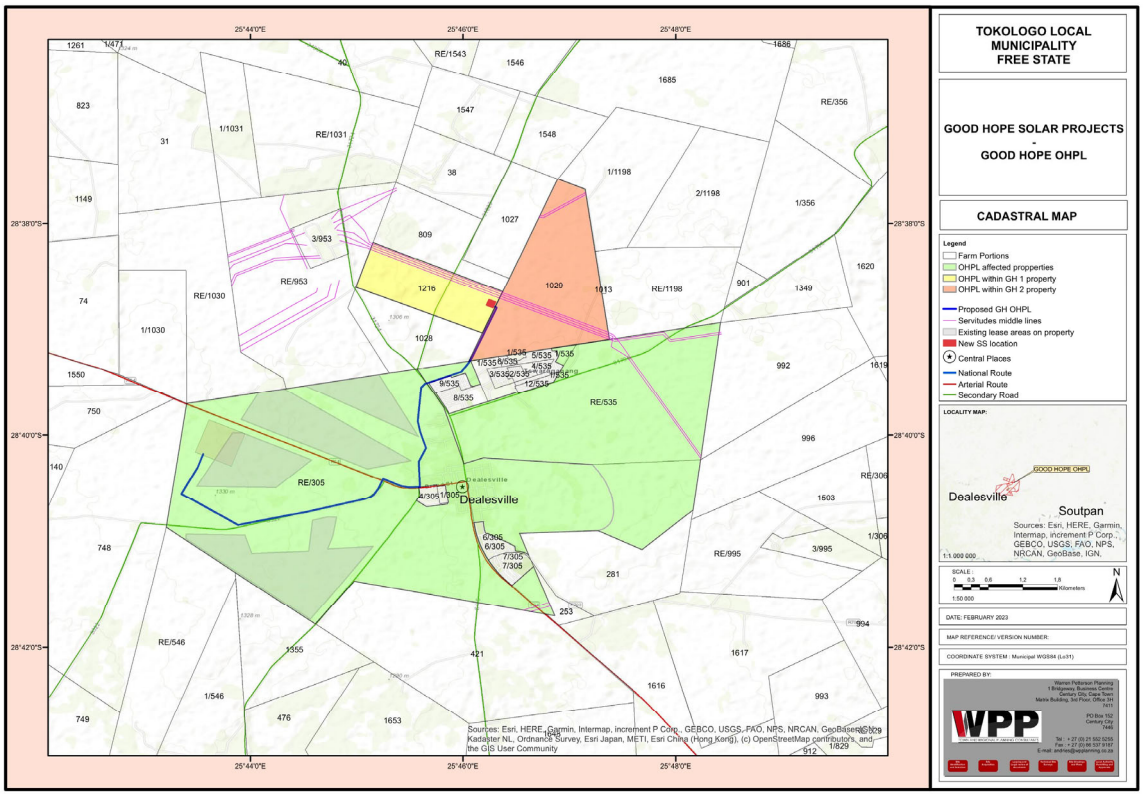


Figure 5: Cadastral Map

4.4 SITE LOCATION OF THE PROJECT

*In accordance with **Appendix 1 Regulation 3 (c) of GN R. 326 of the NEMA EIA Regulations (2014, as amended):***

***3(c)**: A plan which locates the proposed activity or activities applied for as well as the associated structures and infrastructures at an appropriate scale, or if it is-*

- *i. A linear activity, a description and coordinates of the corridor in which the proposed activity or activities is to be undertaken*
- *ii. On land where the property has not been defined, the coordinates within which the activity is to be undertaken*

The proposed Good Hope OHPL corridor traverses to the north of the town of Dealesville from north east to south west. The distance of the proposed OHPL corridor from the town of Dealesville varies from 400 m (closest point) to 3.4 km. The proposed substation will be located within the Good Hope PVSEF development area 3 km to the north of Dealesville. The layout plan of the proposed OHPL corridor and the 132 kV back-to-back substation is presented in **Figure 6**.

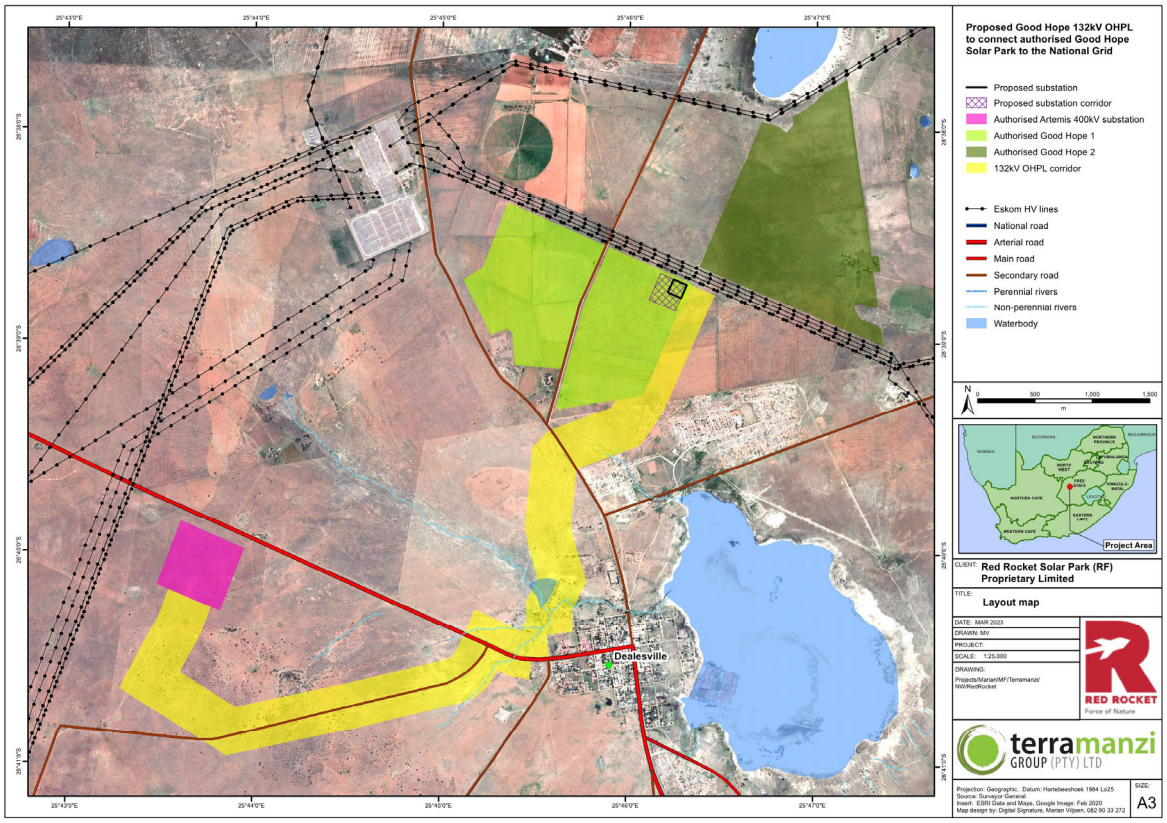


Figure 6: Layout plan of the proposed OHPL corridor and the 132 kV back-to-back substation

The OHPL powerline corridor will be 400 m wide and approximately 8.6 km in length.

The central defining coordinates of the proposed Good Hope OHPL corridor and substation are provided in **Table 5**.

Table 5: The central GPS co-ordinates of the proposed Good Hope OHPL corridor (Preferred Alternative) and Substation.

Point	Latitude	Longitude
Good Hope Substation		
Good Hope SS site central co-ord	28°38'45"S	25° 46’ 15"E
Good Hope OHPL Corridor		
Start (Good Hope PVSEF)	28°38'44"S	25° 46’ 23"E
Turn 1 (SW)	28°39'23"S	25° 45’ 59"E
Turn 2	28°39'32"S	25° 45’ 37"E
Turn 3	28°40'29"S	25° 45’ 34"E
Turn 4	28°40'24"S	25° 45’ 15"E
Turn 5	28°40'51"S	25° 43’ 53"E
Turn 6	28°40'33"S	25° 43’ 33"E
End (Artemis SS)	28°40'11"S	25° 43'33"E

4.5 PROJECT DESIGN (ITERATIVE PROCESS)

An initial proposed OHPL route with a corridor approximately 400m wide was identified and has been investigated as part of this Basic Assessment Process. The proposed OHPL corridor (preferred alternative) has been assessed to guide the Applicant and Professional Team to accommodate the most acceptable and implementable route for the centre line of the proposed Good Hope OHPL powerline.

The preferred OHPL corridor alternative has been assessed against the No-Go Alternative within this Basic Assessment Report.

An Opportunities and Constraints Map has been developed to guide the Applicant and Professional Team to accommodate the most acceptable and implementable route for the centre line of the proposed powerline route.

The final footprints of the monopoles and/or lattice structures comprising the proposed overhead powerline will be determined prior to construction phase commencing. Micro-siting of the preferred route will determine optimal sizes and positions of the monopoles and/or lattice structures should an Environmental Authorisation be granted.

5. SCOPE OF THE PROPOSED ACTIVITY

*In accordance with **Appendix 1 Regulation 2(d) of GN R. 326 of the NEMA EIA Regulations (2014, as amended)**:*

i. All listed and specified activities triggered and being applied for;

ii. A description of the activities to be undertaken including associated structures and

5.1 DETAILED DESCRIPTION OF THE OHPL AND SUBSTATION

This Section of the Report provides a detailed description of the proposed Good Hope OHPL and substation. Based on information provided by the Applicant and advised by Eskom, the proposed 132kV line is required to be comprised of monopoles and/or lattice structures, which run the electrical cabling above ground. The monopoles and/or lattice structures are considered desirable in terms of requisite infrastructure, and this is detailed in this Section of the Report.

The proposed powerline will be approximately 8.6 km in length and will be constructed using monopoles and/or lattice structures for both straight lines and angled bends, which will be placed approximately 200 to 400 metres

apart. The maximum height above ground is approximately 30 metres and the width of the servitude will be 31 metres.

5.1.1 Servitude

It is a requirement of Eskom that 132kV powerlines are located on a servitude of 31 m width. The associated servitude for the overhead powerline will have a width of 31 metres (15.5 m on either side of the centre line of the power line). Access to the OHPL will be required during both the construction and operational phases of the project and the servitude will be cleared of bush for this purpose. Maximum use of existing servitudes and roads will be made to gain access to the OHPL for construction and maintenance activities.

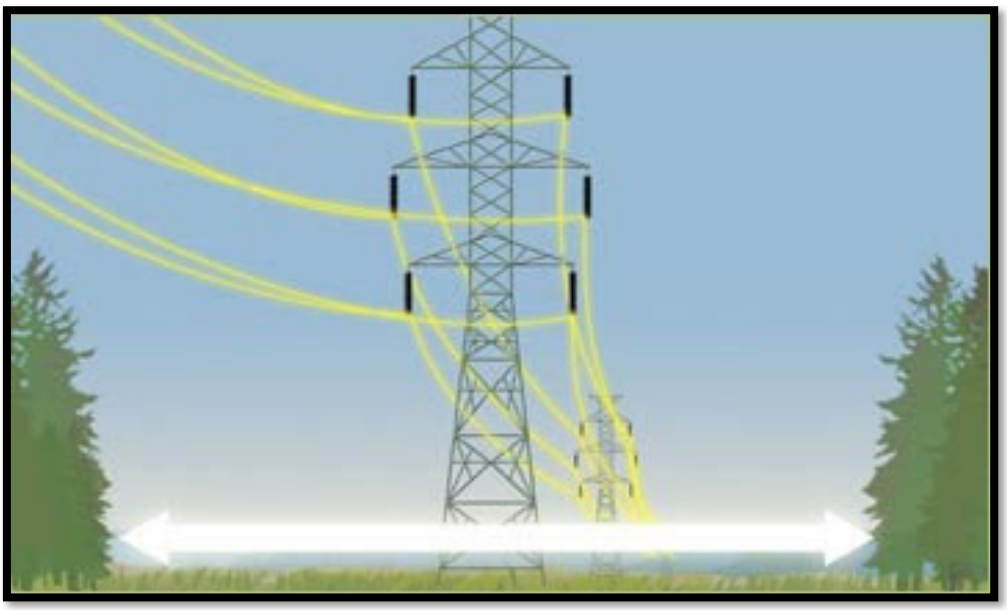


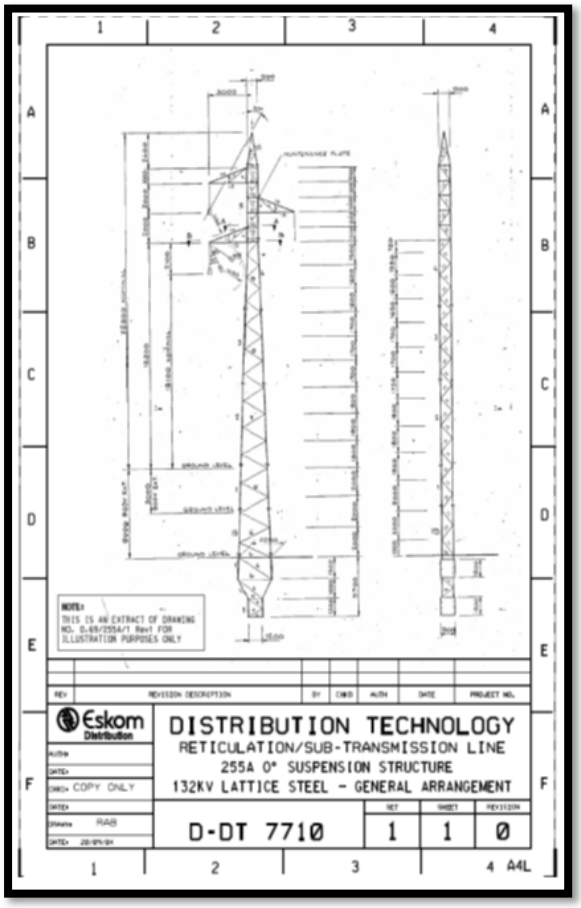
Figure 7: Typical servitude cleared underneath the powerline route.[1]

5.1.2 Lattice OHPL Structure

A typical steel lattice transmission structure requires an average of 14,000 kilograms of steel per structure. Lattice steel towers are typically supported by shallow gravity pad foundations (see Photo 5.1 and **Figure 8**) at a depth of approximately 1 metre. Guyed towers may involve dead man gravity anchors and/or drilled anchors to support the tower (see Photo 5.1 and **Figure 8**).

[1] http://www.hydroquebec.com/electricity-and-you/servitudes-and-property-rights/transmission-lines-substations/

Photo 5.1: Typical dead man anchor foundations for guyed towers (Photo courtesy of Outeniqua Geotechnical Services, 2017).



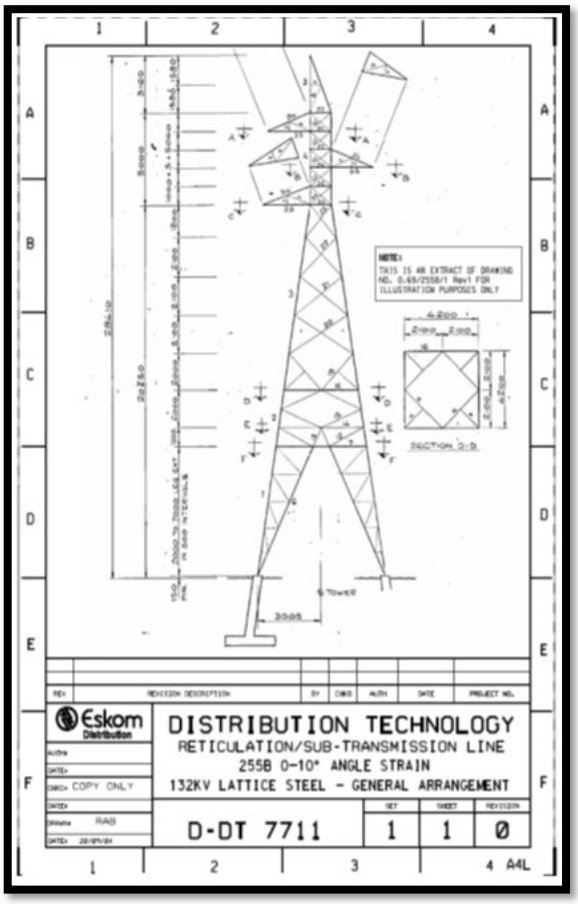


Figure 8:: Typical lattice structure considered for the overhead powerline (Photo courtesy of Eskom, 2017).

5.1.3 Monopoles

A typical steel monopole transmission structure requires around 18,000 kilograms of steel per structure. Monopoles typically have single pier foundations, which consists of a cylindrical cement column to support the monopole above. Monopoles require a concrete cap at the foot of each steel monopole structure with an approximate diameter of 750mm (see **Figure 9**).

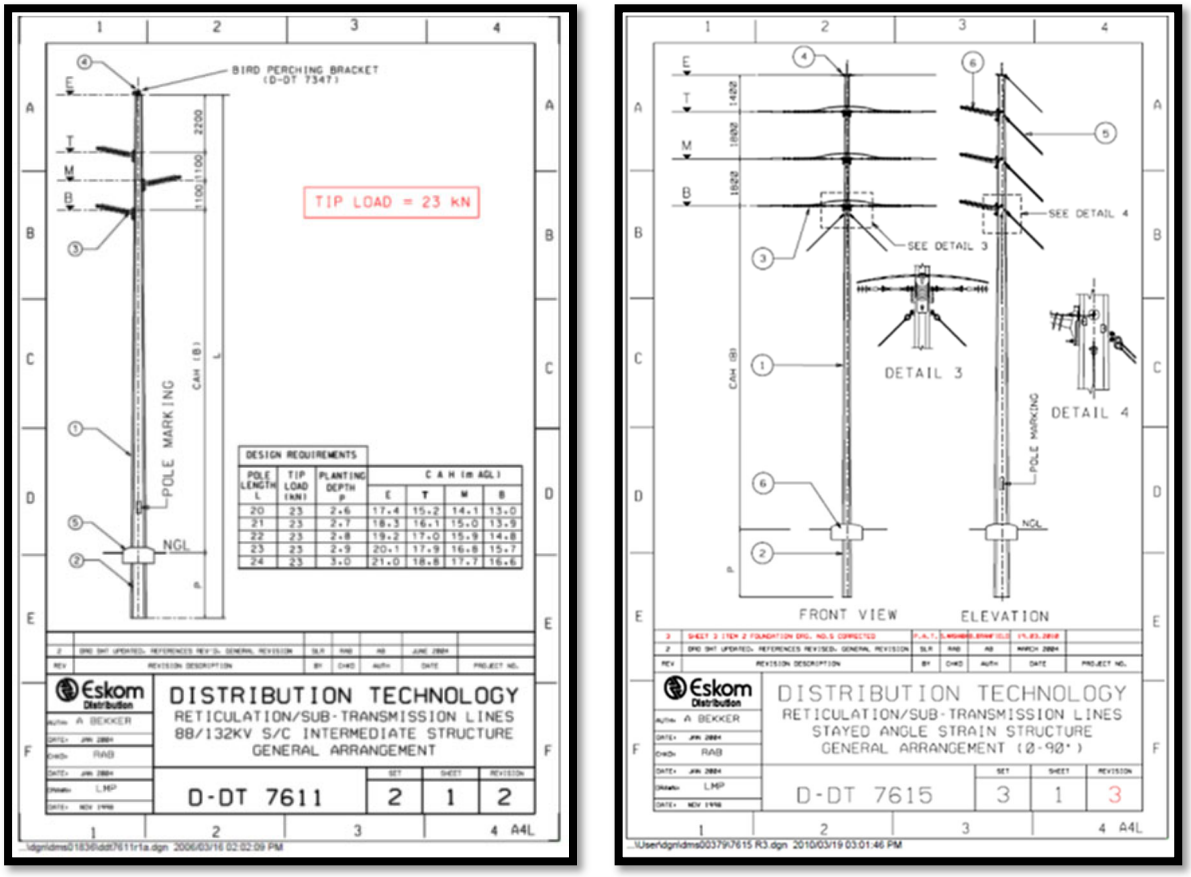


Figure 9: This Figure depicts the typical monopoles considered for the overhead powerline (Photo courtesy of Eskom, 2017).

5.1.4 Statutory Safety Clearance Requirements

Statutory safety clearances for power lines are stipulated by the Occupational Health and Safety Act (85 of 1993). For 132kV OHLP, a minimum 1.45 metre safety clearance is required to be implemented. The minimum vertical clearance to buildings, poles and structures not forming part of the power line must be 3.8 m, while the minimum vertical clearance between the conductors and the ground is 6.7 m.

The minimum distance of a 132kV distribution line running parallel to public roads is 95 m from the centreline of the powerline to the centreline of the road servitude.

The minimum distance between any part of a tree or shrub and any bare phase conductor of a 132kV distribution line must be 3.8 m to allow for the possible lateral movement of this vegetation that could be a potential hazard for distribution lines that are operational and energised.

5.2 LISTED ACTIVITIES TRIGGERED

The following approach to the Environmental Application and process for the proposed **Activity** is based on the provisions stipulated in section 24(5) of the National Environmental Management Act 2008 ("NEMA") No. 107

of 1998 (as amended) and the EIA Regulations (2014, as amended) contained in Government Notice (GN) R. 326, R. 327, and R. 324, which dictate that a Basic Assessment Environmental Application process be followed.

EIA Regulations – Listed Activities (as discussed and agreed with the Competent Authority)

Based on the information currently available on the proposed Project, it is anticipated that the following Listed Activities contained in **Listing Notice 1** would require a Basic Assessment process in terms of the NEMA:

GNR 327 - Listing Notice 1: Activity 11
The development of facilities or infrastructure for the transmission and distribution of electricity *-* *(i)* ***outside urban areas or industrial complexes with a capacity of more than 33 but less than 275 kilovolts; or*** *(ii)* ***inside urban areas or industrial complexes with a capacity of 275 kilovolts or more.*** *Excluding where development of bypass infrastructure for the transmission and distribution of electricity where such bypass infrastructure is –* *(a)* ***temporarily required to allow for maintenance of existing infrastructure;*** *(b)* ***2 kilometres or shorter in length;*** *(c)* ***Within an existing transmission line servitude; and*** *(d)* ***Will be removed within 18 months of the commencement of development.***
The proposed Good Hope OHPL and substation will have a distribution capacity of up to 132kV. The project site is located outside of an urban area.

GNR 327 - Listing Notice 1: Activity 12
The development of - *(i)* ***Dams or weirs, where the dam or weir, including infrastructure and water surface area, exceeds 100 square metres; or*** *(ii)* ***Infrastructure or structures with a physical footprint of 100 square metres or more;*** ***(a) within a watercourse;*** ***(b) in front of a development setback; or*** ***(c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse;*** ***excluding -*** ***(aa) the development of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour;*** ***(bb) where such development activities are related to the development of a port or harbour, in which case activity 26 in Listing Notice 2 of 2014 applies;*** ***(cc) activities listed in activity 14 in Listing Notice 2 of 2014 or activity 14 in Listing Notice 3 of 2014, in which case that activity applies;*** ***(dd) where such development occurs within an urban area;*** ***(ee) where such development occurs within existing roads, road reserves or railway line reserves; or*** ***(ff) the development of temporary infrastructure or structures where such infrastructure or structures will be removed within 6 weeks of the commencement of development and where indigenous vegetation will not be cleared.***
The proposed Good Hope OHPL will consist of steel transmission structures and the individual lattice / monopole structures that may have cumulative footprints exceeding 100-square meters located within 32 m of a watercourse.

GNR 327 - Listing Notice 1: Activity 14
The development and related operation of facilities or infrastructure, for the storage, or for the storage and handling, of a dangerous good, where such storage occurs in containers with a combined capacity of 80 cubic metres or more but not exceeding 500 cubic metres.

The development of the substation will require the construction and operation of facilities and infrastructure for the storage and handling of dangerous goods (combustible and flammable liquids, such as oils, lubricants, solvents) associated with the onsite substation where such storage will occur inside containers with a combined capacity exceeding 80 cubic meters but not exceeding 500 cubic meters.

GNR 327 - Listing Notice 1: Activity 19
The infilling or depositing of any material of more than 10 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10 cubic metres from a watercourse; but excluding where such infilling, depositing, dredging, excavation, removal or moving - ***(a) will occur behind a development setback;*** ***(b) is for maintenance purposes undertaken in accordance with a maintenance management plan;*** ***(c) falls within the ambit of activity 21 in this Notice, in which case that activity applies;*** ***(d) occurs within existing ports or harbours that will not increase the development footprint of the port or harbor; or*** ***(e) where such development is related to the development of a port or harbour, in which case activity 26 in Listing Notice 2 of 2014 applies.***
The proposed powerline route will traverse a watercourse. Towers may need to be constructed within the water course resulting in the infilling / depositing of 10 cubic metres material into / from a watercourse.

GNR 327 - Listing Notice 1: Activity 27
The clearance of an area of 1 hectares or more, but less than 20 hectares of indigenous vegetation, except where such clearance of indigenous vegetation is required for - ***(i) the undertaking of a linear activity; or*** ***(ii) maintenance purposes undertaken in accordance with a maintenance management plan.***
The construction of the Good Hope OHPL & substation will likely involve the need to clear, cumulatively, more than 1 hectare but less than 20 hectares of indigenous vegetation for the construction of the towers and the substation.

GNR 327 - Listing Notice 1: Activity 28
Residential, mixed, retail, commercial, industrial or institutional developments where such land was used for agriculture, game farming, equestrian purposes or afforestation on or after 01 April 1998 and where such development ***(i) will occur inside an urban area, where the total land to be developed is bigger than 5 hectares; or*** ***(ii) will occur outside an urban area, where the total land to be developed is bigger than 1 hectare;*** *excluding where such land has already been developed for residential, mixed, retail, commercial, industrial or institutional purposes.*
The construction of the 132kV Good Hope OHPL and substation will likely impact, cumulatively, on an area larger than 1 hectare outside an urban area.

Based on the information available on the proposed Project, it is anticipated that the following Listed Activities contained in **Listing Notice 3** require a Basic Assessment Process in terms of the NEMA:

GNR 324 - Listing Notice 3: Activity 12
The clearance of an area of 300 square metres or more of indigenous vegetation except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan. ***b*. Free State** **i. Within any critically endangered or endangered ecosystem listed in terms of section 52 of the NEMBA or prior to the publication of such a list, within an area that has been identified as critically endangered in the National Spatial Biodiversity Assessment 2004;** **ii. Within critical biodiversity areas identified in bioregional plans;** **iii. On land, where, at the time of the coming into effect of this Notice or thereafter such land was zoned open space, conservation or had an equivalent zoning; or** **iv. Areas within a watercourse or wetland; or within 100 metres from the edge of a** ***i.* watercourse or wetland.**
300 square metres or more of indigenous vegetation may be required to be cleared for the installation of the proposed 132kV powerline and substation. The substation and a portion of the OHPL corridor are located within CBA 1.

GNR 324 - Listing Notice 3: Activity 14
The development of- ***i. Dams or weirs, where the dam or weir, including infrastructure and water surface area exceeds 10 square metres; or*** ***ii. Infrastructure or structures with physical footprint of 10 square metres or more*** ***Where such development occurs -*** *(a)* ***within a watercourse;*** *(b)* ***in front of a development setback; or*** ***(c) if no development setback has been adopted, within 32 metres of a watercourse measured from the edge of a watercourse;*** ***excluding the development of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour.***
The construction of the Good Hope OHPL and associated infrastructure will traverse a watercourse. The OHPL will consist of individual steel lattice / monopole structures. The cumulative footprint of structures that may be located within 32 m of a watercourse will exceed the 10 meter squared threshold.

This Application for Environmental Authorisation will be submitted to and considered by the National Department of Forestry, Fisheries and the Environment (DFFE) as the appropriate Competent Authority for the Application.

Based on the above and in terms of GN R. 326 of the NEMA EIA Regulations (2014, as amended), a **BASIC ASSESSMENT PROCESS must be followed**.

6. LEGISLATIVE CONTEXT

*In accordance with **Appendix 1 Regulation 3(e) of GN R. 326 of the NEMA EIA Regulations (2014, as amended)**, the following information is presented in Section 5:*

i. An identification of all legislation, policies, plans and guidelines, spatial tools, municipal development planning frameworks and instruments that are applicable to this activity and have been considered in the preparation of the report

ii. How the proposed activity complies with and responds to the legislation and policy context, plans, guidelines, tools frameworks and instruments

6.1 SOUTH AFRICAN LEGISLATION (NATIONAL)

The National Policy on Environment clearly outlines the need, desire, and intention to increase the reliance on renewable energy as a key source of power. These commitments are outlined in various Acts, White Papers, development plans and framework, specifically including:

- National Energy Act (2008).
- White Paper on Energy Policy of the Republic of South Africa (December 1998).
- White Paper on Renewable Energy (November 2003).
- National Development Plan.
- National Integrated Resource Plan for Electricity (2010-2030).
- National Infrastructure Plan, 2010.
- Integrated Development Plans.
- Spatial Development Frameworks.

The policy and planning frameworks regarding energy are all underpinned by the need for the delivery of electricity to all South Africans to support social and economic health and ongoing development.

The construction and operation of the proposed Good Hope OHPL will enable the transmission of power from the authorised Good Hope (EA:14/12/16/3/3/1/2484 and EA:14/12/16/3/3/1/2485) to the environmentally authorised Artemis 400 kV Substation (Eskom). From the Artemis Substation the power generated by the Good Hope PVSEF will be fed into the national grid and distributed throughout the country.[2] As such, the proposed powerline is necessitated by the authorised Good Hope PVSEF, therefore, the policies that support renewable power generation also support the need for this 132 kV OHPL.

OHPL are subject to specified building line restrictions, servitude widths, line separations and clearances from other powerlines. The building restriction on either side of a 132kV OHPL (measured from the centre line is required to be ~18m (15.5-20m) and the distance between 2 parallel powerlines should be ~15m (21-24m)[3].

6.1.1 National Environmental Management Act (Act No. 107 of 1998)

In terms of NEMA, as amended and the NEMA EIA Regulations (2014, as amended), an application for EA for certain listed activities is required to be submitted to either the Provincial Environmental Competent Authority, or the National Competent Authority (DFFE):

- The current NEMA EIA regulations, GN R.326, GN R.327, GN R.325 and GN R.324, promulgated in terms of Sections 24(5), 24M and 44 of the NEMA and subsequent amendments, commenced on 08 December 2014 (as amended).
- GN R.326 lists those activities for which a Basic Assessment is required,

[2] Distribution will be limited by the Eskom distribution infrastructure.
[3] Eskom Distribution, March 2011 (reviewed March 2016), building line restrictions, servitude widths, line separations and clearances from other powerlines: Distribution Guide – Part 19.

- GN R.327 lists the activities requiring a full EIA (Scoping and Impact Assessment phases) and
- GN R.325 lists certain activities and competent authorities in specific identified geographical areas.
- GN R.324 defines the EIA processes that must be undertaken to apply for Environmental Authorisation.

6.1.2 National Water Act (Act No. 36 of 1998)

The National Water Act, 1998 (Act No. 36 of 1998) (NWA) is the primary legislation regulating both the use of water and the pollution of water resources. It is applied and enforced by the Department of Water Affairs (DWA). Section 19 of the National Water Act regulates pollution, which is defined as "the direct or indirect alteration of the physical, chemical, or biological properties of a water resource to make it:

- less fit for any beneficial purpose for which it may reasonably be expected to be used; or
- harmful or potentially harmful to -
- the welfare, health or safety of human beings;
- any aquatic or non-aquatic organisms;
- the resource quality; or
- Property.

The persons held responsible for taking measures to prevent pollution from occurring, recurring, or continuing include persons who own, control, occupy or use the land. This obligation or duty of care is initiated where there is any activity or process performed on the land (either presently or in the past) or any other situation which could lead or has led to the pollution of water.

The following measures are prescribed in the section 19(2) of the NWA to prevent pollution:

- cease, modify or control any act or process causing the pollution;
- comply with any prescribed standard or management practice;
- contain or prevent the movement of pollutants;
- eliminate any source of the pollution;
- remedy the effects of pollution; and
- remedy the effects of any disturbance to the bed or banks of a watercourse.

Section 21 of the NWA lists the water uses for which a water use licence (WUL) is required. In terms of the NWA, water uses include the following activities:

a) Taking water from a water resource;
b) Storing water;
c) Impeding or diverting the flow of water in a watercourse;
d) Engaging in a stream flow reduction activity contemplated in section 36;
e) Engaging in a controlled activity identified as such in section 37(1) or declared under section 38(1);
f) Discharging waste or water containing waste into a water resource through a pipe, canal, sewer, sea
g) outfall or other conduit;
h) Disposing of waste in a manner which may detrimentally impact on a water resource;
i) Disposing in any manner of water which contains waste from or which has been heated in, any industrial or power generation process;
j) Altering the bed, banks, course or characteristics of a watercourse:
k) Removing, discharging or disposing of water found underground if it is necessary for the efficient
l) continuation of an activity or for the safety of people; and
m) Using water for recreational purposes.

6.1.3 National Heritage Resource Act (Act No. 25 of 1999)

The National Heritage Resources Act, 1999 governs the management of heritage resources which are of cultural significance. The South African Heritage Resources Agency is the national body responsible for the protection of South Africa's cultural heritage resources.

Section 38(3) of the NHRA requires that all heritage resources are identified and assessed and that any comments and recommendations of the relevant heritage resources authority with regard to the proposed development have been taken into account prior to the granting of the consent.

The NHRA provides protection for the following categories of heritage resources:

- Landscapes, cultural or natural (Section 3 (3))
- Buildings or structures older than 60 years (Section 34);
- Archaeological Sites, palaeontological material and meteorites (Section 35);
- Burial grounds and graves (Section 36);
- Public monuments and memorials (Section 37);
- Living heritage (Section 2 (d) (xxi)).

6.1.4 Civil Aviation Act (Act No. 13 Of 2009)

The purpose of this act is to repeal, consolidate and amend the aviation laws giving effect to certain International Aviation Conventions; to provide for the control and regulation of aviation within the Republic; to provide for the establishment of a South African Civil Aviation Authority with safety and security oversight functions; to provide for the establishment of an independent Aviation Safety Investigation Board in compliance with Annexure 13 of the Chicago Convention; to give effect to certain provisions of the Convention on Offences and Certain other Acts Committed on Board Aircraft; to give effect to the Convention for the Suppression of Unlawful Seizure of Aircraft and the Convention for the Suppression of Unlawful Acts against the Safety of Civil Aviation; to provide for the National Aviation Security Program; to provide for additional measures directed at more effective control of the safety and security of aircraft, airports and the like; and to provide for matters connected thereto.

6.1.5 National Energy Act (Act No 34 of 2008)

The National Energy Act was promulgated in 2008 (Act No 34 of 2008). One of the objectives of the Act was to promote diversity of supply of energy and its sources. In this regard, the preamble makes direct reference to renewable resources, including wind:

"To ensure that diverse energy resources are available, in sustainable quantities, and at affordable prices, to the South African economy, in support of economic growth and poverty alleviation, taking into account environmental management requirements (…); to provide for (…) increased generation and consumption of renewable energies…" (Preamble).

6.1.6 White Paper on the Energy Policy of the Republic of South Africa

The White Paper on Energy Policy of the Republic of South Africa (December 1998) states that *"Government policy is based on an understanding that renewables are energy sources in their own right, are not limited to small-scale and remote applications, and have significant medium and long-term commercial potential". Furthermore, it recognizes that "Renewable resources generally operate from an unlimited resource base and, as such, can increasingly contribute towards a long-term sustainable energy future".*
The support for renewable energy policy is guided by a rationale that South Africa has a very attractive range of renewable resources, particularly solar and wind and that renewable applications are in fact the least cost energy service in many cases; more so when social and environmental costs are taken into account.

Government policy on renewable energy is thus concerned with meeting the following challenges:

- *Ensuring that economically feasible technologies and applications are implemented;*
- *Ensuring that an equitable level of national resources is invested in renewable technologies, given their potential and compared to investments in other energy supply options; and,*
- *Addressing constraints on the development of the renewable industry.*

The White Paper also acknowledges that South Africa has neglected the development and implementation of renewable energy applications, despite the fact that the country's renewable energy resource base is extensive and many appropriate applications exist.

6.1.7 White Paper on Renewable Energy

This White Paper on Renewable Energy (November, 2003) (further referred to as the White Paper) supplements the White Paper on Energy Policy, which recognizes that the medium and long-term potential of renewable energy is significant. This Paper sets out Government's vision, policy principles, strategic goals and objectives for promoting and implementing renewable energy in South Africa.

The White Paper notes that while South Africa is well-endowed with renewable energy resources that have the potential to become sustainable alternatives to fossil fuels, these have thus far remained largely untapped. As signatory to the Kyoto Protocol[4], Government is determined to make good the country's commitment to reducing greenhouse gas emissions. To this purpose, Government has committed itself to the development of a framework in which a national renewable energy framework can be established and operate.

South Africa is also a signatory of the Copenhagen Accord, a document that delegates at the 15th session of the Conference of Parties (COP 15) to the United Nations Framework Convention on Climate Change agreed to "take note of" at the final plenary on 18 December 2009. The accord endorses the continuation of the Kyoto Protocol and confirms that climate change is one of the greatest challenges facing the world. In terms of the accord South Africa committed itself to a reduction target of 34% compared to business as usual.

Apart from the reduction of greenhouse gas emissions, the promotion of renewable energy sources is aimed at ensuring energy security through the diversification of supply (in this regard, also refer to the objectives of the National Energy Act).

Government's long-term goal is the establishment of a renewable energy industry producing modern energy carriers that will offer in future years a sustainable, fully non-subsidized alternative to fossil fuels. The medium-term (10-year) target set in the White Paper is:

10 000 GWh renewable energy contribution to final energy consumption by 2013, to be produced mainly from biomass, wind, solar and small-scale hydro. The renewable energy is to be utilized for power generation and non-electric technologies such as solar water heating and bio-fuels. This is approximately 4% (1667 MW) of the projected electricity demand for 2013 (41539 MW) (Executive Summary, ix).

6.1.8 National Integrated Resource Plan for Electricity (2010-2030)

[4] The Kyoto Protocol is a protocol to the United Nations Framework Convention on Climate Change (UNFCCC), aimed at fighting global warming. The UNFCCC is an international environmental treaty with the goal of achieving "stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system."[The Protocol was initially adopted on 11 December 1997 in Kyoto, Japan and entered into force on 16 February 2005. As of November 2009, 187 states have signed and ratified the protocol (Wikipedia)

The Integrated Resource Plan (IRP) outlined the preferred energy mix to meet electricity needs over a 20- year planning horizon from 2010 to 2030. In line with the national commitment to transition to a low carbon economy, 17,800 MW of the 2030 target are expected to be from renewable energy sources, with 5,000 MW to be operational by 2019 and a further 2,000 MW (i.e. combined 7,000 MW) operational by 2020. Most of the anticipated renewable energy is proposed to come from onshore wind and solar projects. In addition, through power generation, there are requirements to contribute towards socio-economic and environmentally sustainable growth. Social and local economic benefits are created via job creation and training programmes, community ownership schemes, improved quality of life and levels of sustainability.

6.1.9 National Development Plan

Key priority areas, with applicable targets and actions were identified by the planning commission in the National Development Plan's (NDP) vision for 2030. Of relevance, the plan prioritises 'improvements to infrastructure' to ensure increased access to electricity and a 'transition to a low-carbon economy'. The NDP identifies the need for South Africa to invest in a strong network of economic infrastructure designed to support the country's medium- and long-term economic and social objectives. A critical component is energy infrastructure, which underpins all economic activity and facilitates growth. The NDP requires the development of 10,000 MWs of additional electricity capacity by 2025 (44,000 MWs was being generated in 2013).

6.1.10 National Infrastructure Plan

The South African Government adopted a National Infrastructure Plan in 2012. The aim of the plan is to transform the economic landscape while simultaneously creating significant numbers of new jobs, and strengthen the delivery of basic services. The plan also supports the integration of African economies. The Minister of Finance, Mr Pravin Gordhan, announced in his 2013 Budget Speech that, in terms of the plan, Government will invest R827 billion over the next three years to build new and upgrade existing infrastructure.

These investments will improve access by South Africans to healthcare facilities, schools, water, sanitation, housing and electrification. On the other hand, investment in the construction of ports, roads, railway systems, electricity plants, hospitals, schools and dams will contribute to faster economic growth.

As part of the National Infrastructure Plan, Cabinet established the Presidential Infrastructure Coordinating Committee (PICC). The Committee has identified and developed 18 Strategic Integrated Projects (SIPS). The SIPs cover social and economic infrastructure across all nine provinces (with an emphasis on lagging regions) and comprise:

- Five geographically-focused SIPs;
- Three spatial SIPs;
- Three energy SIPs;
- Three social infrastructure SIPs;
- Two knowledge SIPs;
- One regional integration SIP;
- One water and sanitation SIP.

The Three Energy SIPS are SIP 8, 9 and 10.

SIP 8: Green energy in support of the South African economy

- *Support sustainable green energy initiatives on a national scale through a diverse range of clean energy options as envisaged in the Integrated Resource Plan (IRP2010).*
- *Support bio-fuel production facilities.*

SIP 9: Electricity generation to support socio-economic development

- *Accelerate the construction of new electricity generation capacity in accordance with the IRP2010 to meet the needs of the economy and address historical imbalances.*
- *Monitor implementation of major projects such as new power stations: Medupi, Kusile and Ingula.*

SIP 10: Electricity transmission and distribution for all

- *Expand the transmission and distribution network to address historical imbalances, provide access to electricity for all and support economic development.*
- *Align the 10-year transmission plan, the services backlog, the national broadband roll-out and the freight rail line development to leverage off regulatory approvals, supply chain and project development capacity.*

6.1.11 Spatial Planning and Land Use Management Act

In 2013, land use planning was influenced by the promulgations of the Spatial Planning and Land Use Management Act (2013) (SPLUMA) which outlines a set of principles to influence spatial planning, land use management and land development. The general principles of SPLUMA are that spatial planning, land use management and land development must promote and enhance spatial justice, spatial sustainability; efficiency; spatial resilience, and good administration. Integrated Development Plans (IDP) and Spatial Development Frameworks (SDF) are the key planning instruments used by municipalities for new developments (whether residential or commercial). Across the country all municipal operations are governed by the Municipal Systems Act (Act No. 32 of 2000). This Act stipulates that all municipalities must prepare and implement an IDP for their area of jurisdiction, which should include an SDF. The IDP and SDF are reviewed annually to accommodate new priorities or to maintain existing ones.

The IDP is a tool for municipal planning and budgeting to enable them to deliberate on developmental issues identified by communities. Each IDP should have a 5-year lifespan that is linked directly to the term of office for local councillors.

The purpose of the SDF as a land use management tool is to plan, direct and control development but it does not provide land use rights. It provides the necessary guidance for land uses at local level to ensure the application of the development principles of sustainability, integration, equality, efficiency and fair and good governance in order to create quality of living, investor confidence and security of tenure.

6.1.12 Renewable Energy Development Zones (REDZ) and Power Corridors

The Renewable Energy Development Zones (hereinafter referred to as “REDZ”) are zones that have been identified by the Department of Environmental Affairs (now referred to as the “DFFE”) in consultation with an Independent Professional Team, which comprised of Visual, Bird, Bat, Biodiversity, Socio-Economic, Archaeological, Palaeontological and Freshwater Consultants and who provided inputs to identify these REDZs.

These Renewable Energy Development Zones and Power Corridors are geographical areas where wind and solar Photovoltaic technologies can be incentivized and where ‘deep’ grid expansion can be directed and where regulatory processes will be streamlined.

The REDZs act as energy generation hubs and provide anchor points for grid expansion thereby allowing for strategic and proactive expansion of grid into these areas. This will ensure that the grid expansion does not hamper the progress of the renewable energy power purchase agreement process.

The REDZs and Power Corridors support 2 of the 18 Strategic Integrated Projects (SIPs) which were identified in the Infrastructure Development Plan which is aimed at promoting catalytic infrastructure development to stimulate economic growth and job creation.

To ensure that when required, environmental authorisations are not a cause for delay, the then, Department of Environmental Affairs (DEA) embarked on a program of Strategic Environmental Assessments (SEAs) for large-scale developments to support the SIPs. The intention of undertaking Strategic Environmental Assessments is to pre-assess environmental sensitivities within the proposed development areas at a regional scale to simplify the site-specific Environmental Impact Assessments (EIA) when they are undertaken, and to focus the assessment requirements to addressing the specific sensitivity of the site.

The REDZs and Power Corridors were identified through the development of 3 Strategic Environmental Assessments as part of the Departments Strategic Environmental Assessment programme. The outputs of these 3 SEAs must now be gazetted to allow them to be implemented.

The outputs of the SEAs directly relate to several government priorities including:

- Contributing to reducing present current energy constraints by facilitating renewable energy development in strategic areas in South Africa;
- Addressing the major objectives of the National Development Plan, namely transitioning to a low carbon economy, developing infrastructure to create jobs and reducing the regulatory burden and the cost of doing business;
- Contributing to achieving the renewable energy target identified in the Integrated Resource Plan and implementing the renewable energy independent power producers program (REI4P) implemented by the Department of Energy and National Treasury;
- Promoting the green economy and sustainable development; and
- Promoting intergovernmental coordination and integrated authorisations

The outcome of the gazetting process means that wind and solar PV activities within the 8 Renewable Development Zones and electricity grid expansion within the 5 Power Corridors will be subjected to a Basic Assessment and not a full EIA process.

This reduces the review and decision-making time and the level of assessment required for each project based on the fact that scoping level pre-assessment was already undertaken in those areas. From an application for Environmental Authorisation taking 300 days, it will now be completed in 147 days.

REDZs[5] refer to geographical areas where wind and solar PV development can occur in concentrated zones, which will lead to:

- a reduction of negative environmental consequences;
- alignment of authorisation and approval processes;
- attractive incentives; and
- focused expansion of the South African electricity grid.

Cabinet further stated that the REDZs will, among others, accelerate infrastructure development and contribute to creating a "predictable regulatory framework that reduces bureaucracy related to the cost of compliance".

The Council for Scientific and Industrial Research (CSIR) identified the following eight geographic areas for REDZ following a Strategic Environmental Assessment (SEA):

2.1 ***[5] Information sourced from:*** ***https://www.cliffedekkerhofmeyr.com/en/news/publications/2016/projects/projects-and-infrastructure-alert-25-february-renewable-energy-development-zones.html***

NAME	SIZE	PROVINCE
Overberg	5 263 km²	Western Cape
Komsberg	8 846 km²	Western Cape
Cookhouse	7 366 km²	Eastern Cape
Stormberg	12 041 km²	Eastern Cape
Kimberley	9 568 km²	Free State & Northern Cape
Vryburg	9 204 km²	North West
Upington	12 833 km²	Northern Cape
Springbok	15 214 km²	Northern Cape
Total	**80 335 km²**	

Currently one of the greatest challenges of South African renewable energy development is constraints on grid infrastructure, and the resulting timelines for and costs of grid expansion. The REDZs are anticipated to aid the future bidding rounds of the Renewable Energy Independent Power Producer Procurement Programme (REIPPPP) by allowing for focused grid development and an alignment of approval processes in the REDZs. To date the REIPPPP has led to the procurement of 7000 MW of renewable capacity across 92 projects.

The REDZs were gazetted on 16 February 2018 (No. 41445, Notice 114, page 92-96) stating the following:

1. The Strategic Environmental Assessment for Wind and Solar Photovoltaic Energy in South Africa, 2015 has identified 8 Renewable Energy Development Zones (REDZs) that are of strategic importance for large scale wind and solar photovoltaic energy development, including the rollout of its supporting transmission and distribution infrastructure, in terms of Strategic Integrated Project 8: Green Enemy in Support of the South African Economy.
2. On 17 February 2016, Cabinet approved, amongst others, tie Renewable Energy Development Zones (REDZs) contained in this Notice, which are of strategic importance for large scale wind and/or solar photovoltaic energy development and an integrated decision-making process for applications for environmental authorisation in terms of the National Environmental Management Act, 1998.
3. Applications for environmental authorisation for large scale wind or solar photovoltaic energy facilities, such facilities trigger activity I of Environmental Impact Assessment Regulations Listing Notice 2 of 2014 and any other fisted and specified activities necessary for the realisation of such facilities, and where the entire proposed facility is to occur in such Renewable Energy Development Zones (REDZs), must follow the basic assessment procedure contemplated in Regulation 19 and 20 of the Impact Assessment Regulations, 2014, in order to obtain environmental authorisation as required in terms of the Act.
4. The timeframe for decision-making as contained in the Environmental Impact Assessment Regulations, 2014 for purposes of the applications for environmental authorisation contemplated in this Notice is 57 days.
5. Applications for environmental authorisation large scale wind or solar photovoltaic energy facilities, if being applied for outside of any Renewable Energy Development Zone, will be considered in line with the requirements as prescribed in terms of the Environmental Impact Assessment Regulations, 2014.
6. If any part of the facilities contemplated in this Notice falls outside a Renewable Energy Development Zone contemplated in this Notice, the requirements as prescribed in terms of the Environmental Impact Assessment Regulations, 20141 apply.
7. Renewable Energy Development Zones (REDZs) compiled in terms of section 24(3) of the National Environmental Management Act 1998 and the applicability of each REDZ for purposes of this Notice, are as follows:

Renewable Energy Development Zone Number	***Name***	***Applicability of REDZ***
Renewable energy development zone 1	*Overberg*	*Large scale wind and solar photovoltaic energy facilities*
Renewable energy development zone 2	*Komsberg*	*Large scale wind and solar photovoltaic energy facilities*

Renewable energy development zone 3	*Cookhouse*	*Large scale wind and solar photovoltaic energy facilities*
Renewable energy development zone 4	*Stormberg*	*Large scale wind and solar photovoltaic energy facilities*
Renewable energy development zone 5	*Kimberly*	*Large scale wind and solar photovoltaic energy facilities*
Renewable energy development zone 6	*Vryburg*	*Large scale wind and solar photovoltaic energy facilities*
Renewable energy development zone 7	*Upington*	*Large scale wind and solar photovoltaic energy facilities*
Renewable energy development zone 8	*Springbok*	*Large scale wind and solar photovoltaic energy facilities*

The project area for the proposed Good Hope OHPL and substation **are located** within the Kimberly REDZ and Central Transmission Corridor (see **Figure 10**). The proposed Good Hope OPHL is also located within the gazetted Central Strategic Transmission Corridor (**Figure 11**).

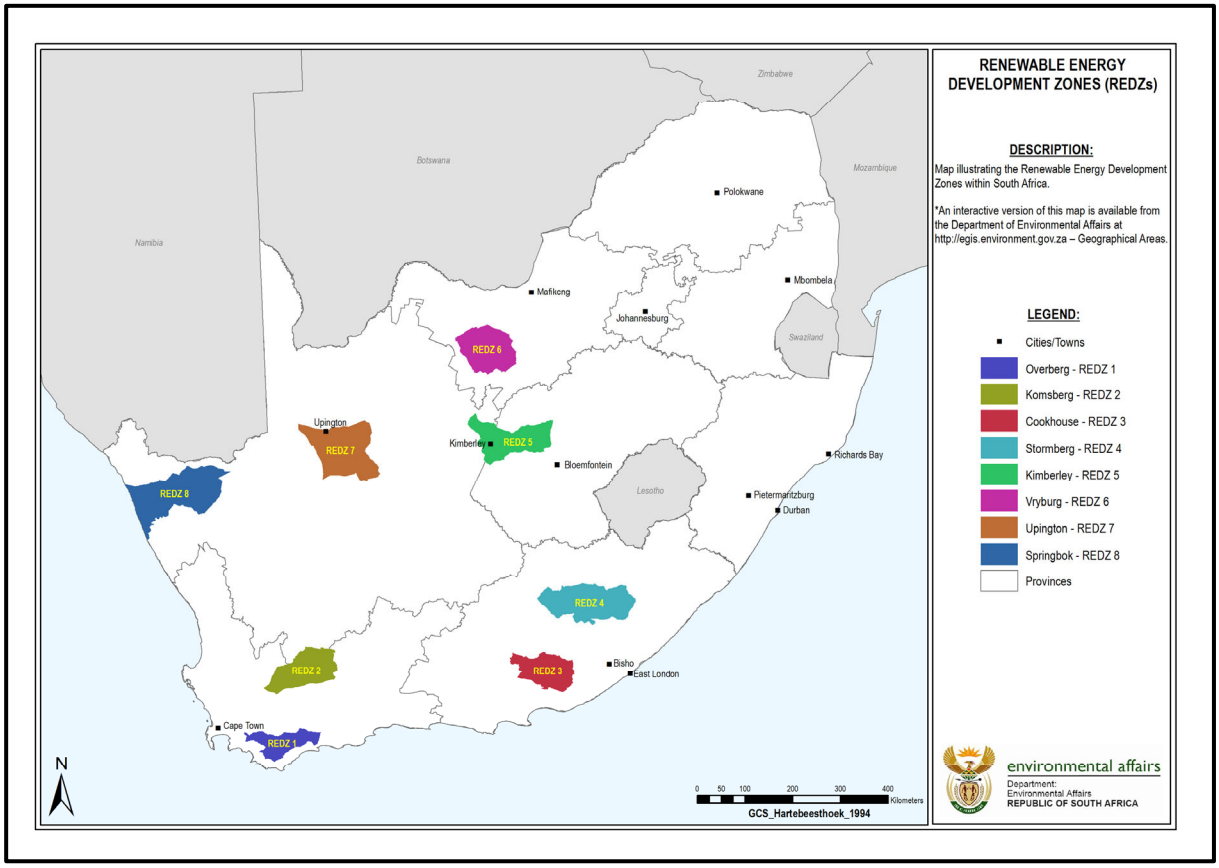


Figure 10: Location of Renewable Development Zones. This project falls within the Kimberly REDZs (REDZ 5)

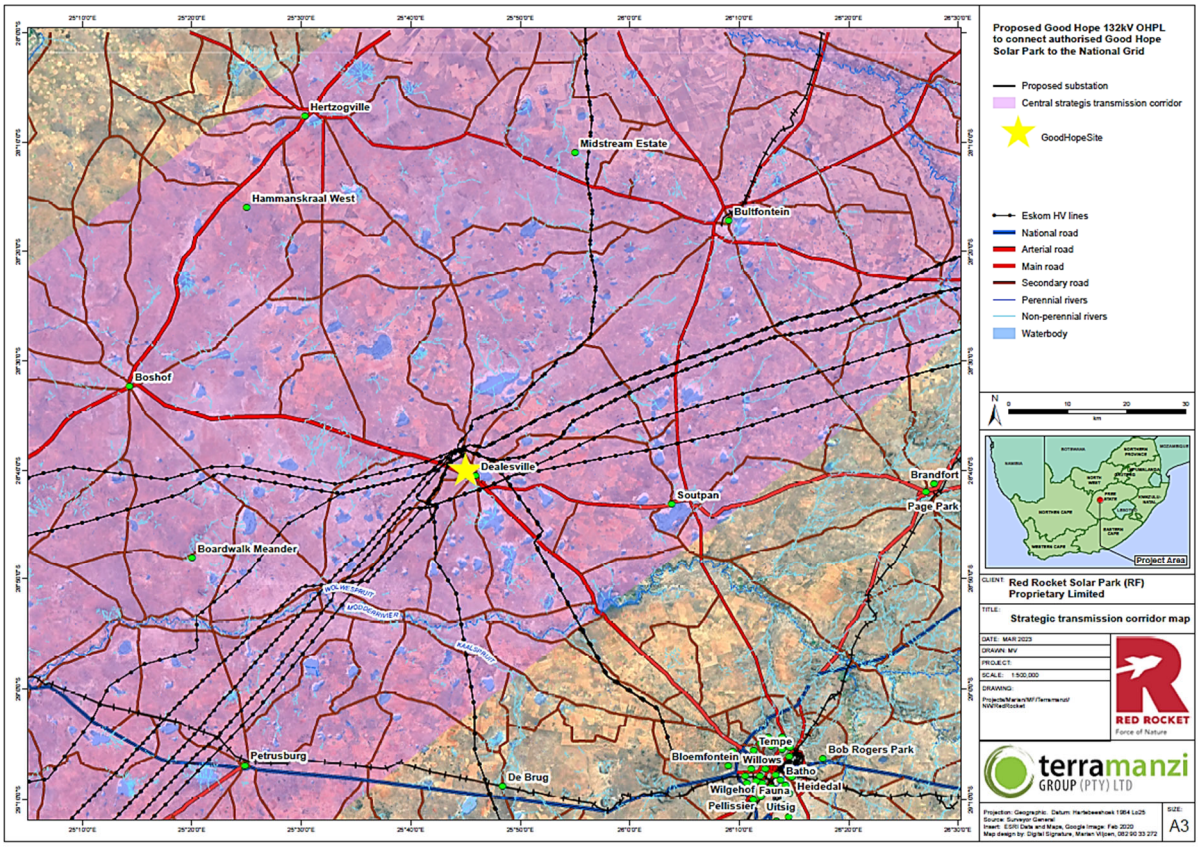


Figure 11: Strategic transmission corridor (Central Corridor) in which the proposed development is situated

6.2 PROVINCIAL LEVEL POLICY AND PLANNING

6.2.1 Free State Green Economy Strategy

The Green Economy Strategy for Free State Province (2014) was developed in alignment with the national green economy strategy elaborated in the National Green Economy Framework and Green Economy Accord, as well the Free State Provincial Growth and Development Strategy. The development process was spearheaded by the Department of Economic Development, Tourism and Environmental Affairs (DETEA).

The objective was to develop a green economy strategy to assist the province to, amongst others, improve environmental quality and economic growth, and to develop green industries and energy efficiency within the province.

The proposed Good Hope OHPL and substation development will support the Good Hope PVSEF which will be a key contributor to the goal of energy efficiency and green industry whilst promoting economic growth and is therefore in support of the Free State Green Economy Strategy and Climate Change Response Plan.

6.2.2 Free State Investment Prospectus

The Free State Investment Prospectus (2019) identifies the development of renewable energy as a key sector. The prospectus states that opportunities are opening up in the Province for the energy sector, including renewable energy. Rezoning for the development of multiple solar PV energy facilities has already been undertaken in the province. The development of a Solar Park in the Xhariep region is seen as a driver of growth along the banks of the Orange River.

Considering the future opportunities available for the development of renewable energy facilities (including solar PV facilities) the operation of the environmentally authorised Good Hope PVSEF and proposed Good Hope OHPL and substation are in-line with the Investment Prospectus of the Free State.

6.3 DISTRICT AND LOCAL POLICY AND PLANNING ENVIRONMENT

6.3.1 Tokologo Municipality Integrated Development Plan

The vision of the Tokologo Local Municipality (LM) is "A progressive municipality, which through cooperative governance creates conditions for economic growth social development and meet the basic needs of the community and improve the quality of life of all residents". The supporting mission statement is the Tokologo LM is committed to providing a better life for all residents within its area of jurisdiction through:

- Creating conditions for economic growth and sustainability.
- Improving access to basic services.
- Promoting social upliftment through improved education, skills development, and job opportunities.
- Ensuring cooperative, transparent, and democratic governance through community participation and involvement.
- Create a healthy and safe environment.
- Improving sport and recreation facilities.

The IDP lists 6 Key Performance Areas (KPAs), namely:

- KPA 1: Spatial Planning and Land Use Management.
- KPA 2: Basic Services and Infrastructure.
- KPA 3: Local Economic Development.
- KPA 4: Municipal Transformation and Organisational Development.
- KPA 5: Financial Viability and Management.
- KPA 6: Good Governance and Public Participation.

KPA 2 and 3 are relevant to the proposed development.

KPA 2: Basic Services and Infrastructure

The goal is sustainable municipal infrastructure and social services, consistently maintaining and improving the needs of the community of Tokologo. Community recreation is identified as a priority with the objective of providing recreational facilities to all residents. Basic services and infrastructure can benefit from SED contributions associated with the project.

KPA 3: Local Economic Development

The goal is to create and facilitate a conducive environment that builds inclusive local economies, sustainable employment and eradicate poverty. Attracting investment and agrarian reform are identified as priorities with the objective of create enabling environment for investment and establishing viable agri-villages and parks. Some of these initiatives can benefit from SED contributions associated with the project.

A SWOT analysis undertaken as part of the IDP identifies several challenges and opportunities that have a bearing on the needs assessment. These include:

Challenges

- Lack of funding for projects.
- Lack of recreational facilities in township areas.

The initiatives identified to address these challenges include:

- Attracting investors for economic development.
- Develop comprehensive Infrastructure Plan for sports facilities.

Opportunities

- Development of renewable energy facilities.
- Development of large commonages located the main towns in the TLM.
- Development of tourism related accommodation, including caravan park/s.
- Development of private game-farming and farms.
- War museum and heritage sites in Boshof.
- Salt pan at Dealesville.

Of relevance the initiatives identified to support these opportunities include:

- Support renewal energy projects.
- Promote growth of emerging farmers.
- Promote and support tourism.

In terms of key focus areas, the IDP lists several critical focus issues, including:

- Creation of employment opportunities.
- Provision and maintenance of safe and well-maintained sport and recreational facilities.

The IDP also lists the priority needs for each ward identified as part of the community engagement process. The key needs identified in Ward 1 that could benefit from SED contributions associated with the project include:

- Provision of public toilets.
- High mast lights.
- Cleaning of graveyard.
- Upgrading of Sport facility.
- Extension of community library.
- Establishment of a youth centre.

Section 13.1.3 of the IDP provides an overview and summary of the spatial development proposals for Dealesville. The section notes that the town is surrounded by several large wetland pans many of which are being mined for salt. There is a large mine on the pan that immediately abuts the town.

In terms of the proposals for Dealesville that could be supported by SED contributions, the following are listed in the IDP:

- Housing developments to the north of Dealesville that aids integrating between Tswaraganang with Dealesville.
- The low-cost housing development in Tswaraganang currently depends on the bucket system for sanitation and needs to be up graded.
- Information signage at the entrances to the town.
- The existing sport and recreational node should also be formalised and upgraded.
- High masts needed for the open space located between the Andries Pretorius Road and the road leading to Bultfontein as most of the community in Dealesville commute by foot. These high masts can be beneficial on the short term and long term as this Public Open Space is already earmarked for housing developments.

The IDP refers to the LDM Spatial Development Framework, which notes that the solar energy projects at Dealesville and Boshof should be promoted to expand into a solar energy hub for the southwestern part of the district. The towns are indicated as solar energy nodes on the district SDF map.

6.4 OTHER LEGISLATION AND POLICIES

Title of legislation, policy or guideline	Applicability to the project	Administering Authority	Date
NATIONAL LEVEL ENVIRONMENTAL LEGISLATION			
National Environmental Management Act (Act No. 107 of 1998)	An Application for Environmental Authorization has been submitted in terms of the NEMA EIA Regulations (2014) and the relevant provisions of these Regulations have been taken into account through the compilation of this Report and the assessment of the Application by the Independent EAP.	Department of Environmental Affairs (DEA)	1998
Regulations in terms of Chapter 5 of the NEMA, 1998. (NEMA EIA Regulations 2014, as amended)	An Application for Environmental Authorization has been submitted in terms of the NEMA EIA Regulations (2014, as amended) and the relevant provisions of these Regulations have been taken into account through the compilation of this Report and the assessment of the Application by the Independent EAP.	DEA	2014 (as amended in April 2017)
National Water Act (Act No. 36 of 1998)	A WULA will be submitted to the Department of Water and Sanitation (DWS) in terms of the NWA.	DWS	1998
National Heritage Act (Act No. 25 of 1999)	An NID will be submitted to SAHRA.	SAHRA	1999
Civil Aviation Act (Act No. 13 Of 2009)	Comment from the South African Civil Aviation Authority (SACAA) and the South African Air Force (SAAF) will be sort as the Project could potentially affect the operations of the above Authorities.	SACAA and SAAF	2009
NATIONAL LEVEL ENERGY POLICY AND LEGISLATION			
National Energy Act (Act No 34 of 2008)	The proposed Project is for the establishment of an overhead powerline that will be connected to a Wind Energy Facility which is a renewable resource Project, which this Act makes direct	DoE	2008

	reference to. Please refer to Section 6.3.2 below.		
White Paper on the Energy Policy of the Republic of South Africa	The proposed Project will facilitate the generation and use of electricity and therefore this Policy refers. Please refer to Section 6.3 below.	DoE	1998
White Paper on Renewable Energy	The proposed Project is for the establishment of an overhead powerline that will be connected to a Wind Energy Facility which is a renewable resource Project. Please refer to Section 6.3 below.	DoE	2003
National Integrated Resource Plan for Electricity (2010-2030)	The proposed Project is for the establishment of an overhead powerline that will be connected to a Wind Energy Facility, which will involve the generation and use of electricity in a sustainable manner. Please refer to Section 6.3 below.	DoE	2011
National Development Plan (NDP)	The proposed Project aims at enhancing economic growth, which the NDP is striving towards. Please refer to Section 6.3.6 below.	DFFE	2013
National Infrastructure Plan	The proposed Project aims at enhancing economic growth, which the NIP is also striving towards. Please refer to Section 6.3.7 below.	DFFE	2012

Title of legislation, policy or guideline	Applicability to the project	Administering Authority	Date
PROVINCIAL LEVEL POLICY AND PLANNING			
Land Use Planning Ordinance, 1978	Consent use is required from the Landowners on which the Wind Energy Facility is proposed to be established.	Local Municipality	1978
Environmental Impact Assessment Guideline for Renewable Energy Projects	These guidelines have been considered to ensure that the environmental management legal framework applicable to renewable energy operations and all the role players in the sector have been appropriately actioned.	DFFE	2015
DEA Guideline Document: Guideline on Public Participation, August 2010	The public participation process, summarized in Section C of this report, has been undertaken in accordance with this guideline.	DFFE	2010
DEA Guideline on Need and Desirability, April 2017	The approach to alternatives which has been adopted in this process is consistent with this guideline.	DFFE	2017

6.5 KEY AUTHORITIES FOR THIS ENVIRONMENTAL APPLICATION

Based on a review of the applicable statutory permitting requirements, the following Authorities will form the key decision makers for the Project:

- The National Department of Forestry, Fisheries and Environment ("DFFE")

- The National Department of Water and Sanitation ("DWS") - Water, Wetland and Wet Areas
- Tokologo Local Municipality
- Lejweleputswa District Municipality
- National Department of Fisheries, Forestry and Agriculture ("DAFF") - Agricultural
- Provincial Department of Agriculture ("DoA") - Agriculture
- South Africa Heritage Resource Association ("SAHRA") - Heritage
- Civil Aviation Authority ("SACAA") - Aviation
- South African Air Force ("SAAF") - Aviation
- National Department of Energy (DOE)

6.6 INTERNATIONAL STANDARDS

6.6.1 International Finance Corporation Performance Standards

The Applicant is committed to complying with the International Finance Corporation (IFC) Performance Standards (PS) on social and environmental sustainability. These were developed by the IFC and were last updated on 1st January 2012.

The overall objectives of the IFC PS are:

- *To fight poverty;*
- *To do no harm to people or the environment;*
- *To fight climate change by promoting low carbon development;*
- *To respect human rights;*
- *To promote gender equity;*
- *To provide information prior to project development, free of charge and free of external manipulation;*
- *To collaborate with the project developer to achieve the PS;*
- *To provide advisory services; and*
- *To notify countries of any Transboundary impacts as a result of a Project.*

The PS comprise of eight performance standards, namely:

- *Performance Standard 1: Assessment and Management of Environmental and Social Risks and Impacts;*
- *Performance Standard 2: Labour and Working Conditions;*
- *Performance Standard 3: Resource Efficiency and Pollution Prevention;*
- *Performance Standard 4: Community Health, Safety and Security;*
- *Performance Standard 5: Land Acquisition and Involuntary Resettlement;*
- *Performance Standard 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources;*
- *Performance Standard 7: Indigenous Peoples; and*
- *Performance Standard 8: Cultural Heritage.*

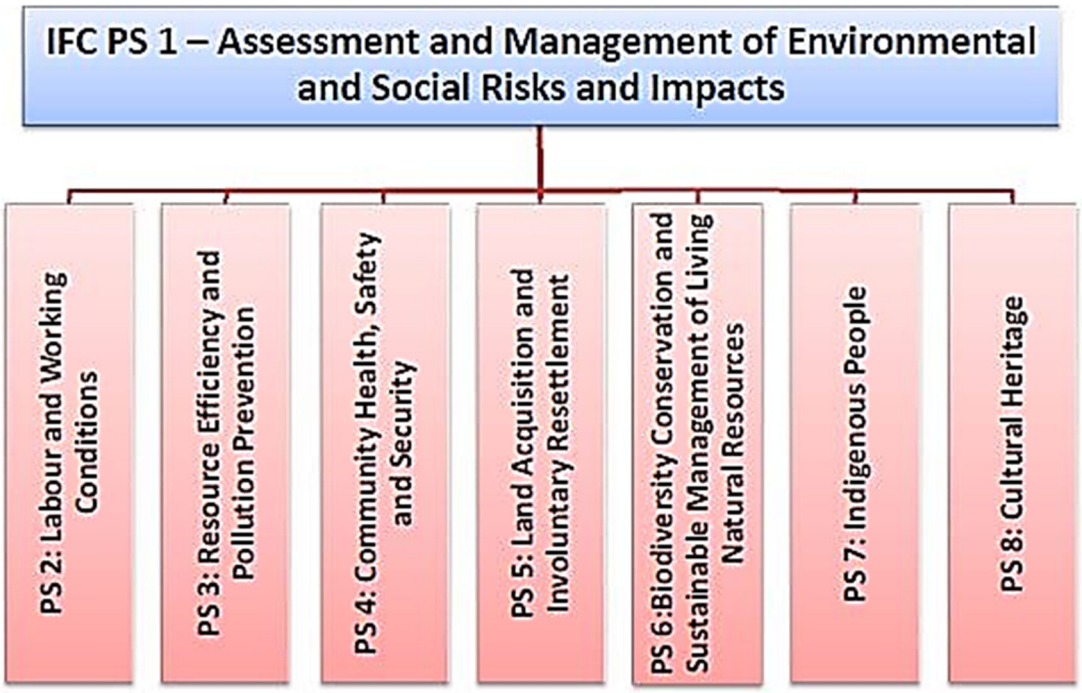


Figure 12: PS Framework as extracted from the International Finance Corporation (IFC) Performance Standards (PS)

The PS framework is presented above.

Performance Standard 1 establishes the importance of:

i. integrated assessment to identify the social and environmental impacts, risks, and opportunities of projects;
ii. effective community engagement through disclosure of project-related information and consultation with local communities on matters that directly affect them; and
iii. the management of social and environmental performance throughout the life of a project through an effective Environmental and Social Management System (ESMS).

PS 1 is the overarching standard to which all the other standards relate. The ESMS should be designed to incorporate the aspects of PS 2 to 8 as applicable.

Performance Standards 2 through to 8 establish specific requirements to avoid, reduce, mitigate or compensate for impacts on people and the environment, and to improve conditions where appropriate. While all relevant social and environmental risks and potential impacts should be considered as part of the assessment, Performance Standards 2 through 8 describe potential social and environmental impacts that require particular attention in emerging markets. Where social or environmental impacts are anticipated, the developer is required to manage them through its Social and Environmental Management System consistent with Performance Standard 1.

6.6.2 Equator Principles

The Equator Principles (EPs) is a credit risk management framework for determining, assessing, and managing environmental and social risk in Project Finance transactions. Project Finance is often used to fund the development and construction of major infrastructure and industrial projects. The EPs are adopted by financial

institutions and are applied where total project capital costs exceed US$10 million. The EPs are primarily intended to provide a minimum standard for due diligence to support responsible risk decision-making.

The EPs are based on the IFC PS 2012 and on the World Bank Group Environmental, Health and Safety Guidelines (EHS Guidelines).

The Equator Principles Financial Institutions (EPFIs) have consequently adopted these Principles in order to ensure that the projects they finance are developed in a manner that is socially responsible and reflect sound environmental management practices.

EPFIs will only provide loans to projects that conform to the following principles:

- Principle 1: Review and Categorisation;
- Principle 2: Social and Environmental Assessment;
- Principle 3: Applicable Social and Environmental Standards;
- Principle 4: Action plan and Management;
- Principle 5: Consultation and Disclosure;
- Principle 6: Grievance Mechanism;
- Principle 7: Independent review;
- Principle 8: Covenants;
- Principle 9: Independent Monitoring and Reporting; and
- Principle 10: EPFI Reporting

6.6.3 The World Bank Group Environmental Health and Safety (EHS) Guidelines

The EHS Guidelines (World Bank Group, 2007) are technical reference documents with general and industry specific (i.e., mining) examples of Good International Industry Practice (GIIP). Reference to the EHS guidelines is required under IFC PS 3.

The EHS Guidelines contain the performance levels and measures normally acceptable to the IFC and are generally considered to be achievable in new facilities at reasonable cost. When host country regulations differ from the levels and measures presented in the EHS Guidelines, Projects are expected to achieve whichever standard is more stringent.

This Basic Assessment Report is broadly aligned with the various Standards

7. MOTIVATION FOR NEED AND DESIRABILITY FOR THE PROPOSED ACTIVITY

*In accordance with **Appendix 1 Regulation 3(f) of GN R.326 of the NEMA EIA Regulations (2014, as amended)**: the following information is presented in Section 6*

- *A motivation for the need and desirability for the proposed development including the need and desirability of the activity in context of the preferred location.*

This section outlines the purpose of considering the activity "need" and "desirability" in accordance with the National Environmental Management Principles in terms of NEMA which serve as a guide for the interpretation, administration and implementation of NEMA and the NEMA EIA Regulations (2014, as amended).

7.1 LEGISLATIVE FRAMEWORK

The National Environmental Management Principles specifically require, *inter alia,* the following:

- *"Environmental Management must place people and their needs at the forefront of its concern and equitably serve their interests;*
- *"Environmental Management must be integrated, acknowledging that all elements of the environment are linked and interrelated, and it must take into account the effects of decisions on all aspects of the environment and all people in the environment by pursuing the selection of the best practicable environmental option;*
- *"Environmental justice must be pursued so that adverse environmental impacts shall not be distributed in such a manner as to unfairly discriminate against any person; and*
- *"Decisions must take into account the interests, needs and values of all interested and affected parties;*
- *"The Environment is held in public trust for the people, the beneficial use of environmental resources must serve the public interest and the environment must be protected as the people's common heritage."*

Need and Desirability must thus be considered in the context of **sustainable development** which is underpinned by social, economic, and environmental considerations and takes a long-term strategic view to environmental management.

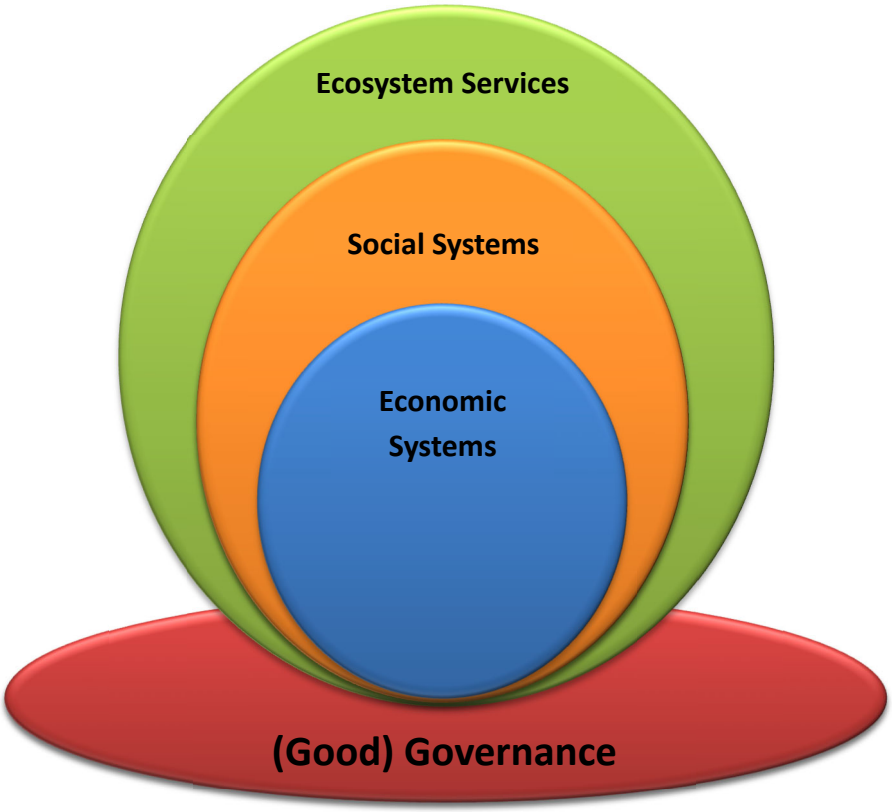
This Basic Assessment Report considers the need and desirability of the project pursuant to the requisite legislation and policies at a local, regional and national level. Furthermore, the entire report and its corresponding specialist assessments take cognizance of all applicable legislation and plans for the area.

7.2 SUSTAINABLE DEVELOPMENT

Sustainable development is best summarised by an extract from the United Nations World Commission on Environment and Development and reads as follows:

"*Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own need. As such it requires the promotion of values that encourage consumption standards that are within the bounds of the ecologically possible and to which all could reasonably aspire.*" (Our Common Future, WCED, 1987).[6]

[6] *United Nations. 1987."Report of the World Commission on Environment and Development." General Assembly Resolution 42/187, 11 December 1987*



The widely accepted inter-dependence model of sustainability recognises that social and economic systems **have never been and can never be independent of the natural system**.

This model further supports the belief that **interactions** between and within component systems will result in **feedback** throughout the system.

Endorsed by the National DEA (Mebratu, 1998)

It is thus important that the BAR carefully considers and assesses the broad principles of sustainable development to clearly demonstrate the need and desirability of the proposed activity in the context of NEMA.

7.3 NATIONAL NEED AND DESIRABILITY OF PROPOSED OVERHEAD POWERLINE

The National Development Plan (NDP) (see section 5.1.9) recognises that the South African economy is "electricity intensive" and needs greater power generation capacity to avoid energy crises such as the one experienced in 2008 and to ensure long-term economic growth and development. It therefore promotes the development of additional energy facilities to ensure that sufficient electricity is supplied to the national grid to meet the country's demand.

Coupled with the need for a greater energy supply is the exigency to rely on cleaner energy resources. Eskom's *Coal Report* makes the following observation: "Air pollution caused by Eskom's coal power stations in two provinces is killing at least 20 people a year and could jump to 617, with 25 000 people hospitalised, once all its stations are up and running. These would include the giant Medupi and Kusile power stations in Mpumalanga and Limpopo."[7]

In an increasingly carbon constrained world already facing climate change impacts, South Africa has to reduce greenhouse gas emission intensity decidedly and soon.[8] To this end, managing the transition towards a low

[7] *http://mg.co.za/article/2014-06-19-power-stations-are-deadly-internal-report-reveals*
http://www.iol.co.za/business/companies/eskom-pollution-is-now-major-issue-1.1814603
http://earthlife.org.za/2015/02/joint-media-release-another-five-years-of-toxic-pollution-by-eskom/
http://www.news24.com/Green/News/Eskom-coal-is-a-killer-new-study-says-20140702
[8] Pegels, A (2010) *Renewable Energy in South Africa: Potentials, barriers and options for support*

carbon national economy is identified as one of the nine key national challenges in the NDP. Furthermore, with imminent carbon fines and ever decreasing coal reserves, the economic risk of relying on fossil fuels continues to rise. Investment in renewable energy and energy efficiency is therefore paramount in reducing the negative economic, social and environmental impacts of energy production and consumption in South Africa.[9]

Readily available renewable energy sources are thus a viable solution to reconcile essential economic development with the need to keep carbon emissions in check.[10] Wind as an energy source is only practical in areas that have strong and steady winds. South Africa has considerable wind potential, especially along the coastal areas of Western and Eastern Cape.[11]

South Africa has considerable solar potential in the Free State, especially around Kimberly where Direct Normal Irradiation (DNI) and Global Horizontal Irradiation (GHI) levels are high. [12] The authorised Good Hope PVSEF is within this area of high solar energy potential.

Essential to improving the country's electricity supply is improved access to renewable sources of energy. The NDP identifies the need for South Africa to invest in a strong network of economic infrastructure designed to support the country's medium- and long-term economic and social objectives. The NDP prioritises 'improvements to infrastructure' to ensure increased access to electricity and a 'transition to a low-carbon economy.' A critical component is energy infrastructure, which underpins all economic activity and facilitates growth. The NDP requires the development of 10,000 MWs of additional electricity capacity by 2025.

The NDP recognises that "emissions of carbon dioxide and other greenhouse gases are changing the earth's climate, potentially imposing a significant global cost that will fall disproportionately on the poor." As such, it calls for the production of sufficient energy to support industry at competitive prices, ensuring access for poor households, while reducing carbon emissions per unit of power by about one-third. Essential to this goal is improving access to renewable sources of energy.

The National Infrastructure Plan (2012) (NIP) intends to transform South Africa's economic landscape and strengthen the delivery of basic services, while simultaneously creating significant numbers of new jobs. Eighteen Strategic Integrated Projects (SIPs) have been developed and approved in terms of the NIP to support these goals. SIP 8 supports sustainable green energy initiatives on a national scale through the generation of clean energy and the construction of renewable energy facilities. SIP 9 looks to enhance socio-economic development through the construction of greater electricity generation capacity.

The Integrated Resource Plan for Electricity (2010) (IRP) foresees a near-doubling of electricity capacity by 2030, with 33% of new generation coming from renewable sources. The *New Growth Path* recognises that this sectoral growth can translate into job creation opportunities in the green economy.

The National Energy Regulator of Souths Africa[13] ("NERSA") established the Renewable Energy Feed-in Tariff[14] ("REFIT") programme to ensure that South Africa could establish an ongoing, ever-increasing deployment of renewable energy resources for the country and safeguard the sustained growth of the renewable sector for the country and internationally. The Feed-in-Tariff (FIT) ensures that definite prices for electricity supply are implemented instead of the conventional consumer tariffs. The main reason why the REFIT programme was implemented is due to the fact that capital cost related with construction and development of renewable energy

[9] Winkler, H (2005) *Renewable Energy Policy in South Africa: Policy options for renewable electricity*
[10] Deichamnn et al. (2011) *The economics of renewable energy expansion in rural Sub-saharan Africa*
[11] Department of Energy (http://www.energy.gov.za/files/esources/renewables/r_wind.html)
[12] *http://www.energy.org.za/news/158-new-solar-resource-maps-for-south-africa*
[13] http://www.nersa.org.za/
[14] http://www.nersa.org.za/Admin/Document/Editor/file/Electricity/REFIT%20Phase%20II%20150709.pdf

facilities is much larger than the equivalent costs related to the expansion and/or continued use of plants that use fossil fuels for energy production. The REFIT, one single tariff had been discussed to introduce during 2009 – 2011, but then the DoE / the government switched to the auction model whereas the developers have to compete with their projects for an amount of Renewable Energy they may deliver to the grid, based on kWh – price, local content of project, social and community involvement etc.

The establishment of the REFIT tariff aimed at ensuring that this tariff would be able to ensure the costs of the renewable energy facilities as well as the Developer could potentially receive a net gain and reasonable return from establishing such facility within South Africa. This encourages Developers to rather invest and establish renewable energy facilities as opposed to "common" fossil fuel type energy facilities.

In conclusion, the construction of the proposed overhead powerline contributes to South Africa's overarching goal of sustainable development through promoting a greener economy, improving access to critical resources and developing a greater network of essential infrastructure in places where it is most needed.

7.4 REGIONAL NEED AND DESIRABILITY OF PROPOSED OVERHEAD POWERLINE

On 09 October 2009, the Department of Energy (DoE) signed a Memorandum of Understanding (MoU) with the Clinton Climate Initiative (CCI) to compile a pre-feasibility study, which would assess the potential of developing one or more Solar Parks in South Africa. The collaboration produced a Solar Park Pre-feasibility study report which was later approved by the Department of Energy in May 2010 and later endorsed in South Africa through Cabinet Approval. In conclusion, the Report stated that solar power could be deployed in South Africa in large quantities over the next ten (10) years at costs that would be competitive [15]with coal-fired power and which would provide the country with clean and secure energy to ensure the ever-increasing demand on energy[16].
Based on numerous resources, solar photovoltaic energy generation has the potential to increase electrification rates and ease strains on the national grid in South Africa. South Africa has one of the highest global rates of annual solar radiation, averaging approximately 220 watts per square meter (W/m^2), compared with about 150 W/m^2 for parts of the United States. Within South Africa, the Free State has embarked on implementing energy efficiency strategies and renewable power generation projects (such as Good Hope PVSEF) that will contribute to advance these goals[17].

In light of the above information it is evident that the development of the proposed Good Hope OHPL and substation are required to connect the authorised Good Hope PVSEF as this will be beneficial to the greater society as the clean energy produced by the PVSEF will be connected into the National Grid.

7.5 GUIDELINES ON "NEED AND DESIRABILITY"

This Basic Assessment process has carefully considered and applied the *DEA (2017), Guideline on Need and Desirability, Department of Environmental Affairs (DEA), Pretoria, South Africa* and assessed the proposed Good Hope OHPL and substation in terms of the guidelines. Please refer to the questions below based on the Need and Desirability Guidelines, which demonstrate that the proposed overhead powerline is underpinned by the principles therein.

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[15] *Articles stating competiveness of Renewable Energy: http://www.biznews.com/energy/2015/10/06/german-energy-minister-baake-tells-sa-build-your-renewables-dump-nuclear/ and http://www.treehugger.com/renewable-energy/death-capacity-factor-how-wind-solar-ultimately-win-game.html*

[16] *This information has been sources from: http://www.cefgroup.co.za/home-solar-park/*

[17] *This information has been sources from https://www.devex.com/projects/tenders/south-africa-feasibility-study-for-the-western-cape-government-solar-pv-project/136643*

7.5.1 Need ('timing')

1. Is the land use (associated with the activity being applied for) considered within the timeframe intended by the existing approved spatial development framework (SDF) agreed to by the relevant environmental authority? (i.e., is the proposed development in line with the Projects and Programmes identified as priorities within the credible IDP).

Yes

2. Should the development, or if applicable, expansion of the town/area concerned in terms of this land use (associated with the activity being applied for) occur here at this point in time?

Yes, the Good Hope substation on 132 kV OHPL application for environmental authorisation is necessary at this time. The Good Hope PVSEF has received environmental authorisation. The OHPL will connect the Good Hope PVSEF to National Grid.

3. Does the community/area need the activity and the associated land use concerned (is it a societal priority)? This referred to the strategic as well as local level (e.g., development is a national priority, but

This is a national priority for the national and local need (See section 7.3 and 7.4).

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?

Based on the available information, it is evident that all necessary services with adequate capacity are currently available, and no additional capacity is required.

6. Is the 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)?

The Good Hope OHPL will connect the authorised Good Hope to National Grid. This OHPL will not have a significant impact on the infrastructure planning of the municipality. Accessibility is available via existing roads.

7. Is the project part of a national programme to address an issue of national concern or importance?

The Good Hope Substation and OHPL will connect the authorised Good Hope PVSEF to National Grid. This development promotes the Vision 2030 (South Africa's National Development Plan). Chapter 4 of the NDP describes the need for alternative energy supplies in South Africa "By 2030, more than 20 000 mw of renewable energy will be contracted" NDP (150: 2011).

7.5.2 Desirability ('placing')

1. Is the development the best practicable environmental option for this land/site?

Based on the available information and the impact assessments undertaken by the Professional Team, it is reasonable to suggest that the proposed alternative is the best practicable environmental option (BPEO) for the site. All Specialist recommendations and mitigation measures must be adhered to; micro-siting to take place to ensure associated OHPL infrastructure avoids sensitive areas identified. Ground surveys of the preferred route will determine optimal tower sizes and positions of OHPL structures.

2. Would the approval of this application compromise the integrity of the existing approved and credible municipal IPD and SDF as agreed to by the relevant authorities?

Based on the available information provided by the Specialists, we are of the opinion that the approval of this application would not compromise the integrity of the existing approved credible municipal IDP and SDF. All the Specialist recommendations and mitigation measures must be adhered to.

3. Would the approval of this application compromise the integrity of the existing environmental management priorities for the area (e.g. as defined in the EMFs), and if so, can it be justified in terms of sustainability considerations?

The proposed Good Hope substation and OHPL will connect the authorised Good Hope PVSEF to National Grid. No EMF is yet in place. With mitigation measures in place the proposed development, environmental management priorities of the area are unlikely to be affected; The proposed project is an essential support service to the Good Hope PVSEF contributes to the provision of sustainable energy.

4. 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 boarder context)?

The proposed Good Hope 132 kV OHPL will connect the authorised Good Hope PVSEF to National Grid. Based on the available information, the Impact Assessments undertaken by the Professional Team, the location is suitable for the Project.

The final delineation of the centreline of the overhead powerline and co-ordinates of each bend in the line will be determined following a successful EA. Ground surveys of the preferred route will determine optimal tower sizes and positions of OHPL structures.

5. How will the activity or land use associated with the activity applied for, impact on sensitive natural and cultural areas (Built and rural/natural environment)?

Based on the available information, the Assessments undertaken by the Professional Team, it is reasonable to suggest that the proposed development will have negligible impacts on the built environment and minimal impacts on the natural environment. Any impacts that proposed development is anticipated to have, will be able

to be mitigated to an acceptable level. Ground surveys of the preferred route will determine optimal tower sizes and positions of OHPL structures. In furtherance to the above the Professional Team did not identify any fatal flaws during their assessments.

6. How will the development impact on people's health and wellbeing (e.g., in terms of noise, odours, visual character and sense of place, etc.)?

Based on the available information, the Assessments undertaken by the Professional Team, it is reasonable to suggest that the proposed development will have a negligible impact on people's health and wellbeing.

7. Will the proposed activity or the land use associated with the activity applied for result in unacceptable opportunity costs?

Based on the available information, the Assessments undertaken by the Professional Team, it is reasonable to suggest that the establishment of the Good Hope substation and OHPL will not result in unacceptable opportunity costs. The project also realises a national need and priority and will contribute to a greater network of efficient electrical infrastructure and increased access to electricity.

8. Will the proposed land use result in unacceptable cumulative impacts?

Based on the available information and the Assessments undertaken by the Professional Team, it is reasonable to suggest that the establishment of proposed Good Hope substation and OHPL within the preferred site and corridor are not likely to result in unacceptable cumulative impacts.

7.5.3 Need and Desirability Conclusion

Based on the above, and the available information, it is evident, through the findings of the Professional Team and this Basic Assessment Report that the proposed development broadly meets the DEA (now DFFE) "need and desirability" criteria, and the development proposal is therefore considered, for the purposes of this application, to be acceptable in terms of these criteria.

Based on the information presented within this guideline, the proposed Good Hope OHPL and substation is aligned with the requirements of the Guidelines.

In summary, the footprint of the substation and the OHPL will be placed in acceptable areas within the site and corridor alternatives, which have been informed by the Professional Team and are summarised in Sections 7 and 9 in this Report. The Professional Team's assessments and the EAP's overall opinion is that the proposed project will *"secure ecological sustainable development and use of natural resources.*"

Further, based on the Professional Team's assessments and providing that the Applicant adheres to all the mitigation measures prescribed by the Professional Team, the proposed overhead powerline will *"promote justifiable economic and social development."*

8. SPECIALIST STUDY FINDINGS AND SUMMARY OF ENVIRONMENTAL ATTRIBUTES

*In accordance with **Appendix 1 Regulation 3(h)(iv), (m) and (k) of GN R. 326 of the NEMA EIA** Regulations (2014, as amended):*

***3(h) (iv)** – The environmental attributes associated with the alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects;*

***3(m)** - Based on the assessment, and where applicable, recommendations from specialist reports, the recording of proposed impact management objectives, and the impact management outcomes for the development for inclusion in the EMPr;*

***3(k)** - Where applicable, a summary of the findings and recommendations of any specialist report complying with Appendix 6 to these Regulations and an indication as to how these findings and recommendations have been included in the final assessment report;*

The following specialist assessments were undertaken for the BAR, as determined by the EAP, the Client and in consultation with the Competent Authority:

- Town Planning Report – Warren Petterson Trading cc
- Agricultural Impact Assessment – Francois Knight (Agri Informatics)
- Terrestrial Impact Assessment – Sean Altern (NCC Environmental Services)
- Avifaunal Impact Assessment – Luke Verbugt (Enviro-Insight cc)
- Freshwater Assessment – S van Staden (Scientific Aquatic Services)
- Archaeology and Heritage Assessment – Wouter Fourie (PGS Heritage)
- Visual Impact Assessment – Stephen Stead (Visual Resource Management Africa)
- Social Impact Assessment – Tony Barbour (Tony Barbour Environmental Consulting)
- Traffic Impact Assessment - Christoff Krogscheepers (ITS Innovative Transport Solutions)

Please note that all potential impacts have been summarised in this Section and a full Impact Assessment is depicted in Section 12 of this Report. Please note that all Specialist Reports and statements for this Draft BAR are attached in Appendix D and form part of the Basic Assessment Report for a 30-day PPP.

8.1 TOWN PLANNING ASSESSMENT

TMG, on behalf of the Applicant appointed Warren Petterson Planning (hereinafter referred to as the "Town Planning Specialist") to undertake a town planning scoping report for the Good Hope OHPL. The report provides a summary of requirements in terms of Tokologo Local Municipality: Municipal Land Use Planning By-Laws (2016), Spatial Planning and Land Use Management Act, Act 16 of 2013 and the Tokologo Municipality Zoning Certificates for the establishment of OHPL and substation. The specialist report is presented in Appendix D and the following is relevant:

8.1.1 Affected Properties

The proposed OHPL will traverse 4 land portions situated approximately 7km northeast of Vredenburg in the Saldanha Bay Local Municipality, Western Cape Province.

The proposed Good Hope OHPL will be located on:

1. Remainder of The Farm 305, Klipfontein 305 (OHPL and substation)
2. Remainder of The Farm 535, Klipkoppan 535 (OHPL)
3. The Farm 1029, Gedenksrust 1029 -Affected farm portion of Good Hope 2 PV facility (OHPL)
4. The Farm 1216, Epsom Downs 1216 - Affected farm portion of Good Hope 1 PV facility (OHPL)

There are at least 20 properties surrounding the affected properties which will not be directly affected. However, the owners and occupants may need to be consulted during the public participation phase of the Basic Assessment Process.

The Cadastral Map showing the property parcels is presented in **Figure 13**.

8.1.2 Local Context

The affected properties for the proposed OHPL and substation are zoned Agricultural in terms of the Tokologo Municipal Zoning Certificates. Since the establishment of the OHPL and substation will only require a servitude registration, no land use application will be required. However, a consent letter signed by the local authority may be required upon registration of the SG diagrams at the Surveyor General's office after which it should be endorsed on the title deed by a conveyancer at the deed's office. The registration of the servitudes will only occur once environmental authorisation is received. The width/dimensions of the servitude will be determined by an electrical engineer based on the capacity of the OHPL, the footprint of the substation and other relevant legislation / requirements.

8.1.3 Findings

The Town Planning specialist **has not identified any fatal flaws** with the project proposal, and it is reasonable to suggest that the Good Hope OHPL and substation are acceptable from a Town Planning perspective.

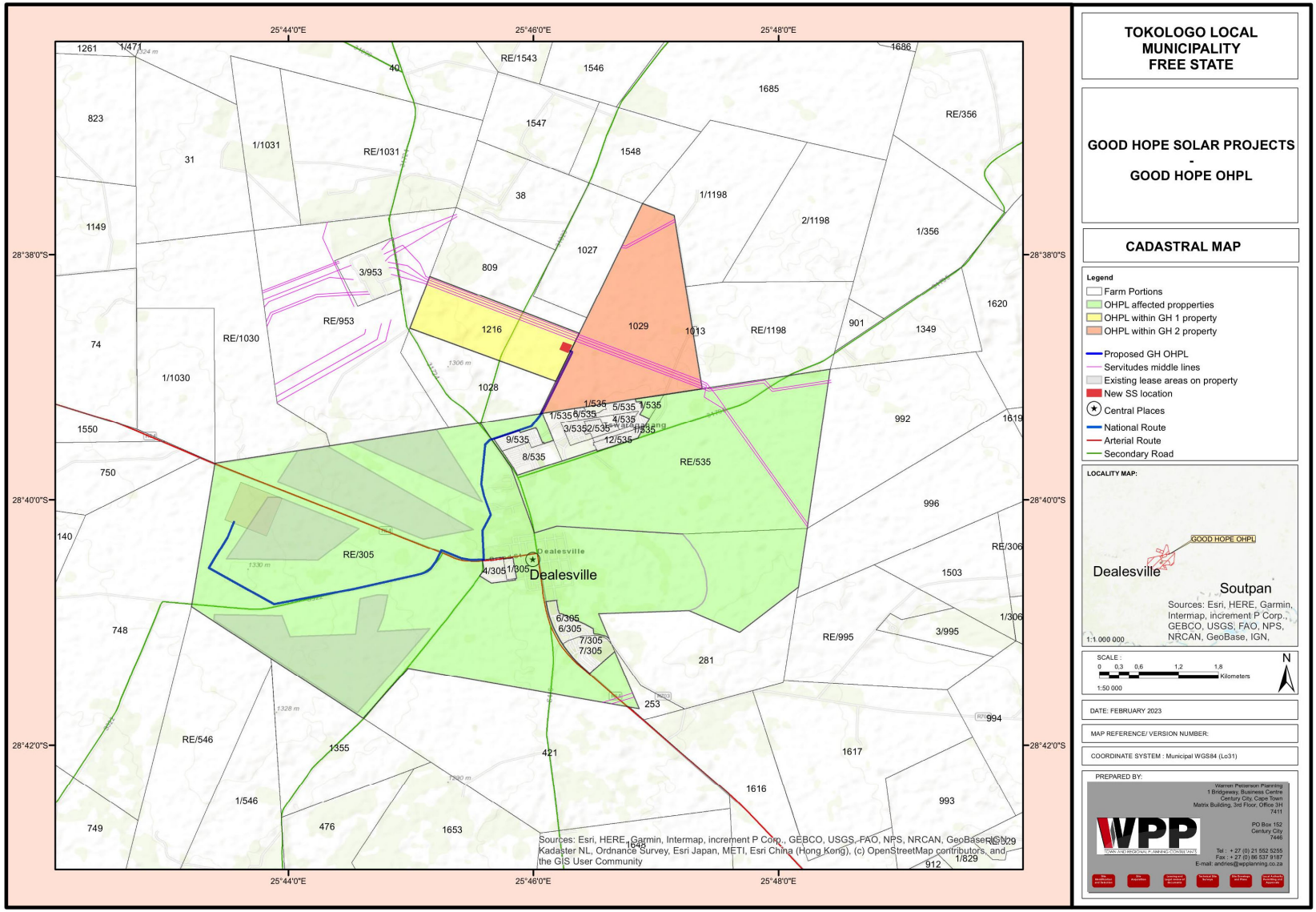

Figure 13: Cadastral Map showing directly affected properties and adjacent properties

8.2 AGRICULTURAL ASSESSMENT

TMG, on behalf of the Applicant, appointed Francois Knight of AgroInformatics (hereinafter referred to as the "Agricultural Specialist") to undertake the Agricultural Assessments for the proposed Good Hope OHPL and substation. The specialist report is presented in Appendix D and the following is relevant:

8.2.1 Current Environment Status Quo

A concise desktop assessment, supported by a field visit were conducted to define the current status quo of the study area as relating to agriculture. The following information is relevant:

Climate

At an elevation of 1270 m amsl and about 500 km from the nearest coastline, the climate is strongly continental. The mean temperature difference between hottest and coldest month is >16°C. The annual rainfall is indicated as 428 mm (Schulze, 2008) and 457 mm (NP), of which only 20% occurs during winter (April to September). Annual data shows that the average rainfall between 2012 and 2019 was below 300 mm/a. The reference evapotranspiration (ET0) is 2156 mm/a, thus almost five times the long-term average precipitation, resulting in a semi-arid aridity classification.

The warmest months are November to January with average highest maximum temperatures above 40.0°C. The coldest month is July with an average minimum temperature of -3.3°C, but temperatures below freezing occur from April to September, resulting in a frost duration of 121 days with an average of 51 frost days per year (Schulze, 2008). The mean annual wind speed is 2.6 m/s (NASA Power, 2022). Despite the low minimum winter temperatures, the positive chill units, calculated by the Linsey- Noakes model (10°C base temperature) are lower than expected at 605 degree-hours (Schulze, 2009), as higher day time temperatures subtracts from accumulated chill units.

Geology and Soils

The geology of the study area consists of shale, mudstone, siltstone and sandstone (Ecca Group) of the Permian period, in places intruded by dolerite during the Jurassic period and covered by aeolian sand during the Quaternary period.

The study area is situated over two Land Types, namely Land Type Ae46 and Land Type Db3:

- **Land Type Ae46** - These soils of are predominantly (±75%) red apedal aeolian deposits of the Hutton soil form, that varies in depth and clay content. Almost 50% is deep soils (>1200 mm) with a fine sand to loamy sand texture. A further ±23% of the soils has a higher clay content of up to 30% in the subsoil and is often less deep (600 -1200 mm). The deeper soils of this Land Type are well suited for irrigated crop production as well as dryland production, where the rainfall is sufficient to meet the water requirement of the crop.
- **Land Type Db3** – These soils are characterised by deep (> 1200 mm) pedocutanic soils on unconsolidated material (Valsrivier soil form), making up ±40% of the Land Type, with shallow (<200 mm) peducutanic soils on saprolite (Swartland soil form) on ±24% of the Land Type.

The clay content of the subsoil of both these land types is high (40 – 60%) making these soils unsuitable for crop production.

Topography and Surface Drainage

The terrain of the study area is gently undulation with slope gradients of mostly <3%. This low gradient in combination with sandy loam soils with moderately high permeability, induces low runoff, with only moderate risk for water erosion under normal rainfall events. The wider topography is characterised by concave areas in the landscape, forming inland pans, some being used for harvesting salt in the dry season.

The highest point along the trajectory of the OHPL is the crest area south of the Artemis substation at an elevation of ±1315 m amsl. The lowest point is where the OHPL cross the drainage line northwest of the town of Dealesville, at an elevation of 1250 m amsl. The blue arrows in **Figure 14** indicates the direction of surface drainage.

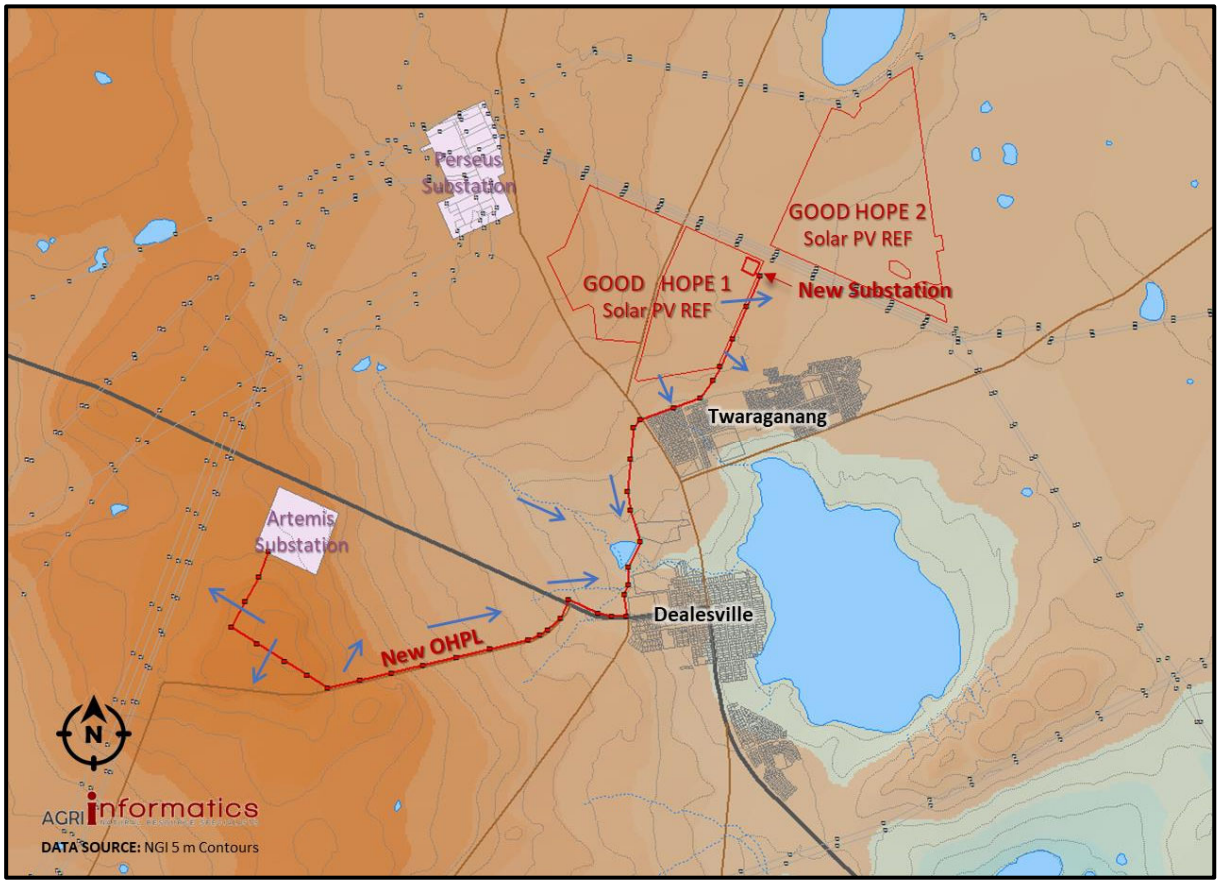

Figure 14: Elevation model of the study area. Direction of surface drainage indicated by blue arrows.

Land Capability and Grazing Capacity

"Land capability" is used to refer to the suitability of land for agricultural activities. The corridor for the proposed Good Hope OHPL as well as the site demarcated for the new substation correspond largely with areas indicated as "Low" to "Low-Moderate" by the Land Capability map of the Department of Agriculture, Land Reform and Rural Development.

The vegetation map of South Africa (Mucina et al, 2018) indicates two vegetation types within the study area, namely Vaal-Vet Sandy Grassland and Western Free State Clay Grassland, where map boundaries of the former correspond to Land type Ae46 and the latter to Land type Db3. The grazing capacities of these vegetation types are moderate and indicated as 8 ha per large stock unit (LSU).

Curent Landuse

The current (March 2023) landuse is as follows:

- **Section 1: A-B (see Figure 15)**: This section spans two old, cultivated fields. Field 1 has not been cultivated since 2015 or earlier. Field 2 of 21.6 ha was cultivated up to 2020. The length of the OHPL over this field will be ±380m and could therefore result in three pylons located within the field (at the nominal pylon spacing of ±100 m for 132 kV lines).

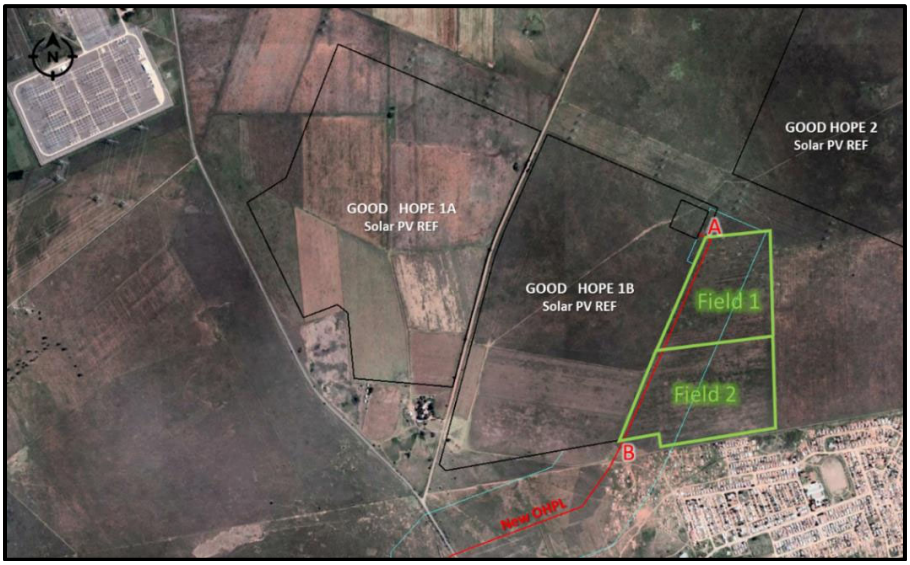

Figure 15: Landuse for Section 1 of OHPL

- **Section 2: B-C-D (see Figure 16)**: This section traverses common land of the Dealesville Municipality, used for communal grazing by small and large stock (sheep, goats, cattle and donkeys). The presence of pylons in this area will not interfere with the land being used for grazing. A drainage line does cross the trajectory of the OHPL and the placement of the pylons will have to avoid these structures. The sub-section C-D follows the alignment of the R64 road and will have no impact on farming activities.

Figure 16: Landuse for Section 2 of OHPL

- **Section 3: D-E-F (see Figure 17):** Sub-section D-E follows the alignment of the S322 road and will have no impact on farming activities. It crosses the upper reaches of a small drainage line, close to point E, but pylon placement can avoid any impact on water flow. Sub-section E-F also spans open land of the Dealesville Municipality, used for grazing by small and large stock. The presence of pylons in this area will not interfere with the grazing activities. -

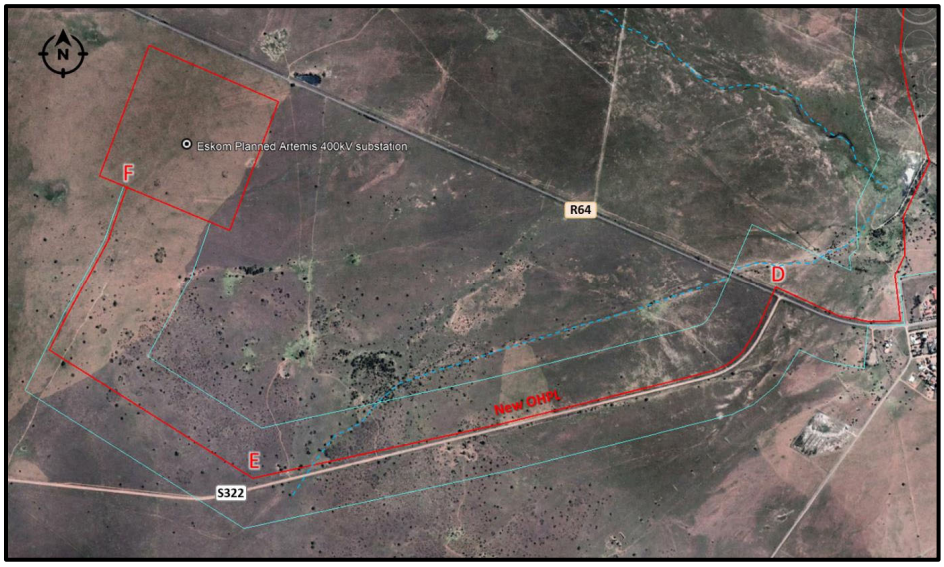

Figure 17: Landuse for Section 3 of OHPL

8.2.2 Agricultural Potential

Irrigated Cultivation

The study area has no access to reliable irrigation water, and therefore has no potential for irrigated cultivation.

Dry Land Cultivation

The annual rainfall of the study area is marginal and unreliable. The average rainfall only supplies around 40 to 50% of the water requirement of a summer grain crop. It is only during seasons with above normal rainfall that certain crops can be grown with some measure of success. The potential for dryland cultivation is therefore marginal.

Livestock Farming

The grazing capacity of the natural vegetation is moderately high, but poor during periods of drought, as recently experienced from 2012 to 2019. The potential for livestock farming is medium.

Conclusion on Agricultural Potential

The agricultural resources of the Good Hope site are very limited for crop production but medium for extensive grazing. The pressure from stock theft and feral dogs on especially small stock farming will be high and therefore the resulting agricultural potential is only medium-low.

8.2.3 Agricultural Site Sensitivity Verification

The DFFE EIA Screening Tool indicates that most of the proposed OHPL corridor and site for the new substation as “Low” or “Medium” sensitivity for the conversion of agricultural land. Only small sections are indicated as “High” sensitivity (.

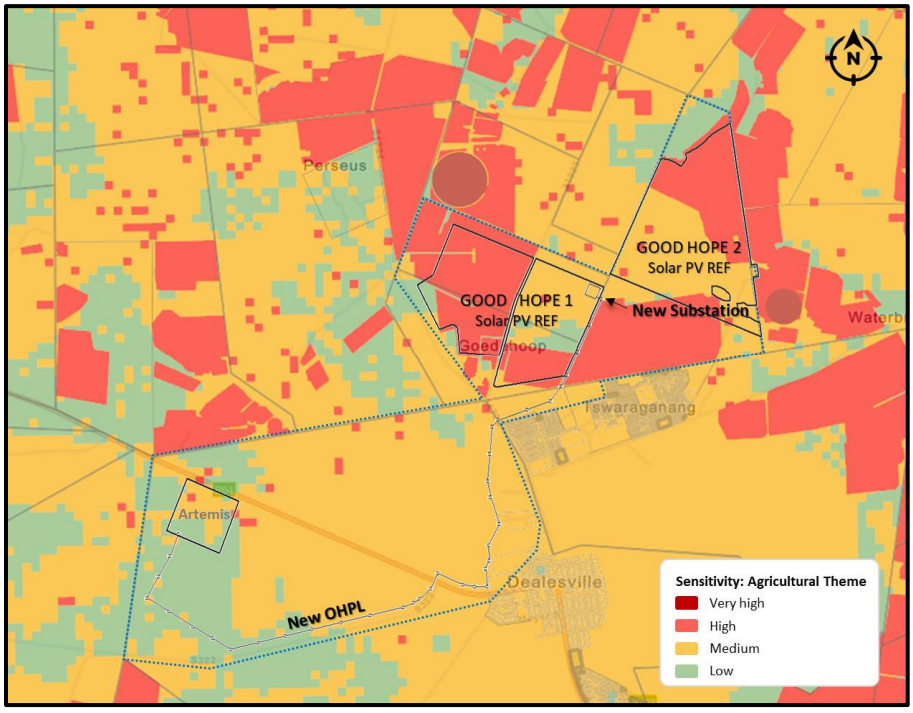

Figure 18: Agricultural Sensitivity as indicated by the Screening Tool of DFFE.

The desktop assessment and site visit, confirms a marginal to low agricultural potential for the study area. The site sensitivity analysis thus confirms the medium and low sensitivity indicated by the Screening Tool for the OHPL section B-F, but downgrades the high sensitivity indicated for section A-B to medium.

8.2.4 Opportunities and Constraints

No specific constraints with regard to the final placement of the trajectory of the OHPL or the substation, within the proposed corridor have been identified. However, placement of powerline pylons as close as practically possible to field boundaries, will introduce less interference with tractor or implement movement and is therefore preferred.

8.2.5 Potential Impacts Identified

Direct Impacts

The impacts normally associated with the development of substations and OHPLs on farm land relates to:

(i) the loss of land for cultivation or grazing caused by the actual footprint of the facility,
(ii) the loss of resource (soil and/or vegetation) due to the degradation or removal thereof during construction,
(iii) the alteration of surface runoff that may lead to erosion and soil loss and
(iv) reduction in optimal land use (farming activities) imposed by the construction activities that limits access and use of precincts of the farm.

While most of the impacts are either of a temporary nature or can be effectively mitigated by good engineering principals and effective construction site management, the loss of land to the footprint of the facility is of a more permanent nature and potentially significant, depending on the sensitivity of the receiving environment.

The sensitivity of the agro-ecosystem of the study area to the installation of the proposed OHPL is low to very low due to the following:

- the agricultural potential of the development footprint has been demonstrated to be medium-low.
- The risk of water erosion is low due to the low slope gradients and moderate permeability of the soils.
- The risk for wind erosion, when the vegetation cover is removed for the construction of the substation, is moderately high due to sandy apedal soils. This can be effectively mitigated and thus the overall agro-ecosystem sensitivity is low to very-low.
- No intensive agricultural activity or high potential agricultural resources occur within the path corridor of the OHPL;
- The proposed OHPL corridor is mostly in close proximity to the edges of cultivated fields; and
- Existing cultivation and/or livestock farming can be continued after installation of the powerline.

The only potential impact of the proposed OHPL on the agro-ecosystem identified by agricultural impact assessment, is the partial disruption of small grain production during the construction phase.

Mitigation Measures

Recommended mitigation measures include:

- Align the final OHPL servitude at field edges;
- Stockpile and preserve the topsoil during construction;
- Ensure proper rehabilitation of construction sites after construction using preserved topsoil.

Based on the above evidence before the EAP, the appointed specialist has not identified any fatal flaws with the project proposal, and it is reasonable to suggest that the Good Hope OHPL and substation are acceptable and implementable from an agricultural perspective.

8.3 TERRESTRIAL BIODIVERSITY IMPACT ASSESSMENT

NCC Environmental Services were appointed (hereinafter referred to as the "Ecologist") to undertake the Terrestrial Biodiversity Impact Assessments for the Good Hope OHPL and substation. The specialist report is presented in Appendix D and the following is a summary:

8.3.1 General Description of the Terrestrial Environment

The proposed OHPL traverses a mixture of agricultural fields (both crop and livestock), indigenous grasslands and riparian areas. The proposed location for the substation is void of all large tree and shrubs and is a relatively flat and homogenous grassland area intermixed with scattered dwarf shrubs.

The 2020 Department of Environment, Forestry and Fisheries (DFFE) landcover assessment confirms that that most of the proposed OHPL corridor is located in 'Grassland/Shrubland' but traverses cultivated fields closer to the Good Hope 1 Solar Facility (see Figure 19).

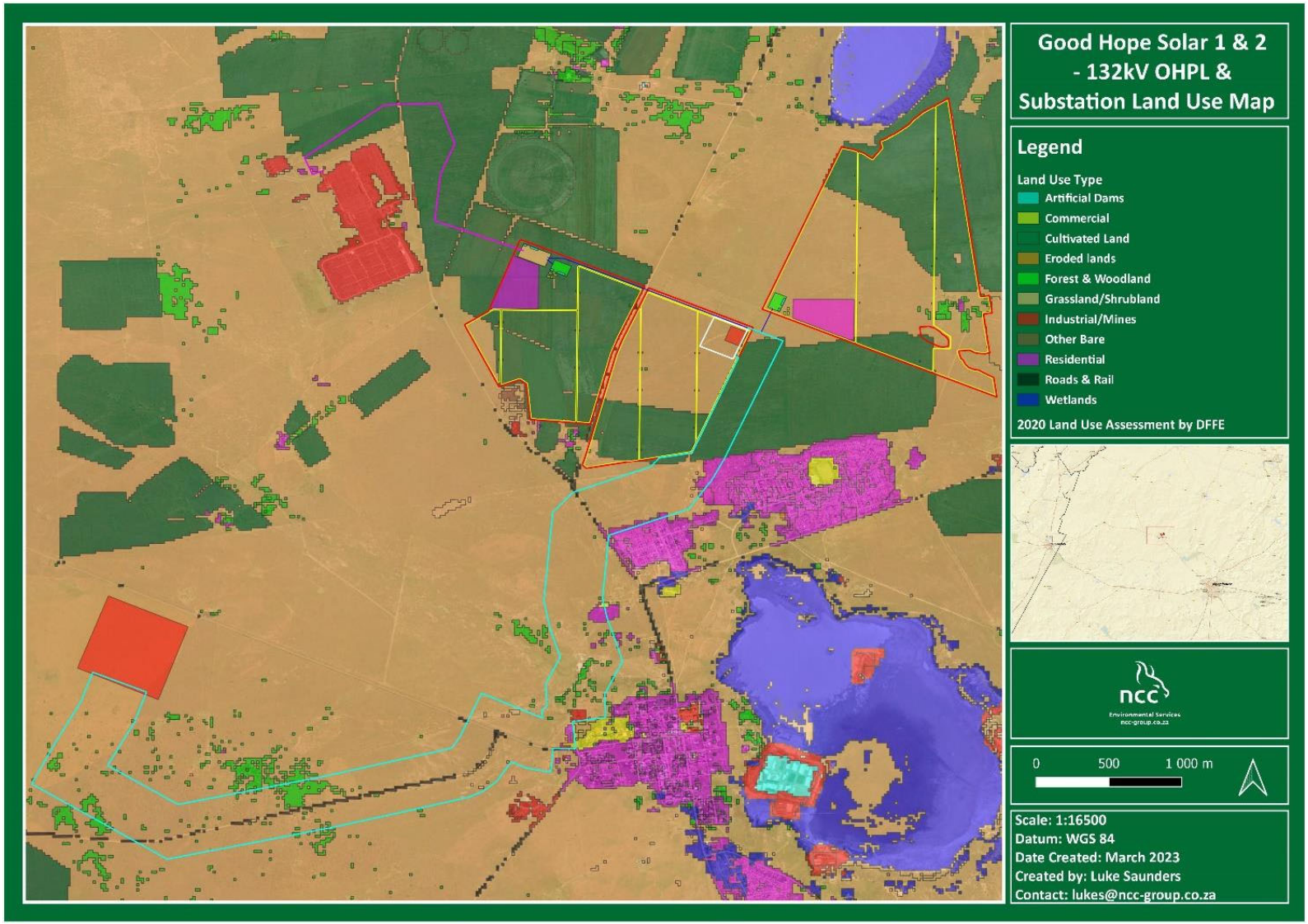

Figure 19: The 2020 Department of Environment, Forestry and Fisheries (DFFE) landcover assessment presents the various land usages of the site as either cultivated land or grassland/shrubland (DFFE, 2020).

8.3.2 Overview of the Terrestrial Biodiversity and Ecosystems

The development is situated within the Dry-Highveld Grassland (DHG) bioregion, which is primarily located on the central plateau of South Africa (Mucina and Rutherford, 2006). Dry Highveld Grassland receives a relatively low annual rainfall, generally below 600 mm per year. The low annual rainfall promotes the proliferation of grasses that retain their nutrients in their leaves during winter (less fibre content and more palatable during winter), therefore being classified as sweet grassland species. The majority of the OHPL corridor, 317ha, (OHPL 311ha, Substation 6ha), apart from previously ploughed crop fields (vegetation Type 1) comprises the historical extent of two listed vegetation types – Only one which is of concern being listed as Endangered - Vaal-vet Sandy Grassland.

- **Vegetation Type 1 - Cultivated Crop Fields**: The cultivated areas comprise a mixture of pioneer grass species and weedy elements. These cultivated croplands do not represent a vegetation type and are of low terrestrial biodiversity value.
- **Vegetation Type 2 - Vaal-Vet Sandy Grassland Gh 10 (Endangered – A3**): National land cover data show that Vaal-Vet Sandy Grassland has experienced extensive spatial declines of approximately 72% since 1750. Threshold for EN is >=70% reduction. The original extent of the ecosystem (100%) is 2274000ha with 36% (818640ha) remaining (2011). Less than 1% of the ecosystem is protected and it is known to have 1 endemic species of concern.
- **Vegetation Type 3 - Western Free State Clay Grassland Gh 9 (Least Concern):** The National Biodiversity Assessment indicates that Gh9 is a poorly protected ecosystem with a threat status of least concern (Skowno et al., 2019). No endemic plant taxa are listed within the Western Free State Clay Grassland (Mucina and Rutherford, 2006).

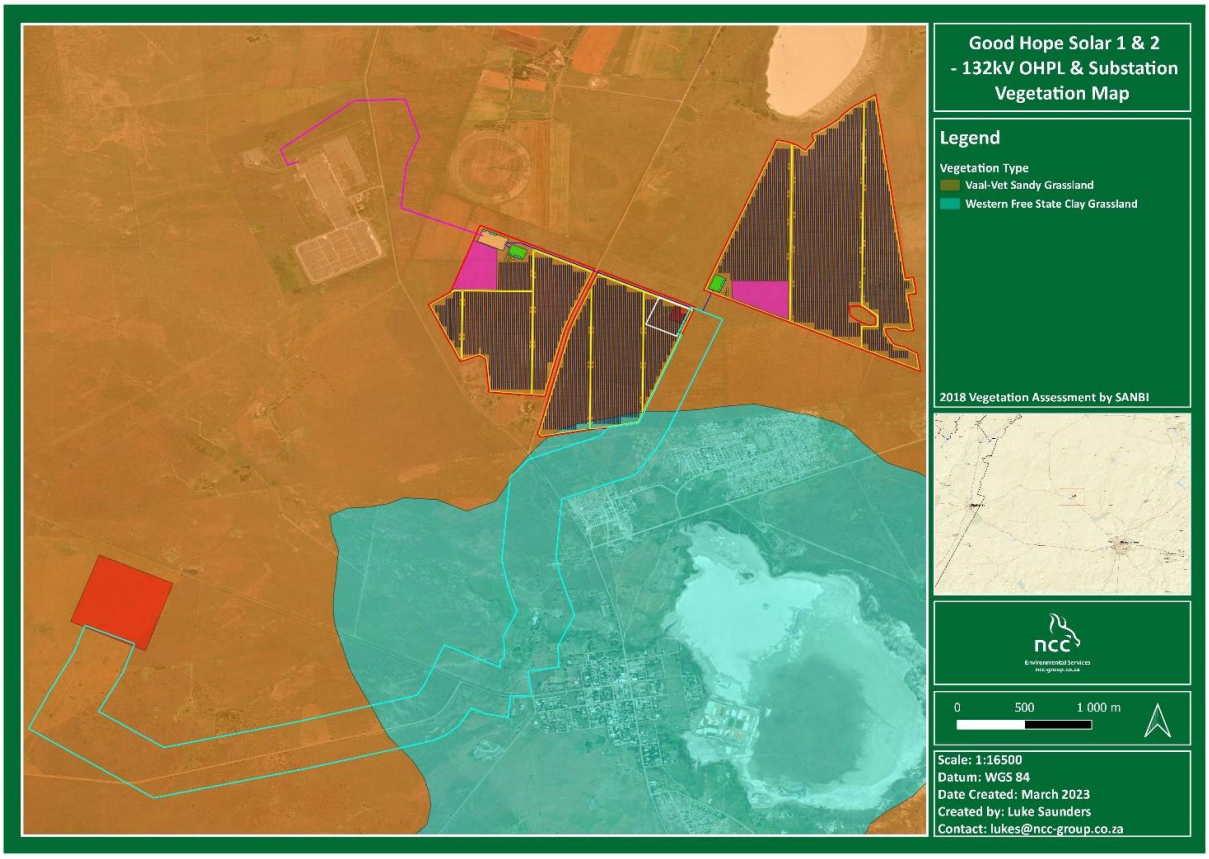

Figure 20: The South African National Biodiversity Institutes (SANBI), 2018 Vegetation Map of South Africa, Lesotho and Swaziland (Eswatini) by Mucina and Rutherford.

8.3.3 Ecological drivers or processes of the system and how the proposed development will

The site is found within the Dry Highveld Grassland Biome. Within this bioregion the proposed site is located within a slightly fragmented and partially terrestrial grassland ecosystem comprising a matrix of agricultural crop fields and remnant grassland patches reliant on the maintenance of suitable ecological drivers. Sections of the site are degraded, both the agricultural crop fields and remnant grassland to a lesser degree. These disturbed grasslands display an overall poor floral species richness and are mainly occupied by pioneering grass species. The indigenous grassland remnants, of which the majority of the OHPL corridor comprises, are of a high nutrient value type and this nutritious grazing supports of herds of large mammals such as antelope which play a role in maintaining the ecosystem.

Grazing is a vital component of dry grasslands, 'Small animals are as important as the bulk grazers in maintaining the vegetation structure, habitat diversity and nutrient cycles that give these systems their character. These grasslands should be managed to maintain the habitat diversity that allows a range of natural herbivores to persist. The remnant patches of indigenous vegetation have a naturally higher diversity of species including more palatable grazing options. These indigenous patches are therefore seen as grazing refugia for a host of faunal species which would be reliant on them. The OHPL development is somewhat limited in impact potential as it is a 132kV OHPL structure with a small spaced out tower footprint and would not result in destruction or loss of large-scale areas.

The climate is a very important ecological driver in the system, 'Even though the winters are cold and frosty, the defining climatic difference (between grassland) is the low and highly variable summer rainfall. In this semi-arid ecosystem, water and not the duration and temperature of the growing season is the limiting factor to growth' (SANBI, Page 52). The OHPL and substation are not expected to influence the areas climate thus grassland ecosystem, drivers or functions in any significant manner. The plant species in this grassland ecosystem are driven primarily by adaptation to drought. 'Most of the species are perennial and long-lived, persisting vegetatively over long periods. However, a significant amount of reproduction also takes place through seed production. This means that plants are able to persist in the form of dormant seeds in the seed bank through periods of drought' (SANBI, Page 52). The development of the OHPL and substation, when considered against the ecosystem as a whole (not just the site footprint but rather as a portion of a particular grassland ecosystem) is not at all likely to negatively effect the plants species life history/functional traits of the flora in the overall area.

Fire is an important regeneration and floral composition management agent in the bioregion and should not be unnaturally suppressed. Fire will not be permitted on the substation, which will have the complete 'removal' of the vegetation on that part of the site anyway thus no longer require this driver. The OHPL will maintain vegetation beneath it and is not expected to act as a firebreak/fire retardant thus it is not expected to have any negative impact of fire as an ecosystem driver in the region.

As a component of the overall grassland ecosystem, of which the slightly degraded and mixed land use corridor forms a part of (consisting of commercial crops, grazing fields and indigenous remnants) the proposed OHPL and Substation is not expected to have significant negative impacts on any ecological drivers, processes or functions. The construction and operation of the Good Hope 1 and Good Hope 2 Solar Projects - 132kV OHPL & Substation will not change anything (ecological drivers or processes responsible for the maintenance of the ecosystem) that significantly effects the overall ecosystem of which the site forms a small component.

8.3.4 Ecological functioning and ecological processes (e.g. fire, migration, pollination, etc.) that operate within the preferred site

Ecosystem services are the benefits people obtain from ecosystems. These include provisioning services such as food, water, timber, and fibre; regulating services that affect climate, floods, disease, wastes, and water quality; cultural services, recreational, aesthetic, and spiritual benefits; and supporting services such as soil formation, photosynthesis, and nutrient cycling".

The functioning of croplands is primarily the provision of human food sources however these can play ecological roles and are often assigned as Ecological Support Areas due to their facilitation of faunal movement and buffering. Therefore main ecological processes and functioning 11 assessed for the site are however in relation to the remnant indigenous patches directly impacted expected to be impacted upon. These areas, even fragmented patches are used as, 'steppingstone' habitats for species such as Aardvark *Orycterocarpus afer*, Blesbok *Damaliscus pygar*gus phillipsi or tortoises such as the Leopard tortoise *Stigmochelys pardalis*.

Floral biodiversity is higher in natural vegetation as opposed to monoculture crops fields. This floral diversity enables faunal diversity which includes insects that function as pollinators. The expected impact of the OHPL and substation upon the remaining natural areas in the vicinity are not significant enough to have any severe effect on any ecological functioning or processes of insects pollinators.

The Good Hope 1 and Good Hope 2 Solar Projects - 132kV OHPL & Substation will not, due to the expected impacts of consecution and operation in terms of scale (small) and state of receiving environment and the associated drivers, change the overall areas ecosystems functioning or ecological processes in any significant manner.

8.3.5 The ecological corridors that the proposed development would impede including migration and movement of flora and fauna

The connection between habitats is of critical importance for the long-term resilience and functioning of ecosystems. At its core, connectivity between habitats dictates the potential of energy exchange between biotic components. Areas with a greater proportion of unobstructed connectivity to prominent green nodes/ corridors deserve a higher conservation value. Key factors being assessed include habitat fragmentation, level of anthropogenic exposure, proximity to conservation areas and indirectly urban centres, unobstructed passage to other habitats' (Nel, 2022).

There are no significant ecological corridors or migration routes that would be impeded upon by the proposed development. The overhead powerline is, as per its name, primarily an overhead (non-terrestrial) structure, and thus, even if theoretically bisecting a natural corridor, would not impede terrestrial movement.

8.3.6 The description of any significant terrestrial landscape features (including rare or important flora-faunal associations, presence of strategic water source areas (SWSAs) or freshwater ecosystem priority area (FEPA) sub catchments

No part of the site falls within a Strategic Water Source Area 12 (SWSA). Dolerite sheets are known within the general region and these which give rise to ecologically sensitive plant communities that show high levels of species richness and endemism -none of these were noted within the corridor however a rocky hillside with species such as the thorny shrub *Ziziphus mucronata* (Buffalo-thorn) and *Pellaea calomelanos* (Hard fern) and an associated woodland at the foothills comprising mostly *Vachellia karroo* (Sweet thorn) and *Searsia lancea* (African sumac) and *Olea europeae subsp.africana* (Wild olive) is noted and should be avoided.

8.3.7 Threatened ecosystems, including listed ecosystems as well as locally important habitat types identified

Vaal-Vet Sandy Grassland (Gh 10) is 'Endangered' and therefore the historical location of this vegetation type is highlighted in orange (**Figure 21**). The substation is located within a degraded portion of this Vaal vet sandy grassland area as well as the lower half of the OHPL. There are no other locally important habitat types identified on the site (apart from potential wetlands to be advised upon by wetland specialist).

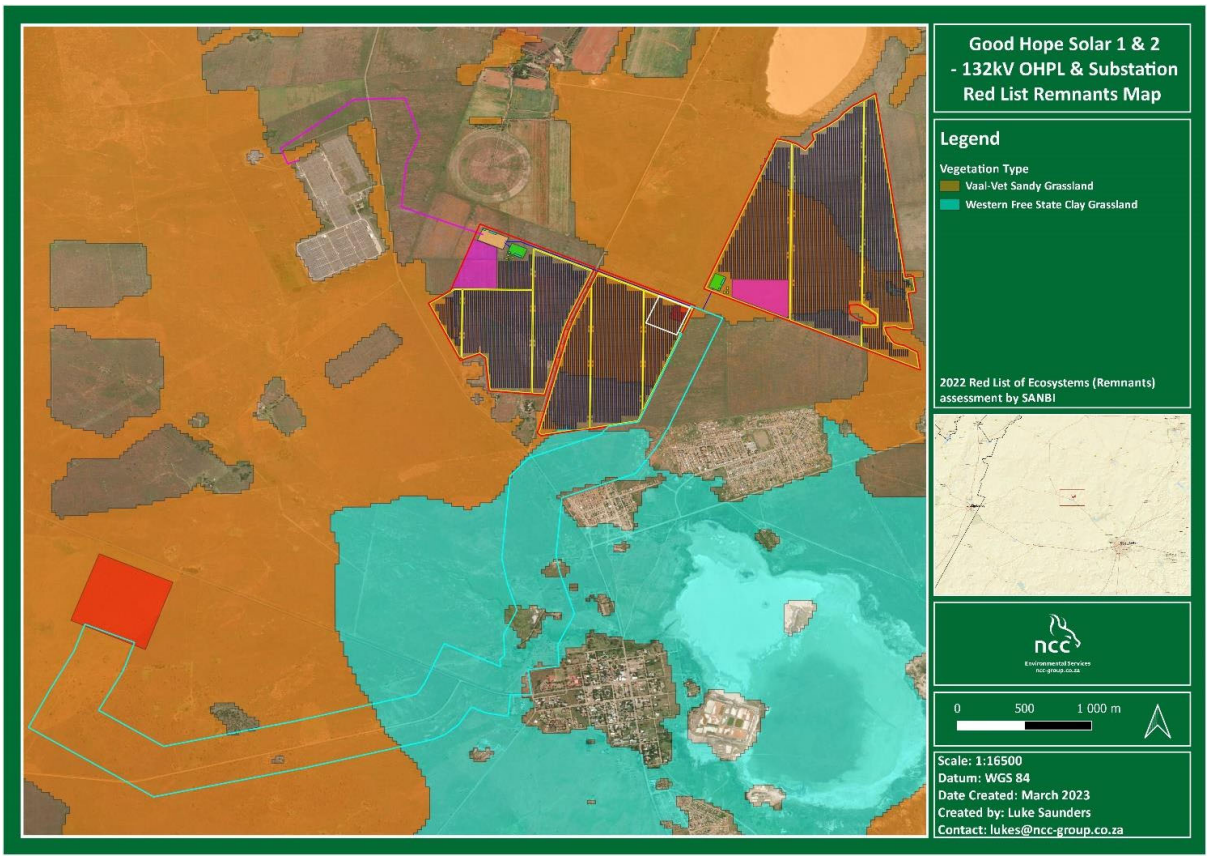

Figure 21: South African National Biodiversity Institutes 2022 Red List of Ecosystems: Remnants depicts the substation and the lower portion of the OHPL being located within these important areas (orange).

8.3.8 Protected Species

Schedule 6 of Protected Plants (Section 30) of the Free State Nature Conservation Ordinance No. 8 of 1969 lists provincially protected species (refer to Table 5) however these are not 'Red Listed' SCC or those which require assessment as per the screening tool protocol. These species do however require permits for destruction/removal as there is the likelihood of their presence including all Schedule 6 Species.

Online reports provide a list of plant species that have been recorded within the broader Dealesville landscape, according to the SANBI SIBIS 16database:

- *Nerine laticoma*
- *Helichrysum dregeanum*
- *Helichrysum pentzioides*
- *Helichrysum caespititium*
- *Helichrysum lucilioides*
- *Euphorbia arida*
- *Euphorbia rectirama (E. spartaria)*
- *Euphorbia inaequilatera var. inaequilatera*

- *Pentzia oppositifolia*
- *Ammocharis coranica*

Any of these species, or those listed under Schedule 6, which are identified on site during clearing operations, must, with a relevant permit on which it is listed, be removed or relocated to areas where they will be able to persist in the local landscape.

8.3.9 Ecological connectivity, habitat fragmentation, ecological processes and fine-scale habitats

A key action to mitigate the effects of climate change is the ability of species to migrate to new locations as the climatic conditions which they require move across the landscape. These corridor and refuge migration strategies occur on both a micro and macro level. On the macro scale corridors provide for species movement at landscape scales. This entails the ability of fauna and flora to undertake large scale movements towards areas which continue to provide the conditions required by a species for growth and reproduction. Movements could entail migrations of up to hundreds of kilometres, and corridors of mostly natural or near natural vegetation across the landscape are needed to permit this to occur.
Ecological corridors are areas required for movement of fauna between habitats and as such these known areas are usually designated as CBAs. Faunal movement can be vital to flora through pollination and the dispersal of seeds. Features such as rivers, ridgelines or forests create natural corridors whilst in modified environments the remaining open areas that are used for linkages (even cultivated farmlands) between areas are, or can be seen, as corridors for connectivity. The development would have no disruption on ecological connectivity or cause habitat fragmentation as it is primarily linear overhead infrastructure. The development would not result in the loss of any ecological processes, or cause loss of any fine-scale habitats for the same reason. None of the impacts on terrestrial biodiversity associated with the proposed development are significant enough to cause any change to the broader environmental processes of the area.

8.3.10 Species, distribution, important habitats (e.g., feeding grounds, nesting sites, etc.) and movement patterns identified

Most of the study areas vegetation and consequently habitat for fauna is described as an almost uninterrupted grassland with large areas of reclaimed grassland following previous cultivation. Habitats of concern include the remnant indigenous areas, wetlands, large trees (nesting) and the rocky hillside. Indigenous remnants are refugia for termite mounds which cannot develop or survive within crop fields (they are ploughed away). As such any indigenous patches harbouring these are seen as important feeding areas as the mounds play a vital role in the nutrition of indigenous mammals including Aardvark *Orycterocarpus afer*. Species such as tortoise, antelope, small mammals and rodents also utilise natural areas as these have a variety of food sources available which are important in these species diets. The Cape ground squirrel *Xerus inauris* which is noted in the area displays a generalist feeding preference, foraging plant materials such as roots, bulbs, corms, leaves, etc., occasionally preying on insects (particularly termites). This variety of food is important and only available from natural areas.

The indigenous areas impeded upon are not unique to the area, in that they are not the only source of natural forage, but rather, due to the fragmented nature of the landscape, any areas which remain natural, and thereby provide a food source to wild animals, are of greater biodiversity value - Despite this the intrusion into these areas from the OHPL (Pole footings) is not expected to cause any severe loss or disruption.

Species such as blesbok (*Damaliscus pygargus subsp. phillipsi*), ostrich (*Struthio camelus*) Leopard tortoise (*Stigmochelys pardalis*), Elegant Grasshopper (*Zonocerus elegans*) and the Brown-veined White (*Belenois aurota ssp. aurota*) were all noted within proximity to the site.

During the site assessment no botanical Species of Conservation Concern ("SCC") were noted bearing in mind that some geophytic and succulent plants might have been overlooked due to their cryptic nature and density of the grasslands. Low numbers of provincially protected plant species are however likely, and these would require a permit for removal if the development were to occur. Interspersed amongst indigenous species a low density of The National Environmental Management: Biodiversity Act 10 of 2004 ("NEMBA") listed invasive alien plants were noted on site and in the vicinity and if the development were to occur these are likely to proliferate due to their ruderal nature.

Three mammals of particular conservation concern were identified in the preliminary online mammal search within the preliminary quarter degree grid (2825).

- *Hippotragus niger niger* (Sable) Vulnerable
- *Kobus leche Lechwe* (Southern lechwe) Near Threatened
- *Atelerix frontalis* (South African Hedgehog) Near Threatened

The two antelope species of conservation concern were not recorded during the site survey. Most often, these antelope species are located within private game reserves or natural parks. A higher probability of occurrence score is given to *Atelerix frontalis* due to its widespread distribution and availability of food resources found on the site. *Atelerix frontalis* displays a nocturnal habit; however, they are occasionally spotted during the day. It has an omnivorous diet but primarily relies on invertebrates that make up the bulk of its diet'.

8.3.11 Terrestrial Critical Biodiverse Areas (CBAs)

Critical Biodiversity Areas (CBAs) and Ecological Support Areas (ESAs) are traversed by the proposed corridor. 'A CBA is a spatial plan for ecological sustainability. It shows the places that are priorities for conserving species and ecosystems, and for maintaining natural ecological processes. The network of protected areas, Critical Biodiversity Areas (CBAs) and Ecological Support Areas (ESAs) is designed to ensure that a viable sample of all ecosystem types and species is conserved and to maximise connectivity of natural areas.

CBAs are areas of high biodiversity and ecological value and need to be kept in a natural or near-natural state, with no further loss of habitat or species. Degraded areas should be rehabilitated to natural or near-natural condition. Only low-impact, biodiversity-sensitive land uses are appropriate. A distinction is often made between CBAs that are likely to be in a natural condition (CBA 1) and those that are potentially degraded or represent secondary vegetation (CBA 2). This distinction is based on best available land cover data but may not be an accurate or current reflection of condition.
The proposed Good Hope OHPL corridor and substation site are ascribed CBA1 status. Despite the ascription of CBA1 some areas within the CBA1 portions of the proposed OHPL corridor are degraded due to grazing and the influence of exotic pioneer grass species.

This substation portion is, 'The unit sensitivity assessment classifies VU-C (Substation) as a low-medium sensitive unit due to its overall poor species richness primarily represented with pioneering grasses and a much denser dwarf shrub component compared to other units'. It is likely for this reason that within this remnant areas the substation has been proposed within the degraded part of it.

The CBA1 portion of the site is based on the presence of an Endangered Vegetation type - Vaal-Vet Sandy Grassland Gh 10 (Endangered - A3 - Historical decline: The threshold for EN is >=70% reduction). The National

land cover data show that Vaal-Vet Sandy Grassland has experienced extensive spatial declines of approximately 72% since 1750.

The proposed development in this area would not be consistent with the desired management state for a CBA1 zone - Maintain in natural or near natural ecological condition.

Nor would development in this area allow for rehabilitation of the degraded section of indigenous vegetation which would otherwise appear possible, 'Because seeds can lie dormant for some time, these grasslands are quite resilient to impacts over a short-term (five-year) period, and may be expected to recover from inappropriate management within the course of several growing seasons, if topsoil has not been lost' (SANBI, 2015).

As per the SANBI 2015 Grassland Ecosystem Guidelines, 'Avoid habitat loss in threatened grassland vegetation types: Threatened vegetation types such as Bloemfontein Dry Grassland and Vaal-Vet Sandy Grassland are highly fragmented and there should be no further habitat loss, or ploughing, in these vegetation types without proper impact assessments'.

It must be noted that the CBA1, as a broader unit of which the sites indigenous vegetation forms a part of, would not be severely impacted upon by the loss of the sites small (7ha) portion. This is based on scale and location of the portion in relation to the rest of the CBA1. The recommendation of Nel 2022 based on the degraded state of this area must also be noted, 'Based on the CBA technical guidelines and the results of the floral investigation, VU-C (Substation area) should be excluded from the conservation management desired state of a CBA zone'. As such, bearing in mind the state, size and location of the portion of impacted CBA1 area it is not expected that any severe change will occur to the CBA1 (of which the substation forms a small part) if it is developed and even if this is not in keeping with the desire d objectives of CBA1 zones.

8.3.12 The impact on species composition and structure of vegetation with an indication of the extent of clearing activities in proportion to the remaining extent of the ecosystem type(s)

We are only concerned with the Endangered Vaal-Vet Sandy Grassland vegetation type as this is the only part of the development that is not a linear activity. The development of the substation site (7ha) within this listed vegetation type would destroy all the species composition and structure of vegetation within the substation area as this would be completely cleared and built upon. The OHPL only requires minor clearing for each tower. footing and these combined are not expected to be more than 1ha.

Table 6: Extent of clearance in relation to remaining vegetation type proportions.

Vaal-Vet Sandy Grassland (Endangered)	
Total original extent	274000ha
Conservation Target	24%
Conservation status	Poorly protected. Only 0.3% statutorily conserved in the Bloemhof Dam, Schoonspruit, Sandveld, Faan Meintjies, Wolwespruit and Soetdoring Nature Reserves. More than 63% transformed for cultivation (ploughed for commercial crops) and the rest under strong grazing pressure from cattle and sheep.
Remaining percent	28% (72% lost)
Remaining hectares	636720ha
Area to be lost (total)	7ha
Remaining hectares	636713ha
Remaining percent	28%

The areas where endangered Vaal-Vet Sandy Grassland (irrespective of state but not ploughed land) that would be lost equates to 7ha. This is a relatively small area in relation to the very large remaining area, (636713ha - irrespective of state) and as such the loss is not large enough to influence the percentages. The loss of this remnants of endangered Vaal-Vet Sandy Grassland is a loss within a CBA1 zone.

8.3.13 Impact on ecosystem threat status

The Ecosystem Threat Status is an indicator of an ecosystem's wellbeing, based on the level of change in structure, function or composition. Ecosystem types are categorised as Critically Endangered (CR), Endangered (EN), Vulnerable (VU), Near Threatened (NT) or Least Concern (LC), based on the proportion of the original extent of each ecosystem type that remains in good ecological condition. According to the spatial dataset the proposed development is located within a EN ecosystem.

The proposed development will result in the transformation of the substation portion of approximately 7 ha of degraded Vaal-Vet Sandy Grassland Gh10. 'Gh10 has a threat status of endangered' (Skowno et al., 2019). As such there would be no change in ecosystem threat status because of the development of the site as the extent of clearance is minimal (7ha) in relation to the remaining extent (<1%) thus has minor effect on the remaining proportions of the units.

-

Vaal-Vet Sandy Grassland (Endangered) - No change (Area lost is minimal in comparison to remaining extent thus no effect)

8.3.14 The impact on explicit subtypes in the vegetation

There are no explicit subtypes of any of the vegetation types within the sections of vegetation that would be lost. Locally present calcrete rich soils are known to surround the large pans found in the vicinity of the site. These soils create a unique arid habitat which often hosts species of particular conservation concern however none of these features are found on or would be affected by the development of the site.

8.3.15 The impact on overall species and ecosystem diversity of the site

In terms of the site footprint for the substation: The species and ecosystem diversity of this 7ha site footprint would be severely impacted upon/removed through direct site clearance. Despite this relatively small area of indigenous vegetation being lost (7ha) in relation to the remaining hectares of the system (636720ha) all effects should be made to prevent unnecessary vegetation clearance as cumulatively the impacts can, and have (72%), add up becoming more significant, even at a smaller scale, as less area remains. Development within healthy functioning grassland ecosystems should only be considered once all the available disturbed habitats have been utilised' (Nel, 2022).

In terms of the OHPL, the terrestrial environment will only be impacted where vegetation clearing is required to construct the towers/pylons and will be limited to a minimal area where the pylon foundations will be constructed as well as a limited work area surrounding this. The overall species and ecosystem diversity of the site would therefore not be affected as the direct footprint from pole footings/towers is minimal.

8.3.16 The impact on any changes to threat status of populations of species of conservation concern in the CBA

There is no change to the threat status of any population of species of conservation concern (SCC) within the CBA areas of the site expected as result of the development. This is inferred based on the fact that no SCC have

been found (excludes potential avifaunal SCC) or are considered likely based on the low diversity vegetation type and screening tool analysis of regional faunal SCC.

8.3.17 Terrestrial Ecological Support Areas (ESAs)

Ecological Support Areas are areas that are not essential for meeting biodiversity targets, but that play an important role in supporting the functioning of PAs or CBAs, and are often vital for delivering ecosystem services. The proposed OHPL corridor alignment traverses two (2) types of Ecological Support Areas. The construction and operation of the OHPL through the ESA areas noted within the assessed corridor is expected to have minimal impact on the terrestrial environment. Where vegetation clearing is required to construct the pylons, this will be limited to a minimal area around each base where the tower/pylon foundations will be constructed as well as a limited work area surrounding this. As such and bearing in mind that the OHPL it is a linear, mostly overhead activity it is not expected to have any impact on the functionality of the terrestrial ESAs.

8.3.18 Loss of Ecological Connectivity

There is expected to be no ecological connectivity or corridors impeded upon because of the OHPL and substation construction.

8.3.19 Protected areas as defined by the National Environmental Management: Protected Areas Act, 2004

The proposed OHPL corridor and the substation site do not fall within a registered protected area such as a SANParks or biosphere reserve. It is not within the South African Protected Areas Database (SAPAD) which forms the basis for the Register of Protected Areas which is a legislative requirement under the National Environmental Management: Protected Areas Act, Act 57 of 2003.

8.3.20 Priority areas for protected area expansion

The site does not form part of any protected area expansion plan (“PAEP”).

8.3.21 SWSAs

The site does not fall within any Strategic Water Source Areas (SWSAs) for surface water (SWSA-sw) nor Strategic Water Source Areas for groundwater (SWSA-gw) (refer to Figure 31). The site development would not, even if it did form a part of a water source area, result in any significant impacts on this due to the nature of the development being primarily and linear overhead structure.

8.3.22 Potential Impacts

The following potential impacts to terrestrial biodiversity have been identified:

- Loss of Indigenous Vaal-Vet Sandy Grassland Vegetation Gh 10 (Endangered - A3) - 70ha
- Loss of portion of Critical Biodiversity Area 1
- Loss of portion of ESA1 and ESA2 Areas and Functionality
- Loss of Ecological drivers, processes or functioning of the ecosystem
- Loss of Faunal Habitat/Forage areas
- Loss of Botanical SCC
- Loss of Provincially Protected Flora including Trees
- Loss of Faunal SCC
- Loss of Provincially Protected Fauna

- Establishment and spread of NEMBA listed Invasive Alien Plants
- Soil Erosion

Each of the potential impacts is carefully described in Section 12 along with proposed mitigation measures to limit these impacts.

Based on the above evidence before the EAP, the appointed specialist has not identified any fatal flaws with the project proposal, and it is reasonable to suggest that the proposed Good Hope OHPL corridor and substation site are acceptable and implementable from a terrestrial biodiversity perspective provided the recommend mitigation measures are implemented.

Please refer to Section 12 of this Report, which details all the Impacts associated with the construction and operational phase of the proposed OHPL.

8.4 AVIFAUNAL IMPACT ASSESSMENT

TMG, on behalf of the Applicant appointed Enviro-Insight cc (hereinafter referred to as the "Avifaunal Specialist") to undertake an Avifauna Assessment for the proposed Good Hope OHPL corridor and substation site. The specialist report is presented in Appendix D and the following is a summary:

Literature Review

A desktop study and literature review was undertaken to evaluate all bird species which could potentially occur in the vicinity of the proposed Good Hope OHPL corridor and substation site, predominantly using data from the second South African Bird Atlas Project but cross-referencing with Hockey et al. and Sinclair & Ryan. SABAP2 data are collected as records per pentad (i.e., 5' X 5' or roughly 9 x 9 km). A list of species potentially occurring within and adjacent to the Good Hope OHPL was therefore developed from SABAP2 data for the four (4) pentads overlapping with the Good Hope OHPL (2835_2540 [68 species], 2835_2545 [118 species], 2840_2540 [100 species], 2840_2545 [112 species];). The expected species list is therefore based on an area much larger than the proposed Good Hope OHPL corridor and substation site. This approach was adopted to ensure that all species potentially occurring within the Good Hope OHPL, whether resident, nomadic, or migratory, were included.

The Red List of threatened species generated by the IUCN (http://www.iucnredlist.org/) provided the global conservation status of avifauna. However, Taylor et al. (2015) produced a regional conservation status assessment following the IUCN criteria which was used for this assessment as it is more relevant and also required by SANBI (2020).

The extinction risk categories defined by the IUCN, which are considered here to represent species of conservation concern (SCC), are defined as follows:

- **Critically Endangered (CR)** - Critically Endangered refers to species facing immediate threat of extinction in the wild.
- **Endangered (EN)** - Endangered species are those facing a very high risk of extinction in the wild within the foreseeable future.
- **Vulnerable (VU)** - Vulnerable species are those facing a high risk of extinction in the wild in the medium-term.
- **Near Threatened (NT)** - any indigenous species which does not qualify for Critically Endangered, Endangered or Vulnerable now, but is close to qualifying for or is likely to qualify for a threatened category in the near future.

The National Environmental Management: Biodiversity Act (Act 10 of 2004) (NEMBA) provides for listing threatened or protected ecosystems, in one of four categories: critically endangered (CR), endangered (EN), vulnerable (VU) or protected. NEMBA also deals with endangered, threatened and otherwise controlled species, under the Threatened or Protected Species Regulations (ToPS).

Survey Description and Coverage

The field assessment was conducted by a SACNASP Registered Professional Zoologist on 2 – 4 March 2023. Two linear sampling transects of approximately 1.5 km each were conducted over two days. Sampling was performed by means of combined walking and driving transects in and around the Good Hope OHPL. Driving was done at very low speeds, with frequent stoppages to observe birds and record data. Short walking transects were conducted from the vehicle wherever safe to do so, habitat allowed and bird productivity was high. The entire Good Hope OHPL and all the different habitats were surveyed in this manner. Suitable nesting structures and habitats were evaluated carefully for any possible nests of sensitive/priority bird species and recorded for mapping purposes.

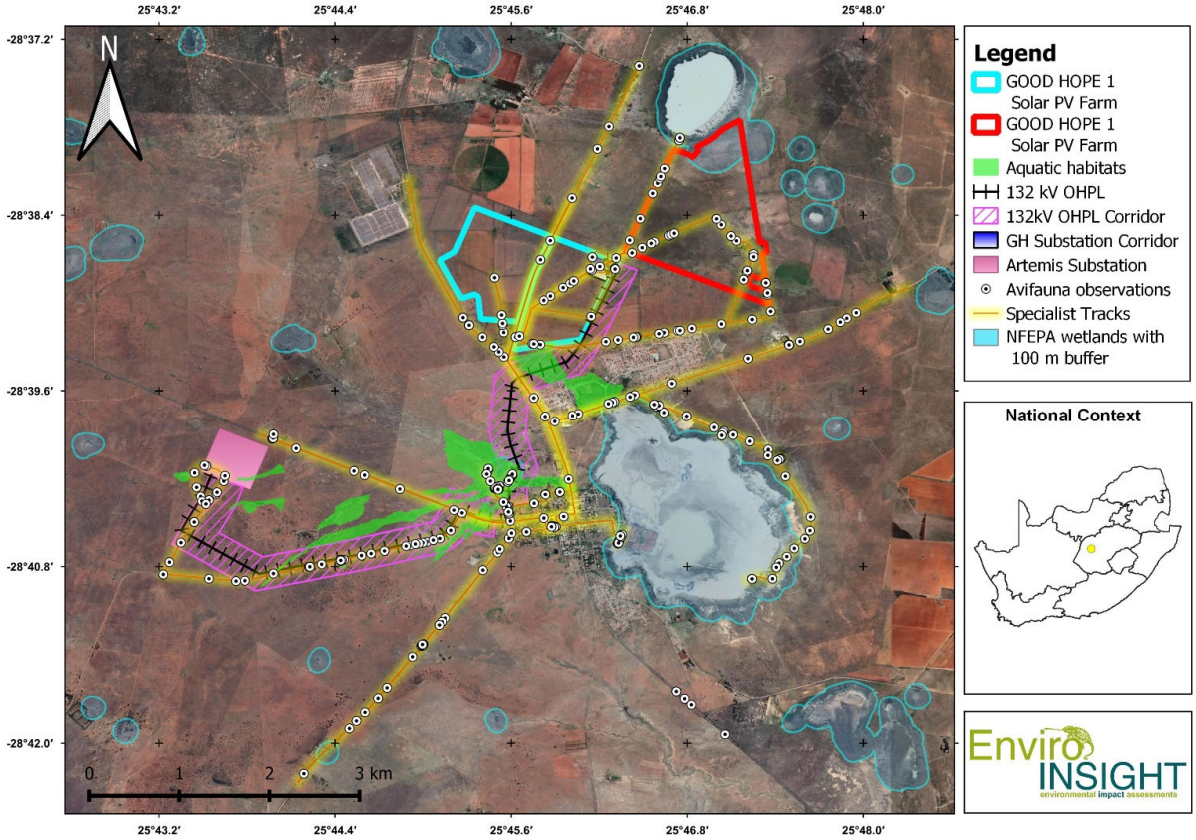

Figure 22: Avifauna survey coverage (tracks and observations) of the Good Hope OHPL during the summer survey.

8.4.1 Receiving Environment

The length of the proposed OHPL is approximately 8 km and the substation site is 7 ha. The study areas for the avifauna assessment included an approximate 2km buffer around the proposed OHPL corridor and substation site. In addition, any important habitats in the vicinity of the buffers were included. The general avifaunal habitat types identified are shown in **Figure 23**.

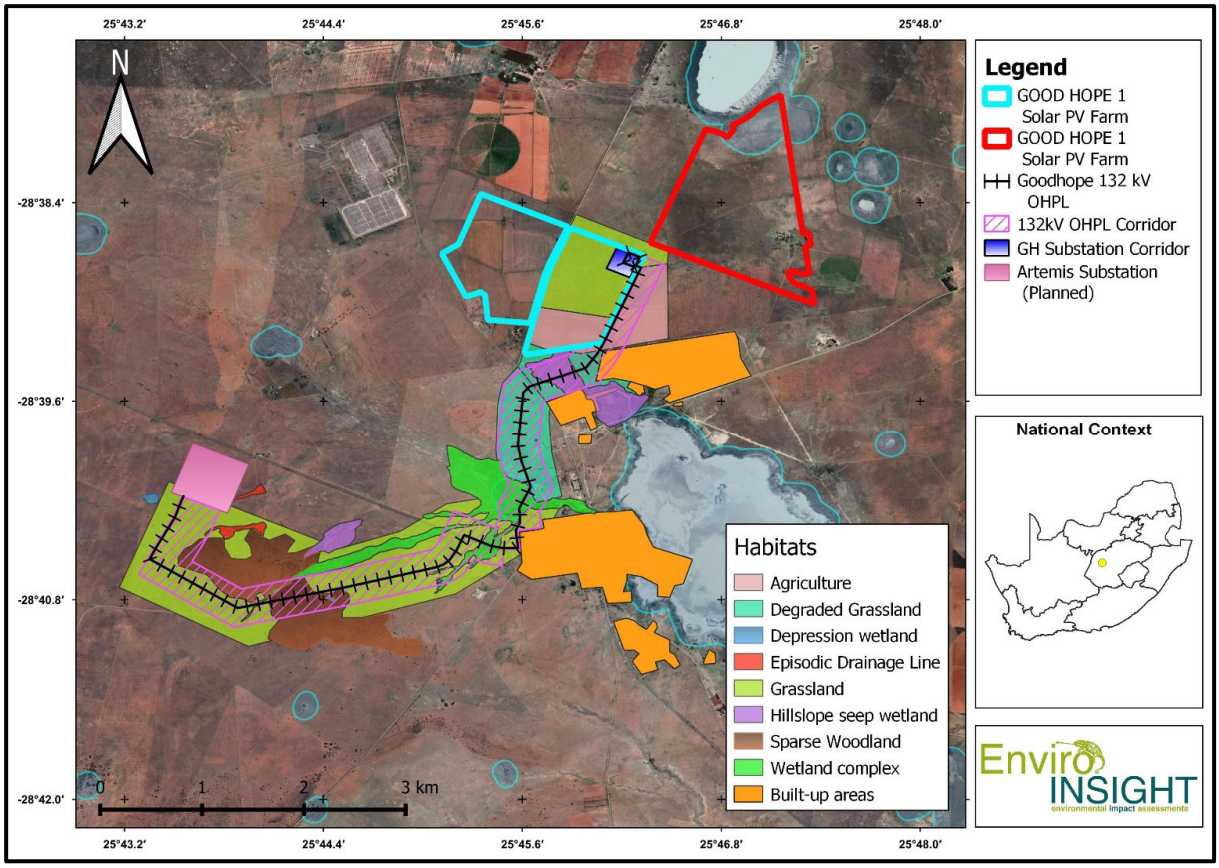

Figure 23: The major habitats of the proposed Good Hope OHPL corridor and substation site.

From the avifauna perspective these can be simplified and classified into the following major habitat types relevant to avifauna: ''Wetlands, Pans and Dams', Grassland', 'Sparse Woodland', 'Agricultural and Fallow fields', and 'Transformed'. Each of these is discussed briefly below.

- **Wetlands, Pans and Dams:** Several types of aquatic habitats surround the Good Hope OHPL namely depression wetlands, large pans, artificially excavated dams and seeps. This habitat also includes the "wetland complex" delineated by the wetland specialist. During the avifauna survey, large congregations of waders or other water birds were present in the aquatic habitats, particularly the large expansive pan situated east for Dealesville. Important SCC relevant to the proposed project utilising these habitats include Lesser & Greater Flamingos and Maccoa Duck.
- **Grassland:** The habitat comprises both natural intact grassland areas, various degrees of degraded grasslands and also seeps. This habitat supports the majority of the large terrestrial bird species (Secretary Bird, Blue Korhaan and Northern Black Korhaan) as well as raptor species such as Amur Falcon, Lesser Kestrel and Brown Snake Eagle. Livestock grazing activities primarily take place in this habitat.
- **Sparse Woodland:** This habitat only marginally interacts with proposed Good Hope OHPL corridor but has important implications for avifauna SCC because the presence of large trees in an expansive area of grassland is a major potential attractant as nesting sites.
- **Agricultural and Fallow Fields: Portions of the** proposed OHPL corridor is currently (March 2023) under agricultural cultivation. Planting of these fields is typically rotated periodically and some fields lie fallow for several years while recovering. This habitat mostly supports common and synanthropic avifauna species but occasionally also high abundances of foraging priority species such as storks (especially when fallow lands are ploughed). Nesting habitat is limited to mostly ground-nesting species. Priority species that will occasionally be observed foraging here includes Secretary Bird, Blue Korhaan, and other raptor species such as falcons and kestrels.
- **Transformed:** Transformed habitat observed consisted predominantly of built-up areas, saltworks or sewage infrastructure, roads (both gravel and tarred) and stands of alien plants/trees. Mostly commensal and synanthropic bird species of low conservation concern are expected in this habitat.


Wetland, pan and dam habitats


Grasslands


Sparse Woodland


Agriculture and Fallow Fields

Transformed

Figure 24: Photographs of the different avifaunal habitats associated with the proposed Good Hope OHPL and substation

Expected and Observed Avifauna

A total of 165 bird species have been recorded by the South African Bird Atlas Project (SABAP2) on the four focal pentads for the Good Hope OHPL, all of which are expected to interact to some degree with the proposed OHPL development. In addition, 18 species not previously recorded on SABAP2 were also observed during the fieldwork survey, one of which is a species of conservation concern (Maccoa Duck, Endangered). During the fieldwork survey 118 avifauna species were observed from 2272 individuals, indicating a high diversity and abundance in the area, mostly due to the presence of the large pan systems nearby attracting many water-associated bird species/

Nine species of conservation concern (SCC; threatened and near-threatened) are expected to interact with the Good Hope OHPL (**Table 7**). Eight of these have been observed within at least one of the four focal pentads associated with the proposed OHPL. It is noteworthy that one of the SCC were not previously recorded by SABAP2 (Maccoa Duck) and that previous avifauna surveys for the GOOD HOPE 1&2 Solar PV Farms confirmed the presence of Secretary Bird (Nuttall & Vermeulen 2022). No records are available for Ludwig's Bustard, as predicted by the EIA Screening Tool. The habitat in and surrounding the proposed Good Hope OHPL corridor and substation is not considered suitable for Ludwig's Bustard.

Table 7: Expected and observed avifauna species of conservation concern for the Good Hope OHPL.

Common Name	Scientific Name	Global Status (IUCN)	Regional Status (Taylor et al. 2015)	# pentads	March 2023 Survey	Nuttall & Vermeulen (2022)
White-backed Vulture	*Gyps africanus*	CR	CR	1		
Blue Korhaan	*Eupodotis caerulescens*	NT	LC	1		
Abdim's Stork	*Ciconia abdimii*	LC	NT	1		
Black-winged Pratincole	*Glareola nordmanni*	NT	NT	1		
Chestnut-banded Plover	*Charadrius pallidus*	LC	NT	1	1	
Maccoa Duck	*Oxyura maccoa*	EN	NT	-	3	
Greater Flamingo	*Phoenicopterus roseus*	LC	NT	1	123	x
Lesser Flamingo	*Phoeniconaias minor*	NT	NT	1	235	x
Secretary Bird	*Sagittarius serpentarius*	EN	VU	4		x

Red Listed Species with a high probability of occurring within the study area are discussed as follows:

- **White-backed Vulture (*Gyps africanus*)**: Although no vultures or their nests were observed during their survey, they are known from the region and since the farms within close proximity to the Good Hope OHPL and their neighbours contain domestic farm animals (cattle and sheep), it is probable that vultures can be present on or near the OHPL infrastructure when an animal has died or has given birth. White-backed Vultures are known to perch on human-made infrastructure, especially if the infrastructure is higher than the surrounding natural vegetation. Telephone and electricity pylons are the most common artificial perches used but White-backed & Cape Vultures (K. Wolter, pers. comm.). Potential electrocution can occur when vultures perch on OHPL infrastructure, either due to faecal "streamers" or large open wings creating a short between insufficiently spaced electrical wire spans. Furthermore, although the trees present in the sparse woodland habitat type appear too small and sparsely distributed, it is still possible that this species may attempt to nest on such trees. Care was taken to investigate each of the large trees within the proposed corridor and no nests were observed during the survey.
- **Blue Korhaan (*Eupodotis caerulescens*)**: This species favours fairly short grassland, where it forages and breeds but will also utilise fallow croplands. The major threats to this species includes human encroachment on habitat through agriculture and urbanisation (Chittenden et al., 2016). The current impacts for this species in the region appears to be agricultural fields, livestock grazing activities, as well as the presence of many overhead power lines, which they are prone to colliding with.
- **Secretarybird (*Sagittarius serpentarius*):** Secretarybirds favour open grassland habitats for terrestrial foraging and seek out flat-top Acacia trees (now Vachellia) or other thorny trees for nesting, such as those present in the sparse woodland habitat type. Care was taken to investigate each of the large trees within the proposed corridor and no nests were observed during the survey. This species is prone to collision with OHPLs.
- **Flamingos (*Phoeniconaias* minor & *Phoenicopterus roseus*)**: Both Lesser and Greater Flamingos were observed during the survey and are well-known and regularly observed at the large pan towards the east of Dealesville. These species require large pan systems and usually prefer the large permanent or semi-permanent systems in the region which offer greater foraging opportunity as well as the ability to forage further out from the banks of the pan to avoid terrestrial predators. Flamingos are susceptible to colliding with OHPLs, particularly when they migrate long distances during the night (McCulloch et al. 2003). This represents a potential impact from the proposed OHPL as the large pan to the east of Dealesville is heavily utilised by these species and their flights to-and-from the pan in a westerly direction are likely to force them into a corridor above the wetland area and between the built-up areas where the OHPL is planned (Figure 25). This is because wetland birds typically migrate along easily identifiable linear features in the landscape like wetlands and will also usually avoid noisy, bright and unfamiliar habitats.
- **Maccoa Duck (*Oxyura maccoa*):** This Endangered species has not been recorded often in this area before but is known from the more frequently surveyed Bloemfontein and Kimberley areas. As with most waterbirds, this species is also at risk from collisions with OHPL in close proximity to water sources.

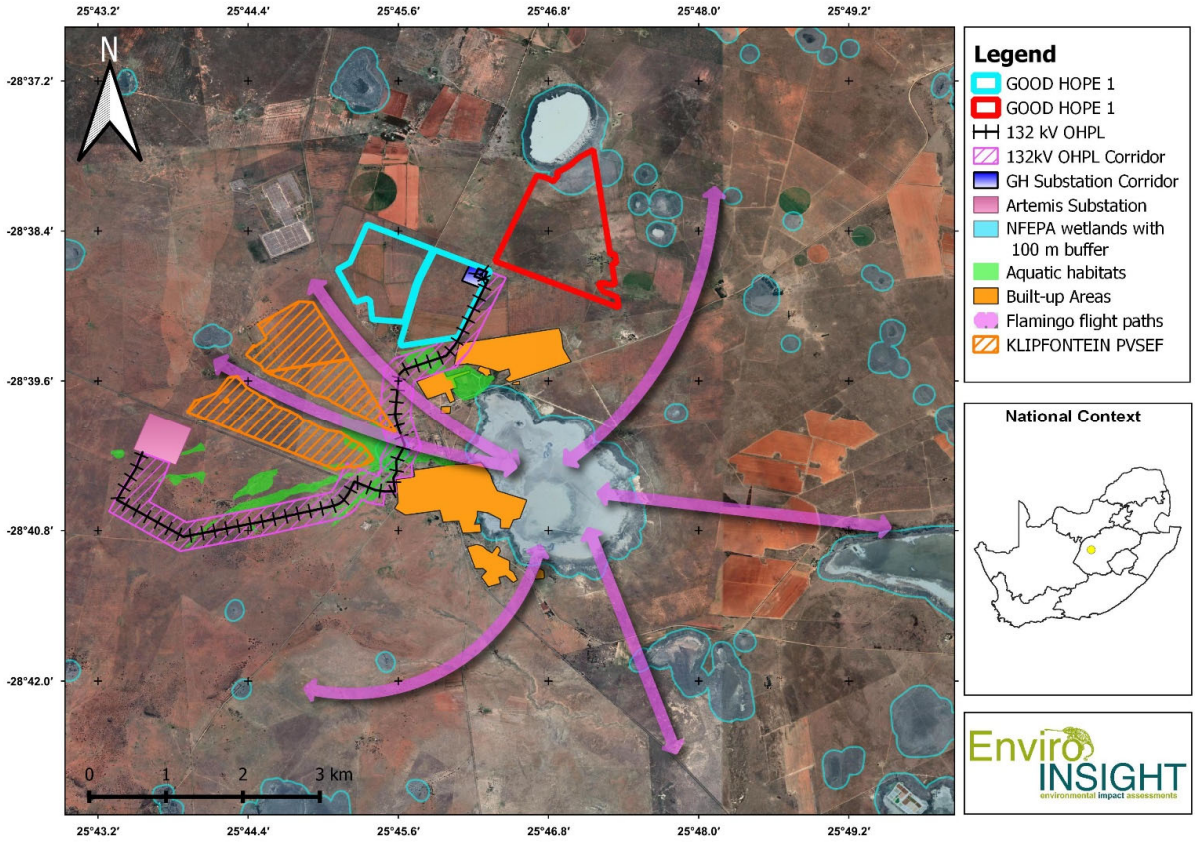

Figure 25: Potential flamingo flight paths in relation to the Good Hope OHPL.

Site Ecological Importance (SEI)

SEI was evaluated for each of the delineated avifauna habitats within the Good Hope OHPL (Table 8) and mapped in relation to the proposed location of infrastructure (**Figure 26**). The spatial representation of this SEI evaluation does not include the application of buffers to each of the habitat types, because SEI is primarily a tool for mapping terrestrial habitat importance and not suited for flight path or flyway mapping, which is the main concern for the proposed development.

From **Figure 26** it can be seen that the majority of the proposed project infrastructure occurs on LOW and VERY LOW Site Ecological Importance (SEI) but that there are a few HIGH SEI areas across the OHPL corridor which cannot be easily avoided without significantly altering the current alignment.

Table 8: Site Ecological Importance (SEI) evaluation for the avifauna habitats present in the proposed Good Hope OHPL corridor and substation vicinity.

Avifauna Habitat	Conservation Importance (CI)	Functional Integrity (FI)	Receptor Resilience (RR)	Site Ecological Importance (SEI)
Wetlands, Pans and Dams	High - Confirmed occurrence of Endangered Maccoa Duck (listed under criterion A but with < 10,000 individuals estimated [4,800-5,700; IUCN 2023])	High - Only minor current negative ecological impacts with no signs of major past disturbance and good rehabilitation potential.	Medium – Unknown in terms of the food/breeding resources that Maccoa Duck and Flamingos require. Applying precautionary approach and assuming medium RR.	**HIGH** BI = High

Avifauna Habitat	Conservation Importance (CI)	Functional Integrity (FI)	Receptor Resilience (RR)	Site Ecological Importance (SEI)
Grassland (including seeps)	Medium – Highly likely foraging habitat (confirmed by Nuttal & Vermeulen 2022) of Endangered Secretarybird (listed under criterion A and with > 10 locations and > 10000 individuals estimated).	High - >10 ha for EN ecosystem type (Vaal-Vet Sandy Grassland).	High - Habitat will recover relatively quickly (~ 5–10 years) to the point where SCC (Secretarybird) can utilise it again for foraging purposes.	**LOW** BI = Medium
Sparse Woodland	Medium – Highly likely potential for nesting sites for the Endangered Secretarybird (listed under criterion A and with > 10 locations and > 10000 individuals estimated).	High - >10 ha for EN ecosystem type (Vaal-Vet Sandy Grassland).	High - Habitat will recover relatively quickly (~ 5–10 years) to the point where SCC (Secretarybird) can utilise it again for foraging purposes.	**LOW** BI = Medium
Agricultural and Fallow fields	Low - No confirmed or highly likely populations of SCC.	Low - Several minor and major current negative ecological impacts with low rehabilitation potential but still serve a function for many species (migration and foraging).	Very High - Habitat already disturbed so can recover to present state rapidly.	**VERY LOW** BI = Low
Transformed	Very Low - No confirmed and highly unlikely populations of SCC.	Very Low - Several major current negative ecological impacts.	Very High - Habitat already disturbed so can recover to present state rapidly.	**VERY LOW** BI = Very Low

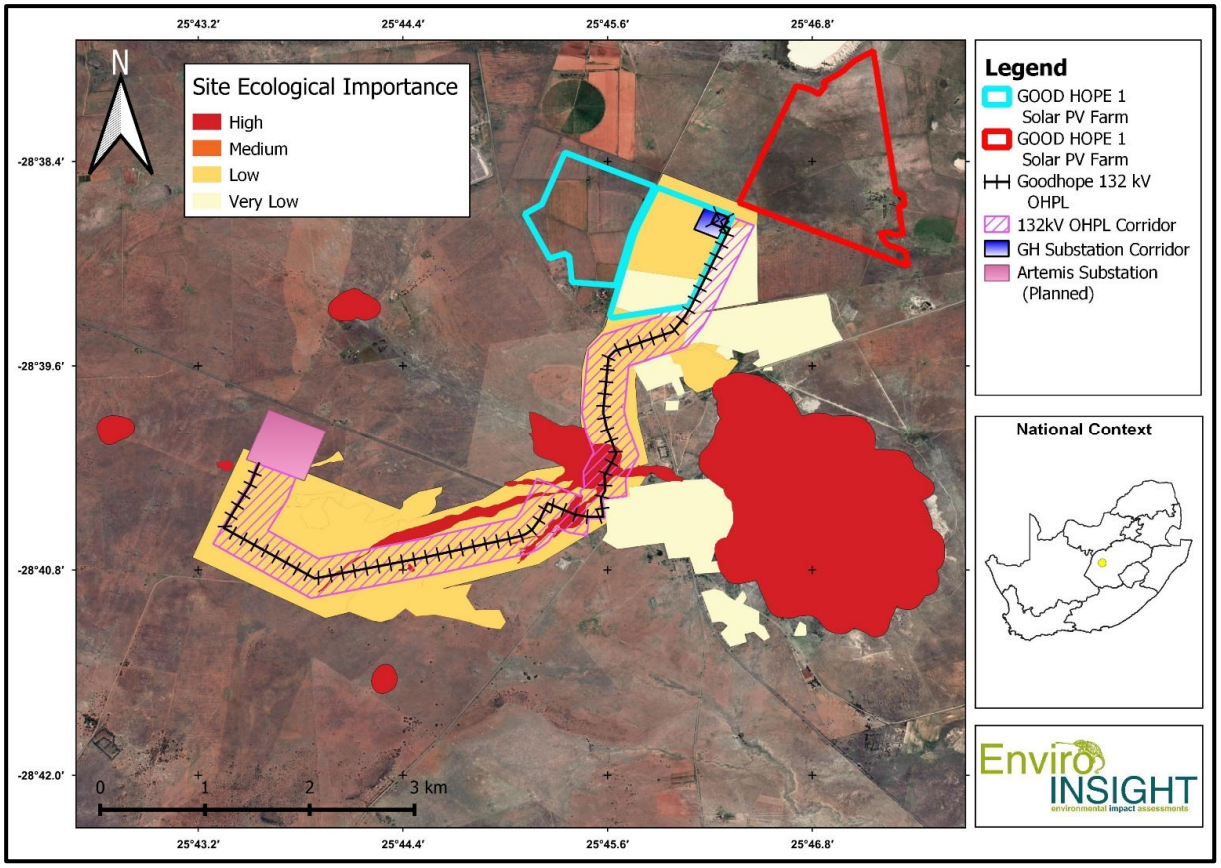

Figure 26: Site Ecological Importance (SEI) in relation to the Good Hope OHPL.

Existing Impacts

Several existing impacts to avifauna were observed in the study area during the survey and include:

- Livestock grazing and agriculture – reduces plant diversity and abundance and therefore habitat viability for foraging avifauna.
- Built infrastructure – Mostly surrounding the urban areas but includes tarred roads too, which eliminate or transform the habitat for avifauna.
- Alien and invasive species – alien trees (Eucalyptus) reduce natural habitat for avifauna.
- Dense network of existing OHPLs from ESKOM for electricity transmission – this creates a major flight obstacle for many species, specifically those that are heavy-bodied.

8.4.2 Potential Impact Identified

Direct Impacts

The effects of powerline infrastructure on birds are highly variable and depend on a wide range of factors including the design and specification of the development, the topography of the surrounding land, the habitats affected and the number and species of birds present.

The main anticipated environmental impacts on avifauna from the proposed Good Hope OHPL and substation are:

- the removal or alteration of habitat specifically utilised by avifauna SCC;
- collisions/electrocutions with electrical transmission infrastructure and security fences (vehicle induced flushing);

- disturbance due to noise such as, machinery movements and maintenance operations during the construction phase;
- attraction of certain bird species due to the OHPL and associated infrastructure such as perches and nest opportunities which lead to exacerbation and increased probability of the above-mentioned impacts.

Each of the potential impacts is carefully described in Section 12 along with proposed mitigation measures to limit these impacts.

Cumulative Impacts

It is very difficult to assess the cumulative impacts of OHPLs since there is no structured monitoring for bird collisions and electrocutions along all existing powerlines in South Africa from which to assess the realized impact. Deaths are usually only sporadically encountered and often go unreported. However, given the large number of threatened bird species which have collisions/electrocutions with OHPLs listed by the IUCN as one of the major threats, it is clear that these species are already experiencing cumulative impacts to their populations in South Africa.

As mentioned above, even with the best mitigation measures applied there are still cumulative negative impacts expected to large-bodied species in the region due to their propensity for collision with overhead powerlines which cannot be completely mitigated with current measures such as bird flight diverters. Some cumulative impact to these species is therefore expected in the region from the existing and planned OHPLs but it is not possible to accurately calculate the magnitude of this impact at this stage. More research is required to assess these impacts appropriately and develop mitigation solutions that are more effective than those currently available.

Nevertheless, to provide some evaluation of cumulative impacts, the most recently available information on existing and planned transmission lines available from ESKOM was mapped in relation to the proposed Good Hope OHPL (**Figure 27**). This shows many existing OHPLs in the area around Dealesville, many of which are connected to the ESKOM Perseus substation (west of GOOD HOPE 1 Solar PV Farm). Many of these OHPLs do not have bird flight diverters (pers. obs.) and it can be hypothesized that many bird collisions must occur from such a dense network of OHPLs. Adding an additional OHPL into the interior of a large space relatively free of existing lines and also in close proximity to the major pan utilised by several avifauna SCC (**Figure 27**), must therefore be carefully mitigated as described above to avoid contributing significantly to the potential impacts from OHPLs in the region.

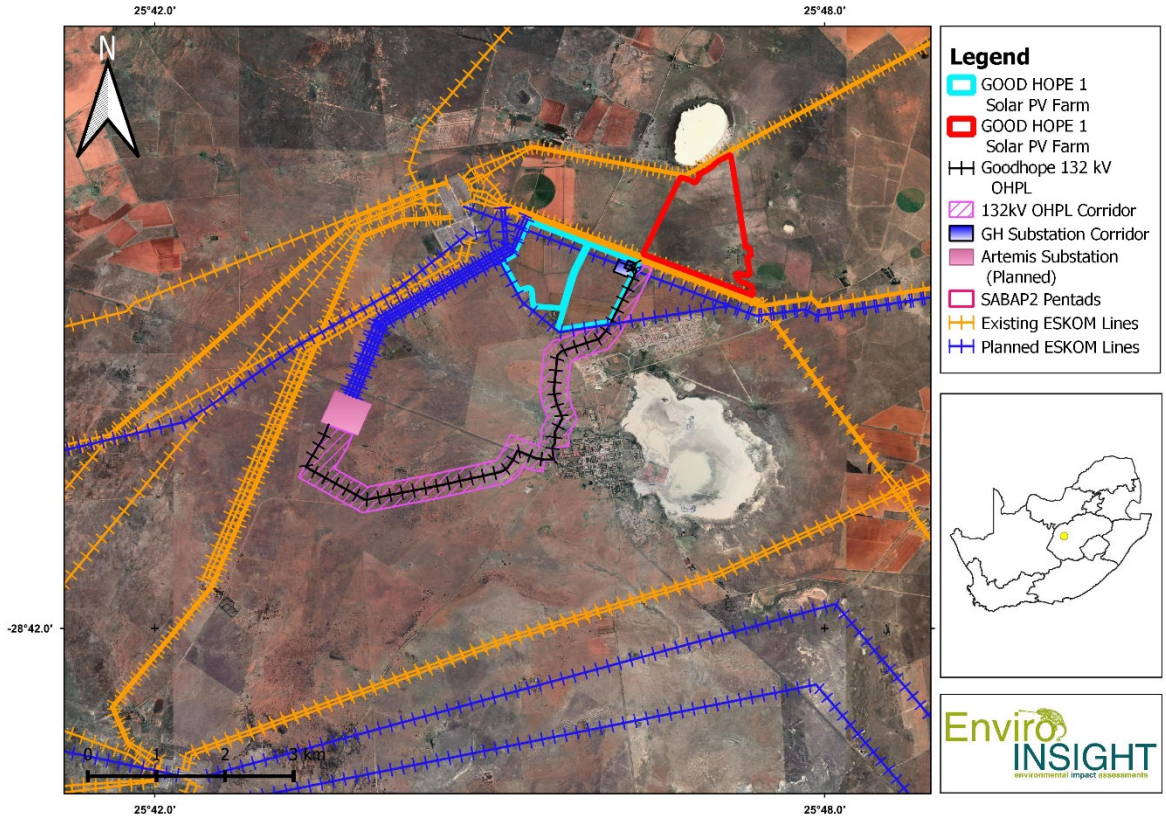

Figure 27: Alignments of planned and existing ESKOM transmission lines (GCCA, 2022) in relation to the Good Hope OHPL.

8.4.3 Opportunities and Constraints

Without long-term data to present the flight paths of flamingos and other large-bodied SCC, it is not possible to develop strict NO-GO areas for OHPLs based on likely collisions (other than buffering the major pan which was not required in this case as it is ~ 800 m from the OHPL corridor). Furthermore, such desirable avoidance mitigation is typically not practically possible due to many other constraints, such as rules and regulations governing the placement of new OHPLs near existing ESKOM OHPLs. Therefore, none of the areas for proposed infrastructure can be considered as NO-GO but strong emphasis must therefore be placed on minimisation mitigation and in this case, ensuring that no electrocutions or collisions of SCC take place. It is for this reason that the sensitive avifauna area demarcated in **Figure 41:** will require extensive application (every ~ 15 m) of bird flight diverters that are visible in the dark.

Finally, it is highly unlikely that White-backed Vultures will nest on the trees in the sparse woodland habitat but it is possible that Secretarybirds might. This cannot be considered sufficient reason for a pre-emptive NO-GO demarcation as there was no evidence of nesting observed by this species during the survey. It is therefore not demarcated as a NO-GO but is strongly recommended that re-investigation of each large tree must take place before final alignment of the proposed OHPL is established within the corridor to ensure that no disturbance/fatalities occurs to this species from the proposed development.

Conclusion

With appropriate mitigation, negative impacts to avifauna SCC expected from the proposed development can be sufficiently minimised, but not entirely avoided. The specialists recommends that the Competent Authority

should grant environmental authorisation for this proposed OHPL within the provided corridor, on condition that:

- All mitigation measures stipulated in this report are adhered to and captured in an Environmental Management Plan (EMP);
- The EMP must include a post-construction avifauna monitoring plan to record and evaluate any collisions/electrocutions for at least two years following construction of the OHPL, with the goal of adaptively managing unforeseen impacts. Ideally this monitoring should be an extension of the required monitoring for the GOOD HOPE 1 & 2 Solar PV Farms already authorized.

Based on the above evidence before the EAP, the appointed specialist has not identified any fatal flaws with the project proposal, and it is reasonable to suggest that the proposed Good Hope OHPL corridor and substation are acceptable and implementable from an Avifaunal perspective with mitigation measures in place.

Please refer to Section 12 of this Report, which details all the Impacts associated with the construction and operational phase of the proposed OHPL.

8.5 FRESHWATER ASSESSMENT

TMG, on behalf of the Applicant appointed Scientific Aquatic Services (hereinafter referred to as the "Aquatic Specialist") to undertake a Freshwater Assessment for the proposed Good Hope OHPL corridor and substation site. The specialist report is presented in Appendix D and the following is a summary:

8.5.1 Assessment Approach

The study methodology was as follows:

- A desk top study of relevant national, provincial and municipal databases was conducted to identify potential freshwater systems in the study area and to aid in defining the Present Ecological State (PES) and Ecological Importance and Sensitivity (EIS) of the freshwater ecosystems;
- A field verification was conducted to groundtruth the information determined by the desk top study.
- All freshwater ecosystems associated with the study area and associated investigation area were delineated using desktop methods in accordance with GN 509 of 2016. Aspects such as soil morphological characteristics and wetness along with vegetation types were used to verify the freshwater ecosystems;
- The freshwater ecosystem classification assessment was undertaken according to the Classification System for Wetlands and other Aquatic Ecosystems in South Africa. User Manual: Inland systems;
- The Present Ecological State (PES) of the freshwater ecosystems were assessed according to the resource directed measures guideline;
- The Ecological Importance and Sensitivity (EIS) of the freshwater ecosystems were determined;
- The Ecoservices of the freshwater ecosystems were assessed;
- The ecosystem services provided by the relevant freshwater were determined in which services to the ecology and to the people are assessed;
- The freshwater ecosystem boundaries, and legislated zones of regulation were depicted for the freshwater ecosystems, where applicable;

8.5.2 Desk Top Outcomes

The desk top study identified the following relevant to freshwater ecosystems in the greater study area:

- **Quaternary Catchment**: Most of the proposed OHPL corridor and the substation site are located in quaternary catchment C52H with a small portion of the OHPL corridor located in quaternary catchment C52K. The study area is located within a sub-WMA currently not considered important in terms of fish, aquatic or freshwater conservation.

- **NFEAP Wetlands:** No natural wetlands are indicated within the proposed OHPL corridor or substation site. One (1) artificial feature is situated within the central portion of the OHPL corridor.
- **NFEPA Rivers:** no rivers are indicated within the study or associated investigation area.
- **National Biodiversity Assessment (2018): South African Inventory of Inland Aquatic Ecosystems (SAIIAE)**: No natural wetlands are indicated within the study area. However, a natural depression wetland is indicated in the western portion of the investigation area and is indicated to be in a natural/good (WETCON A/B) ecological condition. The Ecosystem Protection Level (EPL) of the depression wetland is poorly protected (PP), and the Ecosystem Threat Status (ETS) is of least concern (LC). No rivers are indicated within the vicinity of the study or investigation area.
- **National Web Based Environmental Screening Tool:** a small area in the far western corner of the investigation area (corresponding with a depression wetland indicated by the NBA, 2018) is of 'very high' aquatic biodiversity sensitivity. However, the study area and remaining portion of the investigation area is of 'low' aquatic biodiversity sensitivity.
- **Strategic Water Source Areas:** According to the Strategic Water Source Area Database (2017), the study and investigation area do not fall within a strategic water source area.

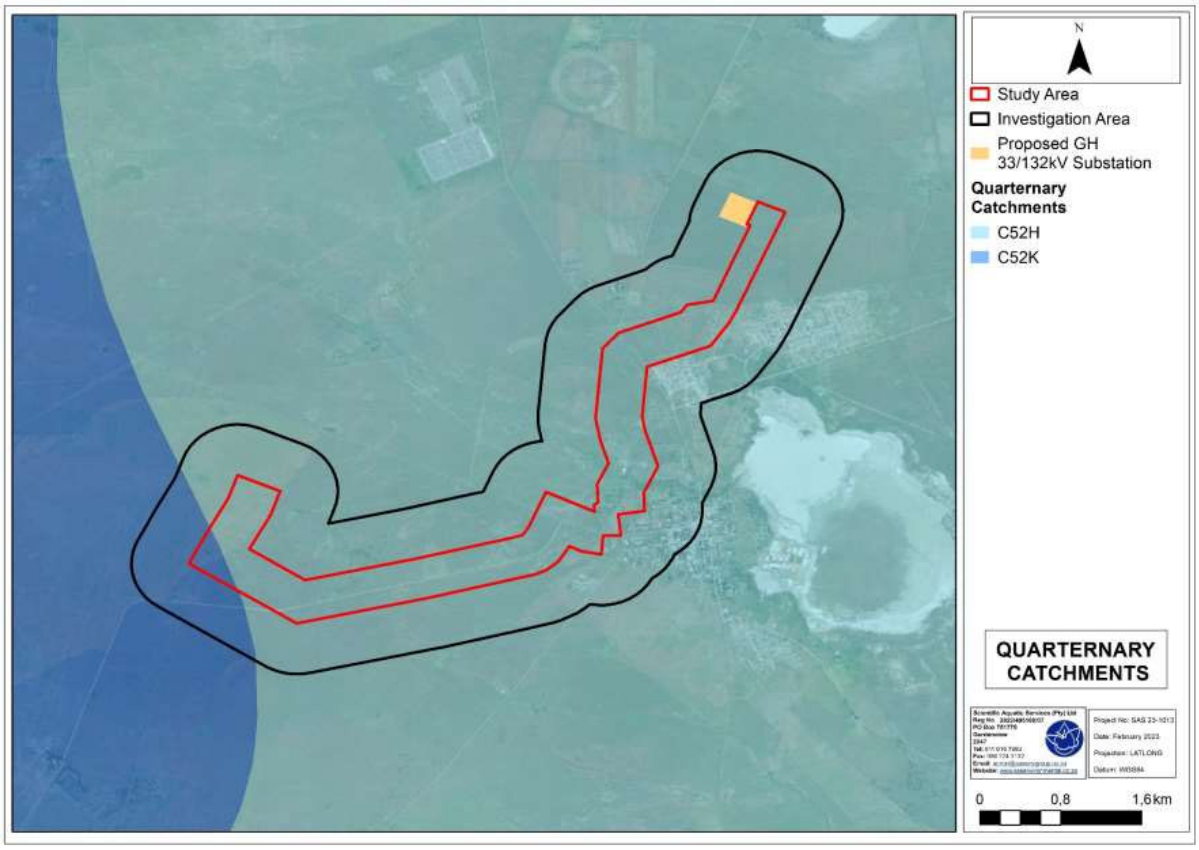

Figure 28: The quaternary catchments associated with the study and investigation area.

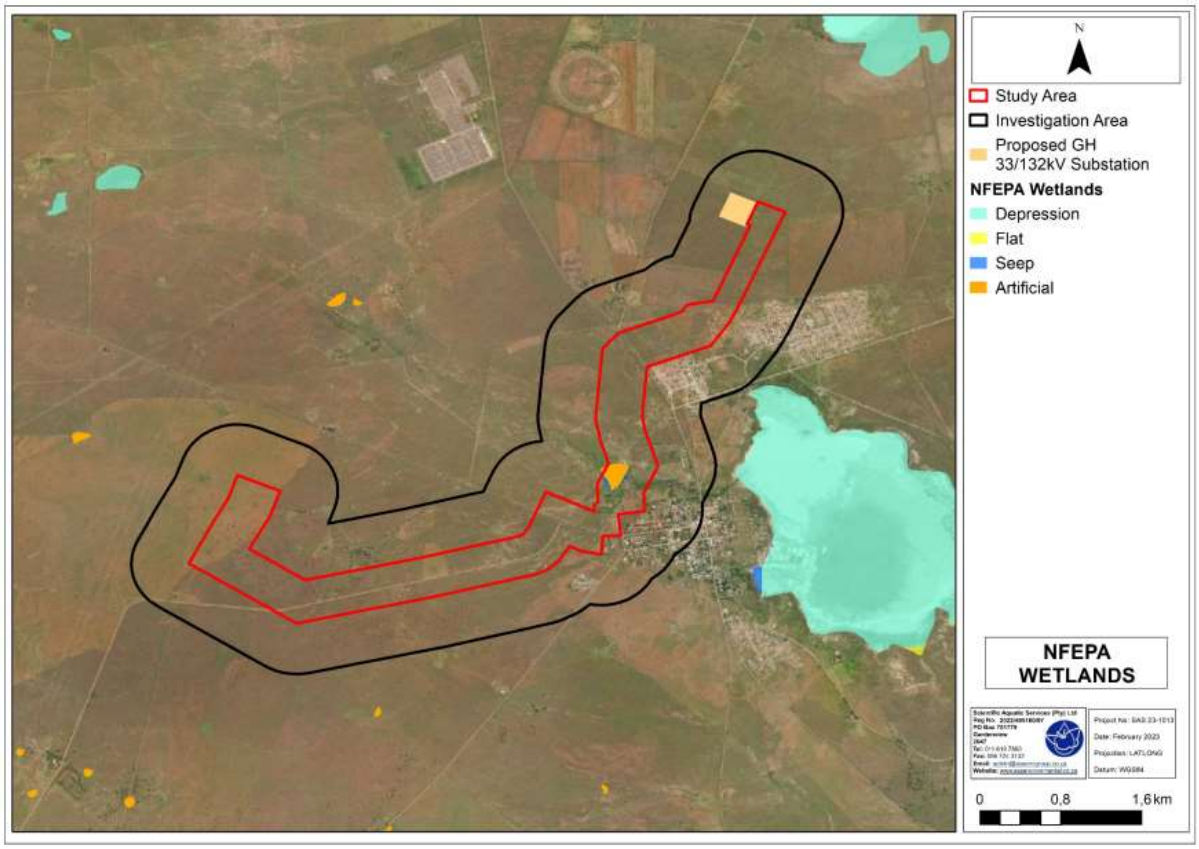

Figure 29: Wetland HGM classifications associated with the study and investigation areas according to the NFEPA database (2011).

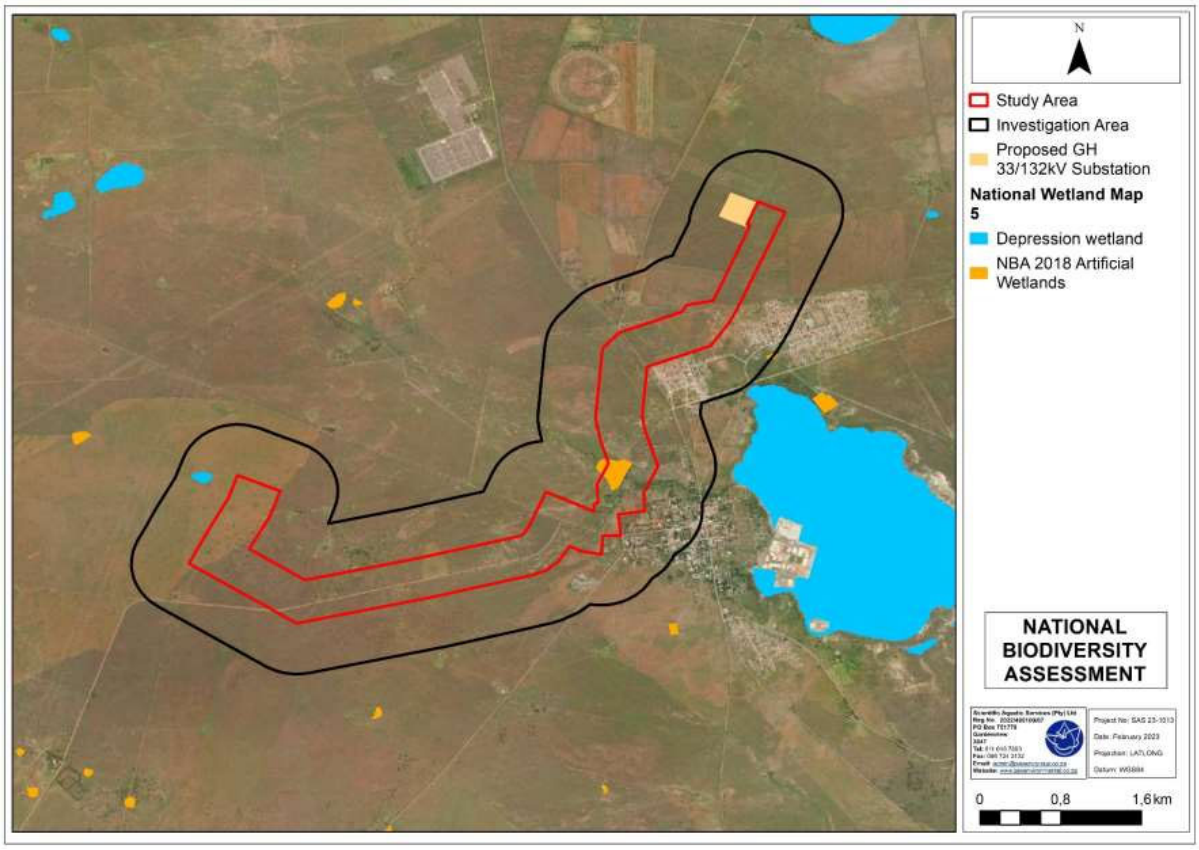

Figure 30: Wetlands associated with the study and investigation areas according to the National Biodiversity Assessment database (2018).

8.5.3 Field Verification and Assessment Findings

Freshwater Characterisation

The site assessment confirmed the presence of numerous Hydrogeomorphic (HGM) units within the study and investigation areas, namely:

- Two (2) Hillslope seep wetlands;
- Three (3) depression wetlands;
- Two (2) Episodic Drainage Lines (EDLs); and
- A Wetland complex (comprising Channelled Valley Bottom, Unchannelled Valley Bottom, Hillslope seep and EDL HGM units)

These delineated freshwater ecosystems are conceptually depicted in **Figure 31**.

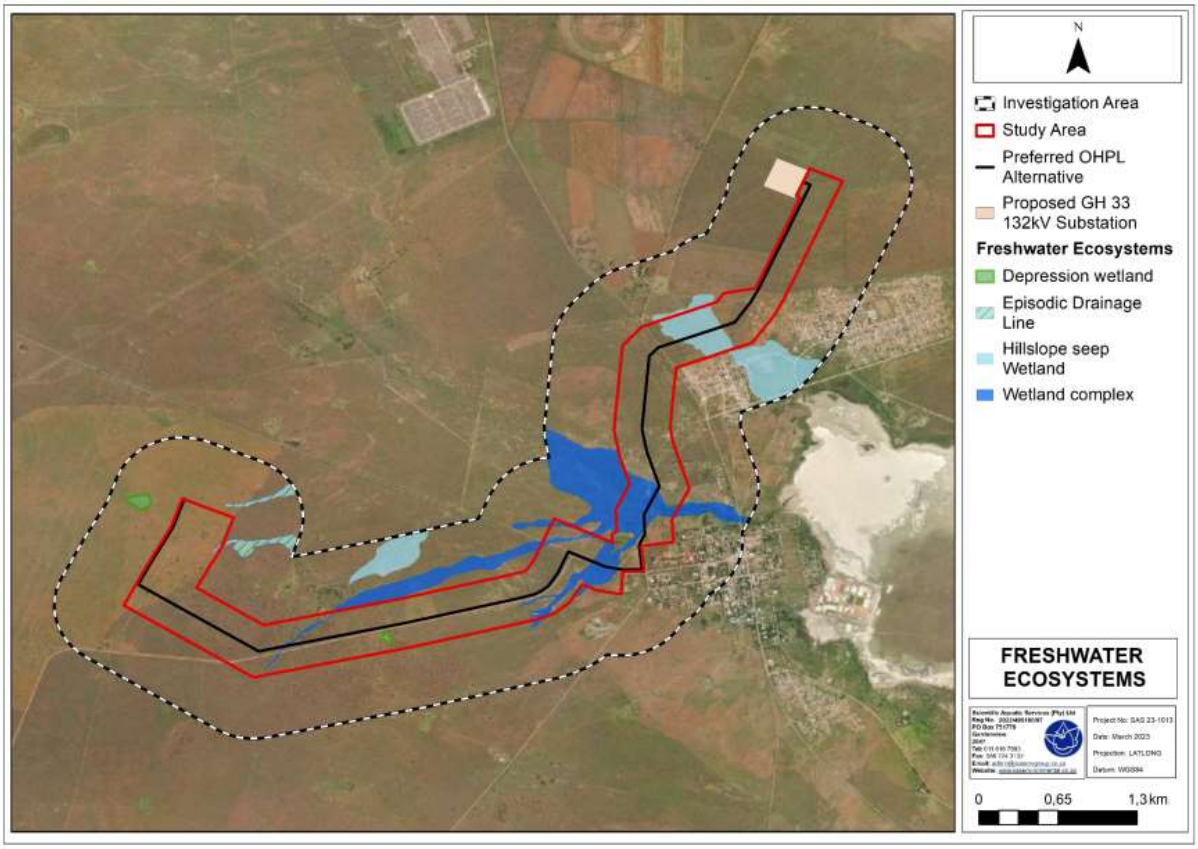

Figure 31: Location of the freshwater ecosystems associated with the study area

No freshwater ecosystems are associated with the proposed substation. The freshwater ecosystems that will be directly traversed by the proposed OHPL are assessed and discussed in the tables that follow. These freshwater ecosystems include:

- The northern hillslope seep wetland; and
- The wetland complex located in the central and southern portions of the study area.

Table 9: Summary of the assessment of the northern hillslope seep wetland traversed by the proposed OHPL.

Ecoservice provision	**Ecoservices category: Moderately High -Very Low** The hillslope seep wetland has a moderately high to very low ecoservice provision, with the primary ecoservice provisioning attributed to functioning services such as sediment trapping, phosphate, nitrate and toxicant assimilation. The moderately high supply and demand for provisioning services is attributed to the fact that the hillslope seep wetland is linked to a downstream depression wetland (identified by the NFEPA database (2011)) and is of critical importance for meeting wetland conservation targets. Ecoservices of low importance include provisioning services such as food for livestock and cultivated foods can be ascribed to the locality of the hillslope seep wetland within a relatively rural area.	**PES Discussion**	**Present Ecological Condition (PES): Seriously modified (PES E) (6.05)** The hillslope seep wetland was assessed to be in a seriously modified ecological condition. The primary impact to the hydrology and geomorphology of the wetland include housing development, associated infrastructure and likely disturbance resulting from domestic waste disposal and other related activities within the delineated boundary of the wetland. These activities have resulted in increased runoff due to hardened surfaces and alterations to the natural flow path and flood peaks of the wetland. The vegetation community of the wetland has also been altered and is dominated by graminoids, sedges and a few herbaceous species. Disturbances such as grazing and construction of infrastructure within the north of the high density residential area have resulted in Alien and Invasive Species (AIP) encroachment.
EIS discussion	**EIS Category: Moderate (1,20)** The hillslope seep wetland was assessed to be of moderate Ecological Importance and Sensitivity (EIS) on a landscape scale. The hillslope seep wetland falls within the Dry Highveld Grassland Group 3 wetland vegetation type (wetveg type) classified as "Vulnerable" by Mbona et al (2014) (Section 3.1).	**REC, RMO & BAS Category**	**Recommended Ecological Category (REC): Category D** **Best Attainable State (BAS): Category D** **Recommended Management Objective (RMO): D (Improve)** Strictly speaking, according to the method of determining the RMO, the RMO is to maintain the PES, seriously modified ecological condition (Category E). However, since a PES Category E/F is considered ecologically unacceptable (Malan and Day, 2012), the recommended Ecological Category (REC) is Category D and therefore, efforts should be made to improve the Ecostatus of the portion of the wetland influenced by the proposed powerline, accordingly. Please refer to the discussion below pertaining to impacts and mitigation measures.
Freshwater Ecosystem drivers and receptors discussion (hydraulic regime, geomorphological processes, water quality and habitat and biota):			
The hydraulic regime and geomorphological processes of the hillslope seep wetland has been altered from the natural condition. Anthropogenic activities such as high density residential development and associated hardened surfaces, likely stormwater discharge and other activities within the delineated extent of the wetland have altered the natural flow path, flood peaks and sediment balance of the wetland. Although no onsite specific water quality testing was undertaken (as surface water was absent at the time of assessment), it is expected that catchment wide anthropogenic activities such as cultivation and rural development, has altered the natural water quality of the wetland. The forementioned activities would result in alterations to the sediment balance of the wetland due to increased sediment laden runoff as well as potential contaminants from herbicides and pesticides used for cultivation purposes. Although the hillslope seep wetland is in a seriously modified ecological condition, the wetland still provides a habitat for biota with the primary vegetation cover comprised of graminoid, sedge and herbaceous species. Numerous Alien and Invasive Species (AIPs) and problem weeds were also noted within the wetland and include, but are not limited to, *Tagetes minuta*, *Bidens pilosa* and *Oenothera rosea*. Overall, the hillslope seep wetland is considered likely to provide roosting, breeding and feeding habitat for avifauna, small mammals, amphibians, reptiles and invertebrate, albeit less sensitive species.		
Extent of modification anticipated	**Low** A low level of modification to the hillslope seep wetland is anticipated from the construction and operation of the proposed OHPL, provided that all mitigation measures as set out in this report are adhered to.		
Risk Assessment Outcome & Business Case:			

Low	The quantum of risk posed by the proposed OHPL to the hillslope seep wetland was assessed as "low" with the implementation of additional mitigation measures in order to ensure a "low" risk significance. It is imperative that all mitigation measures as set out in this report are strictly adhered to. Following finalisation of the position of the supporting structures, the mitigation measures provided will have to be re-assessed to ensure that all potential risks are adequately prevented and actively managed. Mitigation measures of greatest importance include: • Supporting infrastructure potentially located within the boundaries of the hillslope seep must not be placed in the permanent or seasonal zones, but rather in the temporary zones of the freshwater ecosystem; • Supporting infrastructure potentially located within the hillslope seep must be located along the previously disturbed areas within the wetland systems so as to avoid creating new disturbed areas within the freshwater ecosystems; and • All construction activities must occur within a low rainfall period

Table 10: Summary of the assessment of the wetland complex traversed by the proposed OHPL

Ecoservice provision	**Ecoservices category: Moderate -Very Low** The ecological service provisioning of the wetland complex was assessed as moderate to very low despite its largely modified ecological condition. Ecoservices considered to be of highest importance include provisioning services such as cultivated foods, food for livestock and harvestable resources largely as a result of the rural area in close proximity to the wetland complex which rely on the area for livestock grazing and fire wood. The high demand for functioning services such as sediment trapping, erosion control, phosphate, nitrate and toxicant assimilation are due to the fact that the wetland complex feeds into a downstream depression wetland (identified by the NFEPA database (2011)), which is of critical importance for meeting wetland conservation targets.	**PES Discussion**	**Present Ecological Condition (PES): Largely modified (PES D) (4.98)** The ecological condition of the wetland complex is largely due to alterations in the natural flow path and flood peaks of the wetland complex resulting from the development of an earth dam, road crossings and cattle grazing. During the site assessment it was also noted that numerous AIPs and problem weeds are associated with the delineated extent of the wetland complex.
EIS discussion	**EIS Category: High (2.67)** Despite the anthropogenic changes that have occurred within the wetland complex and surrounding area, the wetland complex is still considered ecologically important and sensitive. The Channelled Valley Bottom (CVB) and Unchannelled Valley Bottom (UCVB) wetland which forms part of the wetland complex, are sensitive to changes in floods, low flow/dry seasons and changes in water quality.	**REC, RMO & BAS Category**	**Recommended Ecological Category (REC): Category D** **Best Attainable State (BAS): Category C/D** **Recommended Management Objective (RMO): C (Improve)** Based on the PES and EIS, the RMO is to improve the ecostatus of the wetland complex to a BAS and REC of C, where feasibly possible. No further degradation of the wetland complex should be permitted and thus, mitigation measures should be implemented during all phases of the proposed powerline to minimise the risk of further negative impacts on the wetland complex.
Freshwater Ecosystem drivers and receptors discussion (hydraulic regime, geomorphological processes, water quality and habitat and biota):			
The hydraulic regime of the wetland complex has likely been affected by increased surface runoff which has altered the natural infiltration rates and the natural flood peaks of the wetland complex due to catchment wide agricultural activities, sediment laden runoff and urban development including road crossings. The earth dam associated with the wetland complex reduces flooding of the downstream wetland, which is important for meeting wetland conservation targets (NFEPA wetland), and results in changes to the ecoservice provisioning of the wetland complex. Although no onsite specific water quality testing was undertaken, it is expected that catchment wide anthropogenic activities such as cultivation and livestock grazing, as well as rural and urban development, has altered the natural water quality of the wetland complex. The forementioned activities would result in alterations to the sediment balance of the wetland due to increased sediment laden runoff as well as potential contaminants from herbicides and pesticides used for cultivation purposes.		

The vegetation community of the wetland complex is dominated by graminoid, sedge, herbaceous and a few woody species including *Vachellia karroo*, *Asparagus sp*, and *Searsia sp*. A few AIP species were also noted such as *Tagetes minuta*, *Bidens pilosa* and *Agave sp*. The wetland complex is considered to provide suitable breeding and foraging habitat for biota (likely less sensitive species). It is also considered likely that the wetland complex, especially in the vicinity of the earth dam, is used by other fauna including small mammals, avifauna, reptiles and amphibians.	
Extent of modification anticipated	**Low** A low level of modification to the wetland complex is anticipated from the construction and operation of the proposed OHPL, provided that all mitigation measures as set out in this report are adhered to.
Risk Assessment Outcome & Business Case:	
Low	• The quantum of risk posed by the proposed OHPL to the hillslope seep wetland was assessed as "low" with the implementation of additional mitigation measures to ensure a "low" risk significance. Following finalisation of the position of the supporting structures, the mitigation measures provided will have to be re-assessed to ensure that all potential risks are adequately prevented and actively managed. It is imperative that all mitigation measures as set out in this report (Section 6.1, Table 6) are strictly adhered to. Once the position of the supporting structures is known, the mitigation measures provided will have to be re assessed to ensure that all potential risks are adequately mitigated. The mitigation measures as mentioned in Table 3 above are also applicable to the wetland complex.

8.5.4 Buffer Zones

Certain articles of legislation related to the above Acts and legislation impose potential zones of regulation on freshwater ecosystems in both a national and provincial context. The Zones of Regulation (ZoR) are not necessarily development exclusion zones, rather areas in which EIA and Water Use Authorisation legislative tools have been introduced for the protection and sustainable use of freshwater resources by requiring that certain types of activities within a freshwater ecosystem, or within a certain distance of a freshwater ecosystem require authorisation. The buffer zones associated with the freshwater ecosystems identified are shown on **Figure 32**.

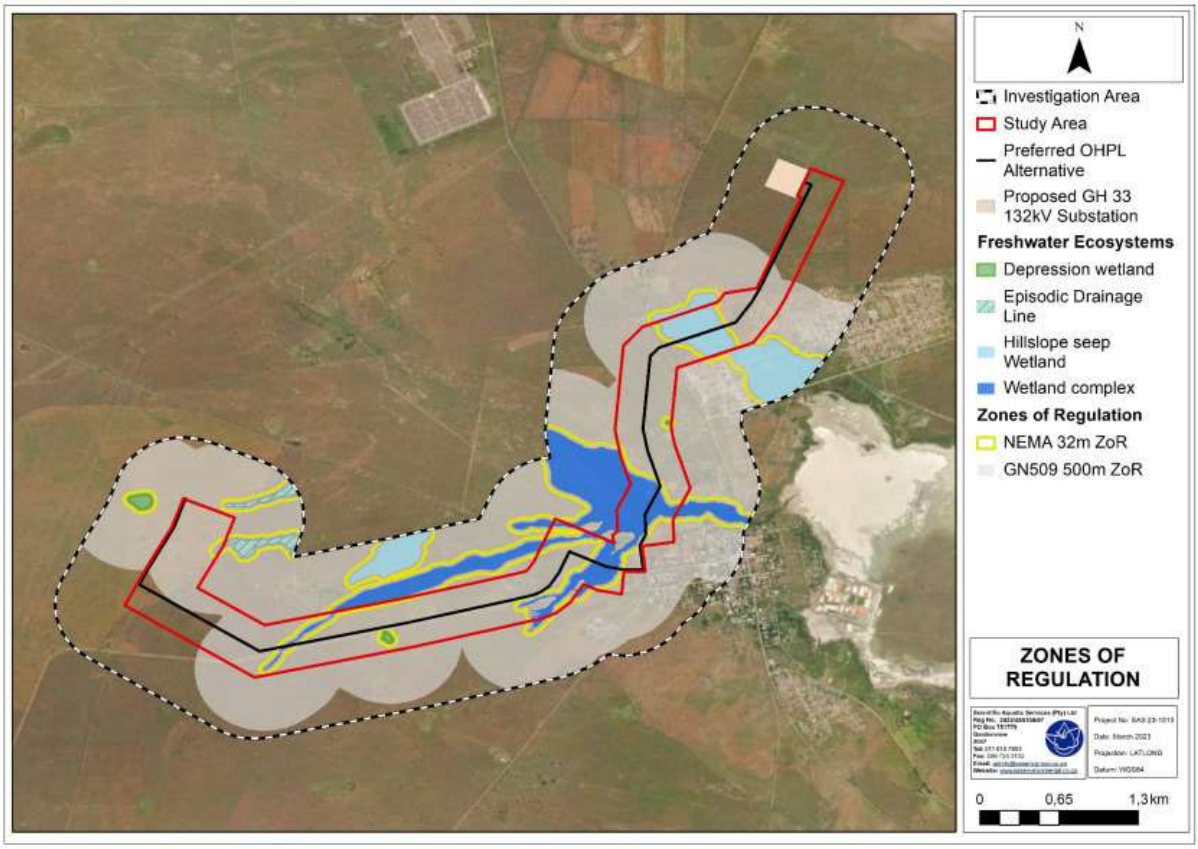

Figure 32: Conceptual representation of the zones of regulation in terms of NEMA and GN 509 associated with the study area.

8.5.5 Risk Assessment

A risk assessment has been carried out by the aquatic specialist to inform the water use authorisation process for the proposed works. A summary of the risk assessment is provided in **Table 11**. The full risk assessment is presented in Section 6 and Appendix D of the Aquatic Impact Assessment. The risk associated with the shorter-term construction and longer-term maintenance related activities would be deemed to be low provided that the mitigation measures as recommended in the aquatic specialist report are implemented. The proposed activities would therefore fall within the ambit of the General Authorisations for Section 21 (c) and (i) water use.

Table 11: Summary of risk assessment undertaken for Section 21(c) and (i) water use activities associated with the proposed Good Hope OHPL and substation

Phases	*Activity*	*Applicable Infrastructure*	*Risk Rating*	*Borderline Low-Moderate Risk Rating*

Construction Phase	*Vehicular movement (transportation of construction materials)	*Supporting structures potentially located inside the wetland complex and hillslope seep.*	*M*	*-(53,75) L*
		All other supporting infrastructure outside freshwater ecosystems	*L*	*NA*
	Removal of vegetation and associated disturbances to soils, and access to the site, including potential grading of existing informal roads.	*Supporting structures potentially located inside the wetland complex and hillslope seep.*	*M*	*55 L*
		All other supporting infrastructure outside freshwater ecosystems	*L*	*NA*
	*Excavation of pits for the support structures leading to stockpiling of soil; and *Movement of construction equipment and personnel within the freshwater ecosystems.*	*Supporting structures potentially located inside the wetland complex and hillslope seep.*	*M*	*55 L*
		All other supporting infrastructure outside freshwater ecosystems	*L*	*NA*
	Direct and indirect impacts on wetlands within the investigation area.	*Potential impacts on the up gradient depression wetlands (within 500 m of the study area).*	*L*	*NA*
		Potential impacts on the down gradient hillslope seep and EDLs (within 500 m of the study area).	*L*	*NA*
Operational Phase	*Operation and maintenance of the OHPL.*	*Supporting structures potentially located inside the wetland complex and hillslope seep.*	*L*	*NA*

8.5.6 Potential Environmental Impacts

The following impacts on the freshwater ecosystems have been identified by the aquatic specialist:

Pre-Construction and Construction Phase

- Loss of freshwater ecosystem vegetation, associated habitat and ecosystem services;
- Transportation of construction materials can result in disturbances to soils, and increased risk of sedimentation/erosion; and
- Soil and stormwater contamination from oils and hydrocarbons originating from construction vehicles.
- Disturbances of soils leading to potential impacts to the freshwater ecosystems vegetation, increased alien vegetation proliferation in the footprint areas, and in turn to altered freshwater ecosystem habitat; and
- Altered runoff patterns, leading to increased erosion and sedimentation of the freshwater ecosystems.

Operation and Maintenance Phase

- Disturbance to soils and ongoing erosion as a result of periodic maintenance activities; and
- Altered water quality (if surface water is present) as a result of increased availability of pollutants.

The assessment of these potential impacts is presented in section 12 of this report.

8.5.7 Conclusion of Aquatic Specialist

Assuming that strict enforcement of cogent, well-developed mitigation measures takes place, the significance of impacts arising from the proposed OHPL activities are likely to be reduced during the construction and operational phases assuming that a high level of mitigation takes place. It is, therefore, the opinion of the freshwater ecologist that the proposed OHPL and associated substation development be considered favourably provided that all mitigation measures as set-out in this report are implemented and the development can be considered for authorisation by means of registration of a General Authorisation in terms of GN509 of 2016 as guided by the new draft regulation on Section 21 c & i water uses published on 10 March 2023 for comment .

Based on the above evidence before the EAP, the appointed specialist has not identified any fatal flaws with the project proposal, and it is reasonable to suggest that proposed Good Hope OHPL corridor and substation site are acceptable and implementable from an Aquatic perspective.

8.6 HERITAGE ASSESSMENT

TMG, on behalf of the Applicant appointed PGS Heritage (C/O Mr Wouter Fourie) (hereafter referred to as the "Heritage Specialist") to undertake a Heritage Assessments for the proposed Good Hope OHPL and substation site. The HIA evaluated the possible impacts on heritage resources present within the proposed OHPL corridor and substation site. The specialist report is presented in Appendix D and the following is a summary:

8.6.1 Survey Methodology

The HIA process consists of three steps:

- **Step I – Literature Review and initial site analysis:** A detailed archaeological and historical overview of the study area and surroundings were undertaken. This work was augmented by assessing reports and data on the SAHRIS. Additionally, an assessment was made of the available historic topographic maps. All these desktop study components were undertaken to support the fieldwork.
- **Step II – Physical Survey:** A physical survey was conducted by a combination of vehicle and pedestrian access through the proposed project area by one qualified heritage specialist on 22 and 23 February 2023, to locate and document sites falling within and adjacent to the proposed development footprint.
- **Step III – Assessment and Reporting:** The final step involved recording and documenting relevant heritage resources identified in the physical survey, assessing these resources in terms of the HIA criteria and report writing, and mapping and constructive recommendations.

The significance of heritage sites was based on four main criteria:
- Site integrity (i.e. primary vs. secondary context),
- Amount of deposit, range of features (e.g., stonewalling, stone tools and enclosures),
- Density of scatter (dispersed scatter)
    - Low - <10/50m^2
    - Medium - 10-50/50m^2
    - High - >50/50m^2
- Uniqueness; and
- Potential to answer present research questions.

8.6.2 Heritage Resources Identified

The field survey of the study area was undertaken by a combination of vehicles and pedestrian survey on 22 and 23 February 2023. Three heritage sites (**GH-OHL-001** to **003**) and three low heritage significance findspots (**GH-OHL-004** to **006**) were identified within the lesser disturbed southern section of the corridor. The heritage findings are described as follows and the locations shown on **Figure 33**.

- Site **GH-OHL-001** consist of a large stone-walled kraal built within the confines of a large low rocky outcrop on the southern side of the dirt road running along the proposed alignment within the corridor.The type of stone-built kraal indicates early farming communities and their economic farming activities relating to animal husbandry. The site has a low to medium heritage significance with a local heritage grading of IIIC.

- Sites **GH-OHL-002 and 003** are engraved initials on dolerite boulders, dating from 1956. The initialled engraving provides a unique glimpse into the general day-to-day activities of the white farming community in the late 1950s. The two engravings has a low heritage significance with a local grading of IIIC.
- The dolerite outcrops towards the corridor's western end are characterised by various low-significance stone tool scatters (**GH-OHL-004 to 006**). Most stone tools consist of cores and flakes with minimal reworking or formal tools. The low density and lack of deposits on the rocky outcrops add to a generally low heritage significance rating and a grading of IIIC.

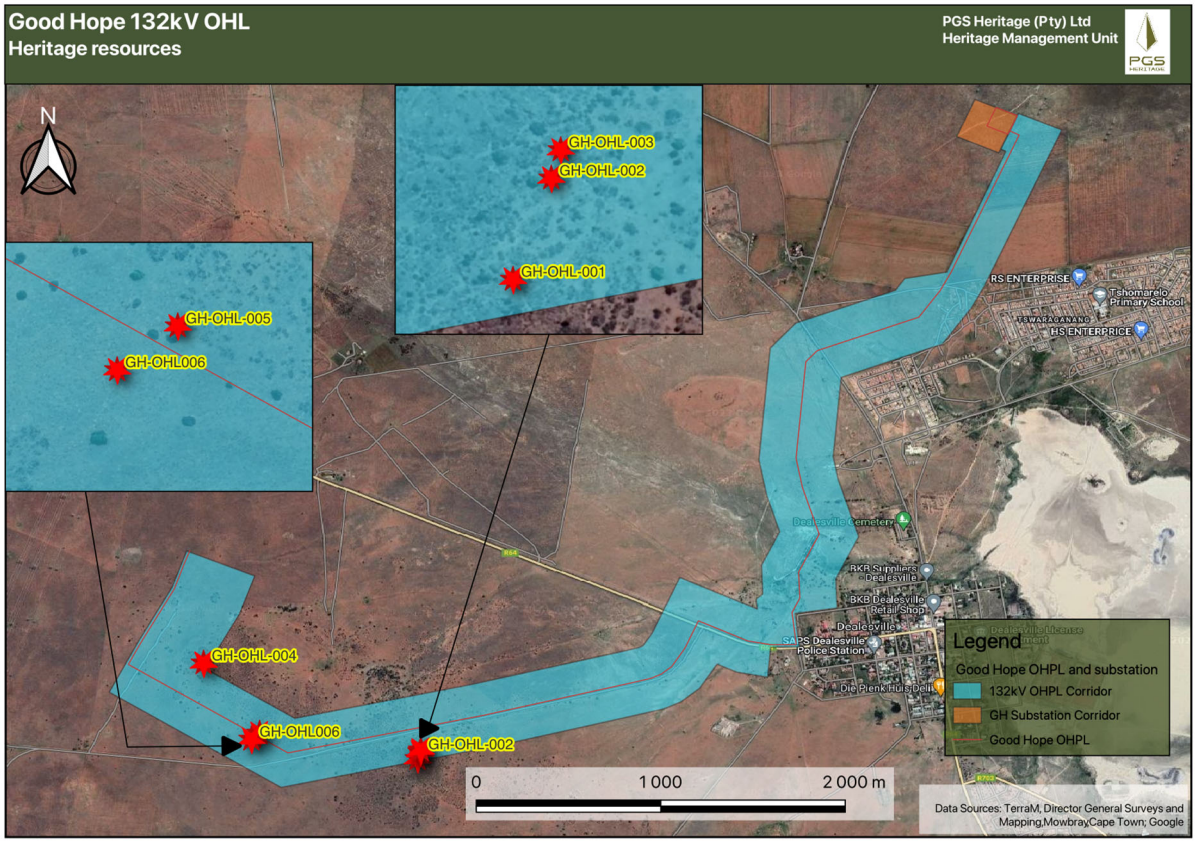

Figure 33: Identified heritage resources within the study area.

8.6.3 Paleontological Resources Identified

According to the Palaeosensitivity Map available on the SAHRIS database, the Palaeontological Sensitivity of the proposed development areas are mostly rated as high (orange), to low (blue) (Almond and Pether 2008, SAHRIS website) and will require a palaeontological desktop assessment.

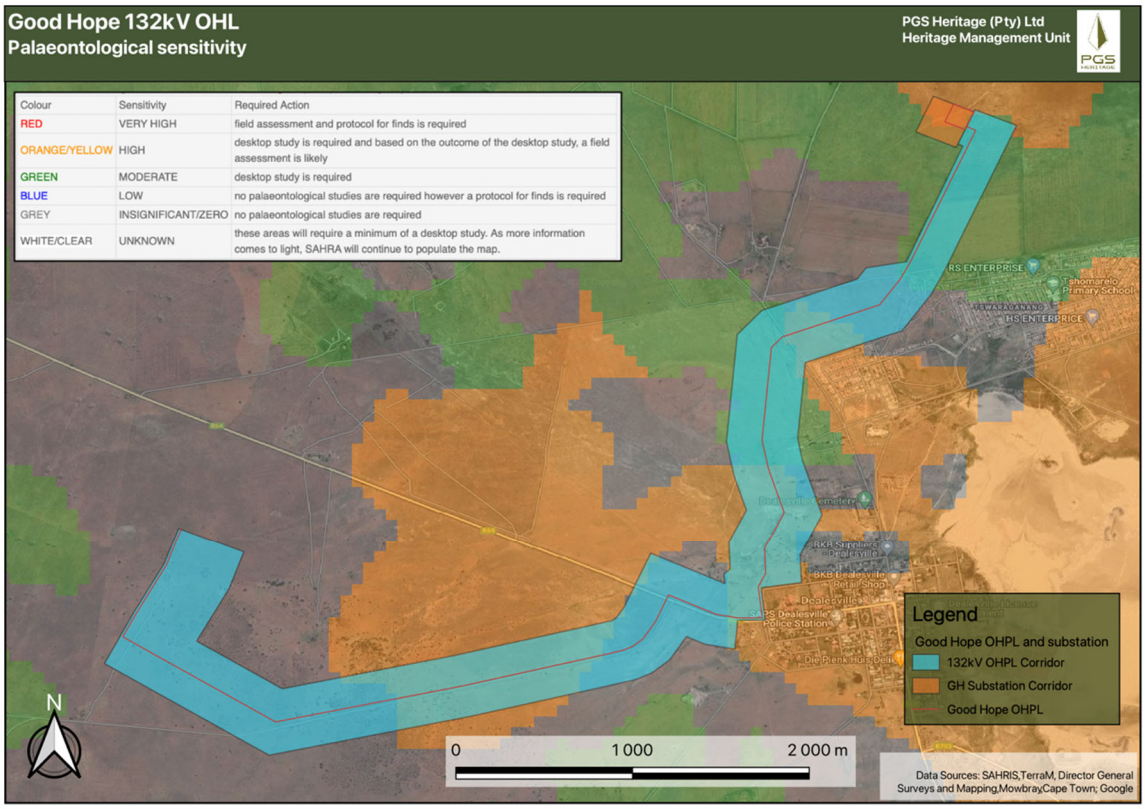

Figure 34: Extract of the 1 in 250 000 SAHRIS PalaeoMap map

However, the HIA completed by the palaeontologist Lloyd Rossouw in 2021, describes the areas as, *"mainly covers "degraded" farmland terrain (in the sense that it has either been ploughed or used for pasture or both in the past) and is underlain by paleontologically insignificant dolerite intrusions, covered by a well-developed and calcrete-rich aeolian sand overburden."* He further notes the presence of Tierberg Formation (Ecca Group) outcrops further to the north of the northernmost part of the GHOHPL substation. He notes that "*Fossils from the Tierberg Formation are generally poorly represented. They largely occur as sparsely distributed and generally not diverse assemblages of trace fossils.*"

8.6.4 Site Sensitivity Verification

The Archaeological and Cultural Heritage Sensitivity Map for the proposed project area prepared using the DFFE EIA Screening Tool indicates a **Low Sensitivity with localised high sensitivity areas** rating for the study area (**Figure 35**).

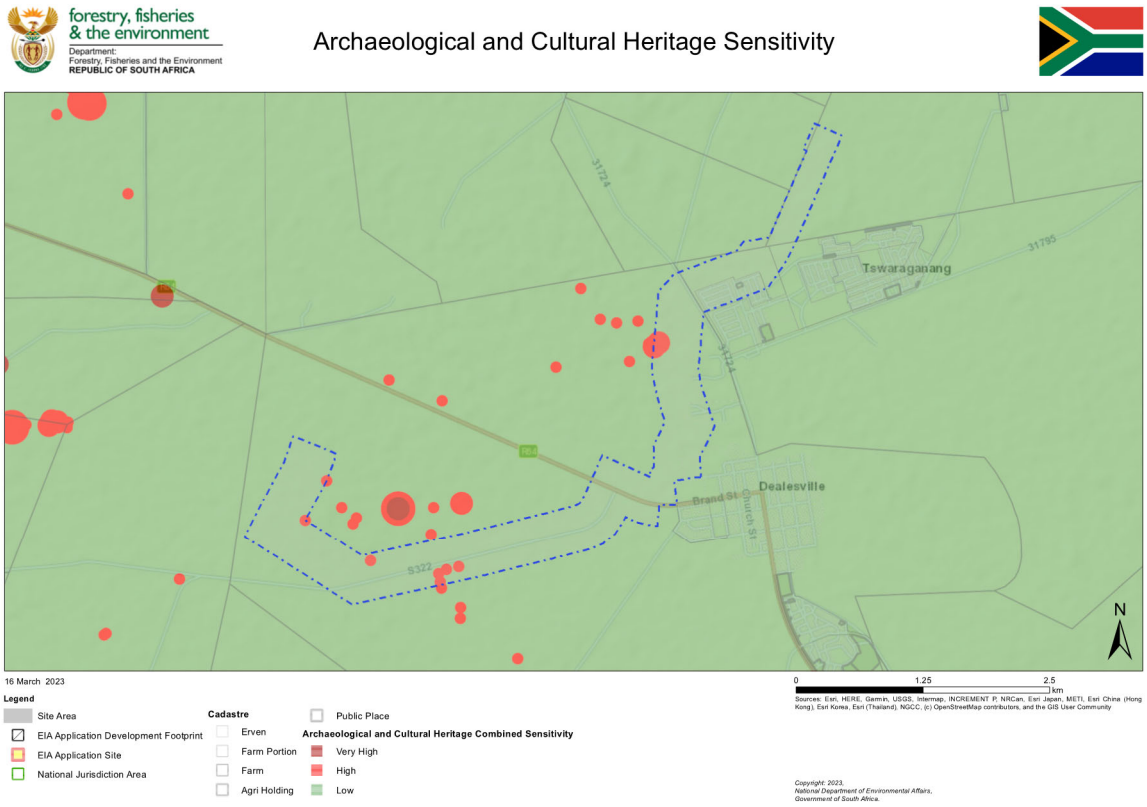

Figure 35: EIA Screening Tool (March 2023) map indicating a low and high sensitivity rating for archaeology and heritage within the corridor.

The localised sensitivities are indicated by red or dark red buffers around the small localised archaeological and cultural heritage findspots. Although these points have high and very high sensitivity ratings, they do not exclude development or indicate a trigger as considered by the regulations relating to grids and powerlines. It must be kept in mind that the type of development still triggers the requirements of an HIA as contemplated in section 38 of the National Heritage Resources Act (Act 25 of 199).

The fieldwork in the study area demonstrated that some of the localised areas identified correlate with those indicated in the screening sensitivity maps. Therefore, in the case of this study area, the Department of Forestry Fisheries and Environment (DFFE) screening tool sensitivity map is supported based on the findings of this fieldwork (**Table 12**).

Table 12: Compliance summary

Screening Tools Rating	Site verification - Heritage	Compliance studies conducted
Low sensitivity overall with localised high-sensitivity areas	Low sensitivity overall with localised high-sensitivity areas	Heritage Impact Assessment conducted in compliance with section 38 of the NHRA

8.6.5 Impact Assessment

An overlay of all the heritage sites identified during the fieldwork over the proposed development footprint areas was made to assess the proposed project's impact on these identified heritage sites. This overlay resulted in the following observations:

- Two historical rock engravings (**GH-OHL002** and **003**) dating to 1956 and a potential Early Farmer Community Stock stone-built kraal (**GH-OHL001**) were located within the proposed OHPL corridor. As a result, the proposed development could impact upon this site by destruction during the construction phase.

It is important to note that the heritage resources located during the fieldwork only represent some of the possible heritage resources in the area. Various factors account for this, including the subterranean nature of some heritage sites. The impact assessment conducted for heritage sites assumes the possibility of finding heritage resources during the project life and has been conducted as such.

The impact assessment presented in Section 12 of this report has assessed the overall impact significance pre-mitigation as LOW (-36) with medium confidence. Post- mitigation, the impact is seen as Very Low with and overall impact rating of (-1).

Recommended mitigation measures include:

- Archaeological Monitoring during construction in the vicinity of sites **GH-OHL004-006**
- Avoidance of the low dolerite outcrop that contains site **GH-OHL-001 to 003**. It is recommended that the alignment keep to the norther side of the dirt road opposite the dolerite outcrop.
- Demarcate the outcrop at **GH-OHL-001 to 003** as a n-go area during construction.
- Develop and implement a Chance finds procedure for construction of the OHPL.

Conclusion

It is the heritage specialist's opinion that the overall impact of the proposed development on heritage resources will be Low. Provided that the general recommendations and mitigation measures outlined in this report are implemented, the impact would be acceptably Low or could be mitigated to the degree that the project could be approved from a heritage perspective. The management and mitigation measures described in the HIA have been developed to minimise the project's potential to impact negatively on heritage resources. The heritage specialist is in support of development of an OHPL in the proposed corridor and substation site **provided** that a walk down of the final approved footprints be conducted before construction commences.

Based on the above evidence before the EAP, the appointed specialist has not identified any fatal flaws with the project proposal, and it is reasonable to suggest that the proposed Good Hope OPHL corridor and substation site are acceptable and implementable from a Heritage perspective.

8.7 VISUAL IMPACT ASSESSMENT

TMG, on behalf of the Applicant appointed Visual Resource Management Africa (C/O Stephen Stead) (hereafter referred to as the "Visual Specialist") to undertake a Visual Impact Assessments for the proposed Good Hope OHPL corridor and substation site. The specialist report is presented in Appendix D and the following is a summary:

8.7.1 VIA Methodology

The following approach was used in understanding the landscape processes and informing the magnitude of the impacts of the proposed landscape modification:

- Site Survey: The identification of existing scenic resources and sensitive receptors in and around the study area to understand the context of the proposed development within its surroundings to ensure that the intactness of the landscape and the prevailing sense of place are taken into consideration.
- Project Description: Provide a description of the expected project, and the components that will make up the landscape modification.
- Reviewing the Legal Framework: The legal, policy and planning framework may have implications for visual aspects of the proposed development. The heritage legislation tends to be pertinent in relation to natural and cultural landscapes, while Strategic Environmental Assessments (SEAs) for renewable energy provide a guideline at the regional scale.
- Determining the Zone of Visual Influence: This includes mapping of viewsheds and view corridors in relation to the proposed project elements, in order to assess the zone of visual influence of the proposed project. Based on the topography of the landscape as represented by a Digital Elevation Model, an approximate area is defined which provides an expected area where the landscape modification has the potential to influence landscapes (or landscape processes) or receptor viewpoints.
- Identifying Visual Issues and Visual Resources: Visual issues are identified during the public participation process, which is being carried out by others. The visual, social or heritage specialists may also identify visual issues. The significance and proposed mitigation of the visual issues are addressed as part of the visual assessment.
- Assessing Potential Visual Impacts: An assessment is made of the significance of potential visual impacts resulting from the proposed project for the construction, operational and decommissioning phases of the project. The rating of visual significance is based on the methodology provided by the Environmental Assessment Practitioner (EAP).
- Formulating Mitigation Measures: Possible mitigation measures are identified to avoid or minimise negative visual impacts of the proposed project. The intention is that these would be included in the project design, the Environmental Management Programme report (EMPr) and the authorisation conditions.

8.7.2 Landscape Planning Policy Fit

Policy fit refers to the degree to which the proposed landscape modifications align with International, National, Provincial and Local planning and policy.

In terms of *international best practice*, the proposed landscape modification will not trigger any issues as there are no significant landscape/ cultural landscape features within the project area there were no significant cultural/ landscape visual resources found on the site or immediate surrounds that are flagged by international landscape guidelines. While the pan does have landscape significance, the PV project and associated OHPLs are set back from the pan in a location where the Persius MTS dominates the local landscape character. As such, this would not trigger an area of outstanding natural beauty category.

In terms of the *local and regional planning*, the importance of the pan is once again emphasised. The proposed RE and associated OHPL developments do not fall within the local planning for the pan as a tourist destination and the associated pathways around the pan.

As the area does fall within a REDZ, and the local landscape is degraded from the MTS and numerous Eskom powerlines, the expected visual/ landscape policy fit of the landscape change is rated High.

8.7.3 Baseline Visual Inventory

The Bureau of Land Management's Visual Resource Management (VRM) method was applied to determine the Visual Inventory, Zones of Visual Influence and Key Visual Receptors.

The methodology for determining landscape significance is based on the United States Bureau of Land Management's Visual Resource Management (VRM) method (USDI., 2004). This GIS-based method allows for increased objectivity and consistency by using standard assessment criteria to classify the landscape type into four VRM Classes, with Class I being the most valued and Class IV, the least. The Classes are derived from *Scenic Quality*, *Visual Sensitivity Levels*, and *Distance Zones*. Specifically, the methodology involved: site survey; review of legal framework; determination of Zone of Visual Influence (ZVI); identification of Visual Issues and Visual Resources; assessment of Potential Visual Impacts; and formulation of Mitigation Measures.

Zone of Visual Influence

The visible extent, or viewshed, is "the outer boundary defining a view catchment area, usually along crests and ridgelines". To define the extent of the possible influence of the proposed project, a viewshed analysis was undertaken from the proposed development areas site at a specified height above ground level. The findings are as follows:

- **Good Hope OHPL corridor ZVI:** The extent of the theoretical viewshed is regional, due to the height of the monopole in relation to the relatively flat terrain of the surrounding areas. Due to the monopoles 32m height in relation to the relatively flat gradient of the surrounding terrain within the 6km distance of the viewshed, theoretical visual incidence covers the full area for all the routing. However, due to the existing presence of pylons in the landscape that increases the Visual Absorption Capacity, as well as the limited visual footprint of these structures with some undulation in the surrounding landscape, the ZVI is likely to be contained to the Middle-ground and influence landscape resources within 6km from location. ***The ZVI Extent of the OHPL is thus defined as Local Area.***
- **Substation site ZVI:** The extent of the theoretical viewshed is local, due to the lower height of the substation structures in relation to the relatively flat terrain of the surrounding areas. A full distribution is mainly within the 1km distance area, with the main expansion to the east and north up to the 6km distance. There is also a small visibility island to the southwest. However, due to the existing presence of pylons in the landscape that increases the Visual Absorption Capacity, as well as the limited visual footprint of these structures with some undulation in the surrounding landscape, the ZVI is likely to be contained to the Foreground (2km). ***The ZVI Extent of the Substation is thus defined as Site and Immediate Surrounds.***

Receptors and Observation Points

KOPs are defined by the Bureau of Land Management as the people (receptors) located in strategic locations surrounding the property that make consistent use of the views associated with the site where the landscape modifications are proposed. The KOPs identified by this study are presented in **Table 13**.

Table 13: KOP Motivation Table.

Name	Theme	Exposure	Motivation
OHPL			
R11724 Road	Road	Very High	Road access is important for tourism that could be used to access the pans that have been highlighted in the local planning as having landscape importance.
R64 Road	Road	Very High	

Tswaraganang Settlement	Residential Settlement	Very High	The residential settlement is in very close proximity to the proposed routing.
Dealville Residential	Residential Settlement	Very High	
Substation			
Farm access road	Road	Medium to High	Road access is important for tourism that could be used to access the pans that have been highlighted in the local planning as having landscape importance.

The receptors located within the ZVI, and KOPs view lines are indicated on the map in Figure 36.

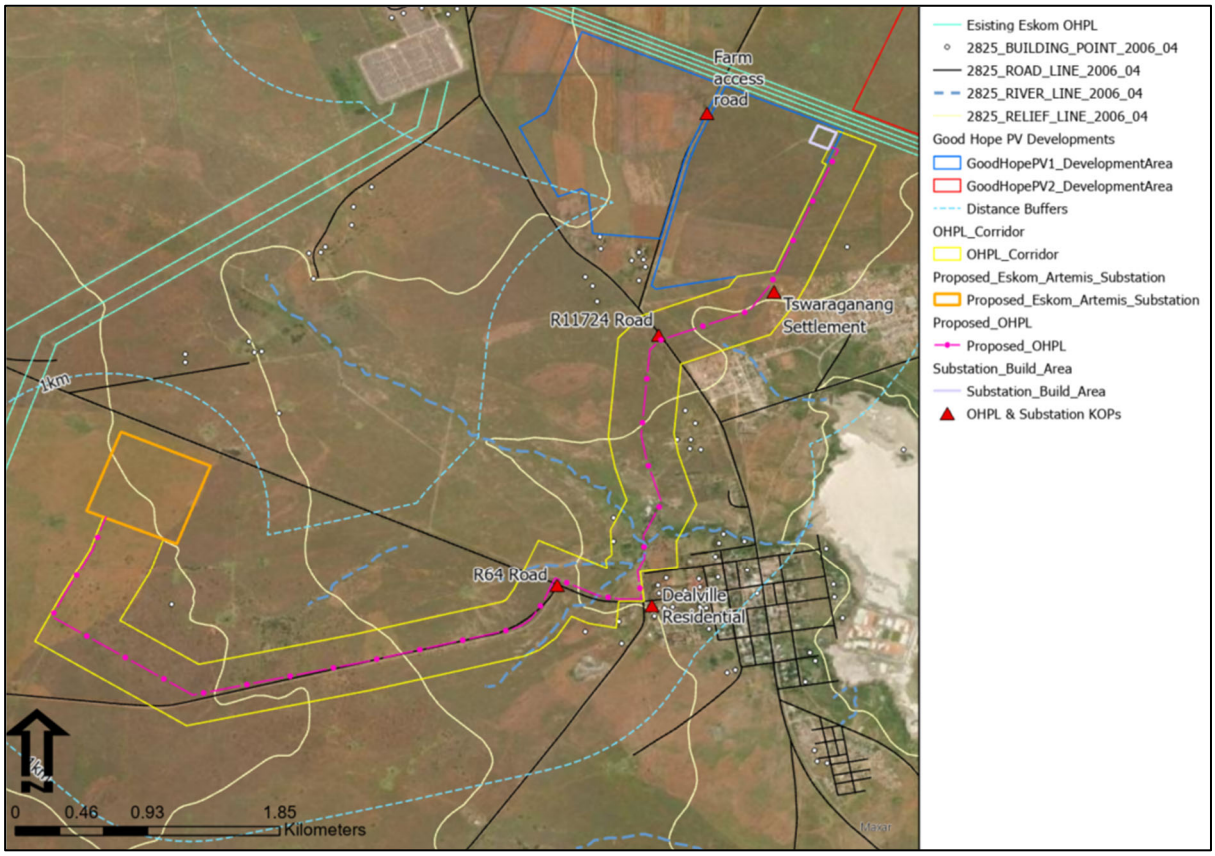

Figure 36: Receptor Key Observation Point and Visual Exposure Map.

Due to the proximity of the routing to the Tswaraganang Settlement, the proposed landscape change will be clearly visible, and the Visual Exposure is rated Very High.

8.7.4 Visual Resource Management

In terms of the VRM methodology, landscape character is derived from a combination of scenic quality, receptor sensitivity to landscape change, and distance of the proposed landscape modification from key receptor points. Making use of the key landscape elements defined by the assessment, landscape units are defined which are then rated to derive their intrinsic scenic value, as well as how sensitive people living in the area would be to changes taking place in these landscapes.

Physiographic Rating Units

The Physiographic Rating Units are the areas within the proposed development area that reflect specific physical and graphic elements that define a particular landscape character. These unique landscapes within the project development areas are rated to assess the scenic quality and receptor sensitivity to landscape change. The physiographic rating units identified by this study are presented in **Table 14** and depicted on **Figure 37**.

Table 14: Physiographic Landscape Rating Units

Landscapes	Ha	Motivation
Settlement buffer 50m	9	This area is located to the north of the Tswaraganang Township, where informal settlement has taken place. A 50m buffer was generated from the nearest dwelling to reduce visual exposure to the powerline structures.
Landscape degraded	13	The area is located directly adjacent to the existing Eskom multi-line powerline corridor where the landscape is significantly degraded. This area is also within view of the existing Perseus MTS.
Cultivated lands	18	The northern section of the routing passes through landscapes that have been cultivated in the recent past.
Dealville urban expansion	20	As with the Settlement Buffer areas, this area is located north of the township of Tswaraganang. Some evidence of further urban expansion is visible on the satellite imagery, and it is likely that this area could be subject to further expansion in the future. To reduce this planning conflict, it is recommended that the areas north of this future expansion area are excluded, with the OHPL routing along the small track.
Drainage	19	A number of drainage lines are located on the routing, with a small dam creating a local landscape feature.
Road reserve buffer 15m	24	As the pans in the area are highlighted as a possible tourist attraction, a minimum buffer of 15m on the road reserve is proposed, to set the monopoles back from the road views.
Undulating grasslands	215	The majority of the routing area passes through gently undulating terrain with grassland vegetation.

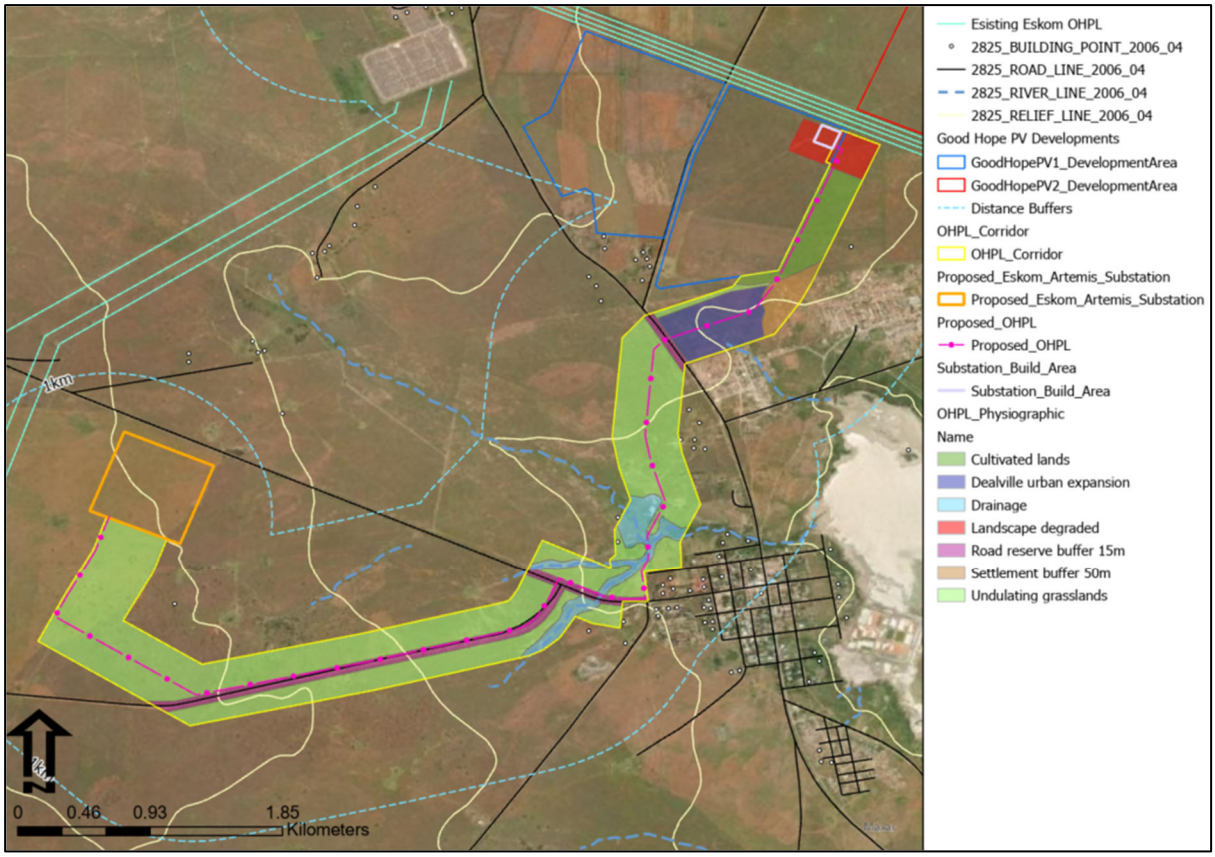

Figure 37: Physiographic Rating Units identified within the defined study area.

Scenic Quality

The dominant landscape was rated for Scenic Quality and was rated **Medium-Low** as a visual resource (**Table 15)**.

Table 15: Scenic Quality Rating Table

Landscapes	Rating	Motivation
Landform	Low	Landform is flat with no significant landforms.
Vegetation	Medium	The vegetation is uniform, veld grasslands.
Water	Low	No water features were identified on the site.
Colour	Medium	The colours are mainly related to the vegetation and are browns and greens due to season variations.
Scarcity	Medium to Low	The rural agricultural grassland landscapes are interesting in context but are widespread in the region.
Adjacent Landscapes	Medium	The adjacent landscape area is also veld grasslands with a similar sense of place. The adjacent pylons degrade the local sense of place and as such are rated Low.
Cultural Modifications	Medium	There are no cultural landscape modifications that detract from the site sense of place and rated as Low to Medium positive.
Scenic Quality	**Medium Low**	The overall Scenic Quality is rated Medium to Low. The grasslands do add to the rural agricultural sense of place, but the adjacent power line corridor detracts from the local sense of place.

Receptor Sensitivity Statement

The dominant landscape was rated for receptor sensitivity to landscape change (**Table 16**). The expected receptor sensitivity to landscape change is rated as **Medium to Low**.

Table 16: Receptor Sensitivity Rating Table

Landscapes	Rating	Motivation
Type of Users	Medium	The site is on the urban fringe so the proposed landscape change will be clearly visible to a large number of people
Amount of use	Medium to High	There are settlement communities located adjacent to the routing and as such with High Exposure. The grasslands to the west will have low visual usage.
Public interest	Low	Public Interest is rated Low as the dominant sense of place is strongly defined by substation and power lines and will be defined by renewable energy developments in the future.
Adjacent land Users	Moderate	Adjacent land users are also rural and are not related to tourist activities and have no landscape significance
Special Areas	Low	The area is not zoned as a special area, other than the possible expansion of the township.
Receptor Sensitivity	**Medium to Low**	While some of the areas are relatively seldom seen, the central section of the routing passes the Tswaraganang Settlement and eastern Dealville with high visual exposure. This area could be subject to future urban expansion, and the clear views of the power lines could be perceived as moderately intrusive.

Visual Resource Management Assessment

The BLM has defined four Classes that represent the relative value of the visual resources of an area and are defined making use of the VRM Matrix:

i. **Classes I and II** are the most valued
ii. **Class III** represent a moderate value
iii. **Class IV** is of least value

The identified classes relative to the study area are summarised in Table 17 and depicted on Figure 38.

Table 17: Summary of Visual Resource Classes in the Study Area

Class	Applicability in Study Area
Class I (No-go) *Due to legal environmental and heritage restrictions, as well as very close proximity to residential areas and possible future urban expansion areas, these areas should be excluded from the development footprint.*	• Any river / streams and associated flood lines buffers identified as significant in terms of the WULA process. • Any wetlands identified as significant in terms of the WULA process. • Any ecological areas (or plant species) identified as having a high significance. • Any heritage area identified as having a high significance. • The possible future expansion area of the Tswaraganang Settlement.
Class II (Not recommended)	• *Road reserve 15m buffer*

Class III (suitable with mitigation)	• Cultivated lands/ undulating grasslands.
Class IV (suitable without mitigation)	• Landscape degraded cultivated lands in close proximity to the multi-powerline corridor.

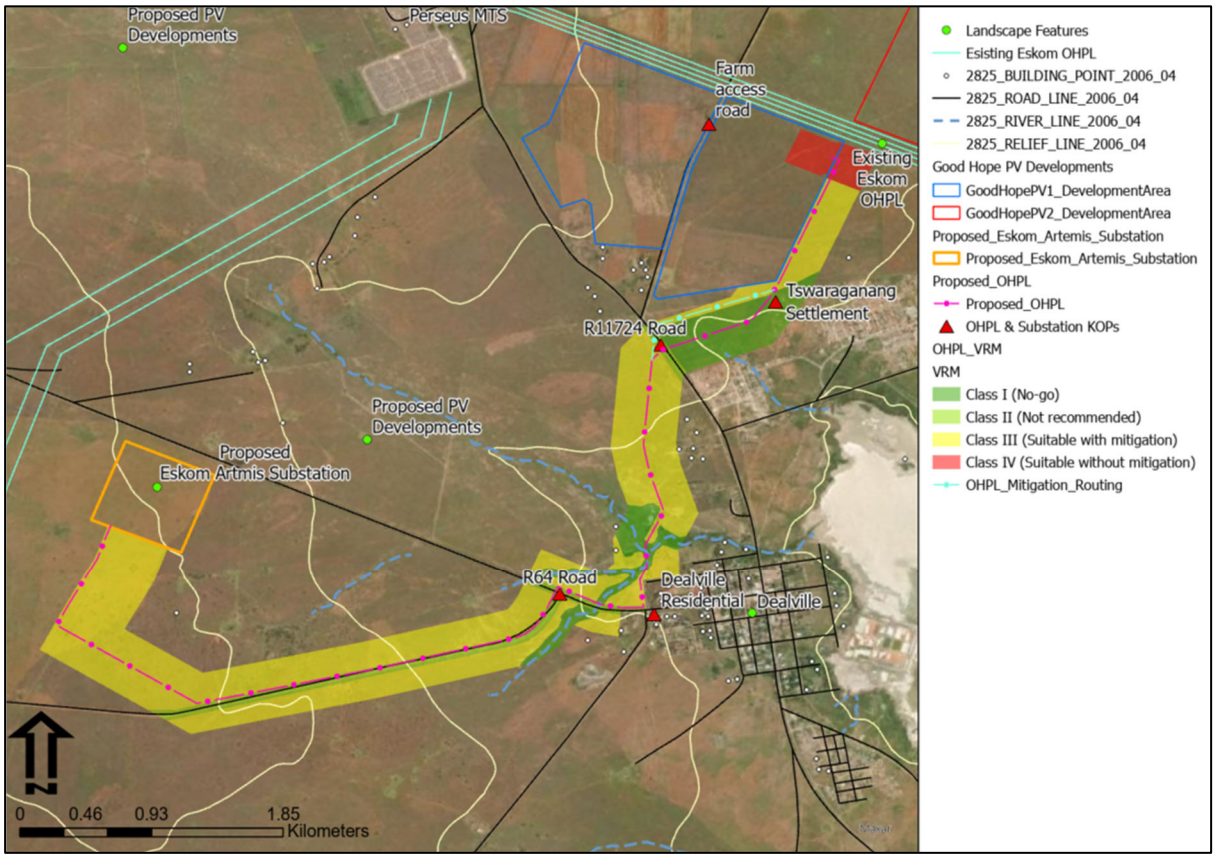

Figure 38: Visual Resource Management Classes map

8.7.5 Potential Visual Impacts

The following visual impacts could take place during the lifetime of the ***proposed OHPL*** project:

Construction Phase: Negative

- Loss of site landscape character due to the removal of vegetation and the construction of the grid connection infrastructure.
- Possible soil erosion from temporary roads crossing drainage lines.
- Windblown litter from the laydown and construction sites.

Operation Phase: Negative

- Massing effect in the landscape from a large-scale modification.
- On-going soil erosion.
- On-going windblown dust.

Decommissioning Phase: Negative

- Not applicable

The impact assessment is summarised in Table 18 and assessed in detail in Section 12 of this report.

Table 18: Visual Impact Assessment Summary of proposed Good Hope OHPL and substation

Impact Significance	Comment
Direct Impacts	
Moderate(-ve) *(without mitigation)*	The Significance of the Visual Impact is rated **Medium** without mitigation, and **Low** with Mitigation. Dust and erosional impacts can be effectively mitigated as the impact areas of the monopoles will be small. The 15m setback from the roads would assist in reducing the intensity of the monopoles to some degree. The landscape change will be clearly noticed by the receptors with limited potential for screening where the monopoles are located in closer proximity to the Tswaraganang receptors. The Visual Significance is moderated by the lower scenic quality of the site and immediate surrounding landscapes, that do include High Exposure Views of multiple Eskom power lines and the Perseus MTS in the background.
Minor (-ve) *(with mitigation)*	
Cumulative Impacts	
Low (-ve) *(without mitigation)*	Within the proposed project zone of visual influence, the landscape character is mainly dominated by flat rural agricultural landscape, and Eskom powerline and substation infrastructure, with limited visual resources. The cumulative visual risk to scenic resources for both alternates was rated **Low negative** with little opportunity for mitigation. As the area is already defined as a power line corridor, the combined views of the multiple solar facilities, once constructed, are unlikely to create a strong, *local* visual massing effect within the agriculturally zoned area. The project is located within the REDZ area, where renewable energy projects of scale would be acceptable. With successful rehabilitation of the area back to an agricultural land use on closure, the cumulative visual risk could be reduced to **negligible in the long term**.
Negligible (-ve) *(with mitigation)*	
PRELIMINARY MITIGATIONS MEASURES Retaining a buffer area from the roads, and the residential areas, would assist in reducing the intensity of the monopole's views to some degree. However, as the Tswaraganang township dwellings would be located 50m from the routing, it is unlikely to significantly reduce the intensity views. These views are likely to change as Good Hope PV 1 and PV 2 have been authorised. Mitigability is thus defined as **Medium**.	

8.7.6 Proposed Impact Mitigation Measures

Retaining a buffer area from the roads, and the residential areas, would assist in reducing the intensity of the monopole's views to some degree. However, as the Tswaraganang township dwellings would be located 50m from the routing, it is unlikely to significantly reduce the intensity views. These views are likely to change as Good Hope PV 1 and PV 2 have been authorised. Mitigability is thus defined as **Medium**. The proposed visual buffer zones are presented in **Table 19**.

Table 19: Proposed Visual Impact Buffers

Landscape Element	Mitigation	Motivation
Residential exposure	50m buffer from residential dwellings.	Design of the OHPL routing such that a minimum of 50m is retained as a no-go area, and the future northern urban

		expansion areas of Tswaraganang are excluded.
Road access cluttering	15m buffer from road reserve.	The monopoles need to be planned such that placement of the structure is not located within 15m of the road reserve.
Rural sense of place	Light spillage mitigation.	For the Substation, design of security lighting needs to be undertaken such that light spillage does not become a nuisance factor for the northern rural residents. Overhead lighting should not be used.

8.7.7 Visual Impact Assessment Conclusion

It is the recommendation that the proposed grid infrastructure development should be authorised WITH MITIGATION for the following key reasons:

- The identified benefits from the proposed landscape outweigh the limited loss of the landscape resources along the routing.
- No tourism related activities making use of visual resources were identified within the project ZVI.
- While there are receptors in the High Exposure distance zone, the potential for mitigation within the corridor is available such that the placement of the monopoles will be 50m from the residential receptors.

Mitigation required to ensure that the landscape change remains congruent with the rural agricultural landscape character:

- 15m buffer restriction from road reserve for placement of the monopoles.
- 50m buffer restriction from the High Exposure rural-residential receptors.

Based on the above evidence before the EAP, the appointed specialist has not identified any fatal flaws with the project proposal, and it is reasonable to suggest that the proposed Good Hope OHPL corridor is acceptable for the construction and operation of a 132 kV OHPL and the substation site is acceptable for the development and operation of a substation from a Visual perspective.

Please refer to Section 12 of this Report, which details all the Impacts associated with the construction and operational phase of the proposed OHPL.

8.8 SOCIAL IMPACT ASSESSMENT

TMG, on behalf of the Applicant appointed Tony Barbour Environmental Consultants (C/O Tony Barbour) (hereafter referred to as the "Social Specialist") to undertake a Social Impact Assessment (SIA) for the proposed Good Hope OHPL corridor and substation site. The specialist report is presented in Appendix D and the section summarises the information contained in the SIA.

8.8.1 Overview of Assessment Methodology

The approach to the SIA study is based on the Western Cape Department of Environmental Affairs and Development Planning Guidelines for Social Impact Assessment (February 2007) and IAIA Guidance for Assessing and Managing Social Impacts (2015).

The study involved:

- Review of socio-economic data for the study area.
- Review of relevant planning and policy frameworks for the area.
- Review of information from similar studies, including the SIAs undertaken for other renewable energy projects.
- Site visit and engagement with key stakeholders.
- Identifying the key potential social issues associated with the proposed project.
- Assessing and assessing the significance of social impacts associated with the proposed project.
- Identification of enhancement and mitigation measures aimed at maximizing opportunities and avoiding and or reducing negative impacts.

8.8.2 Policy and Planning Environment

The legislative and policy context within with a proposed development s located plays an important role in identifying, assessing, and evaluating the significance of potential social impacts associated with any given proposed development. An assessment of the "policy and planning fit" of the proposed development therefore constitutes a key aspect of the Social Impact Assessment (SIA).

An overview of the policy and planning environment affecting the proposed project has been determined by reviewing the following documents.

- The National Energy Act (2008).
- The White Paper on the Energy Policy of the Republic of South Africa (December 1998).
- The White Paper on Renewable Energy (November 2003).
- Integrated Resource Plan (IRP) for South Africa (2019).
- The National Development Plan (2011).
- National Infrastructure Plan (2012).
- The Strategic Environmental Assessment (SEA) for wind and solar PV energy in South Africa (CSIR, 2015).
- Free State Provincial Spatial Development Framework (PSDF).
- Free State Green Economy Strategy (2014).
- Free State Investment Prospectus (2019).
- Tokologo Local Municipality Integrated Development Plan (2020-2021).

The section also provides an overview of the South African Renewable Energy sector.

The development of renewable energy and associated support infrastructure is strongly supported at a national, provincial, and local level. At a national level the National Development Plan (NDP), New Growth Path Framework and National Infrastructure Plan, all refer to and support renewable energy. The study area is also located within the Kimberly Renewable Energy Development Zone (REDZ) and Central Transmission Corridor. The area has therefore been identified as suitable for the establishment of renewable energy facilities and associated infrastructure. The development of the Good Hope OHPL in the proposed corridor and the substation on the proposed site is therefore supported by key policy and planning documents as the developments are

support infrastructure to existing and environmentally authorised renewable energy projects (i.e. Good Hope 1 and Good Hope 2 Solar PV facilities.

8.8.3 Socio-Economic Overview of the Study Area

The study area is located in the Tokologo Local Municipality (TLM), which forms part of the Lejweleputswa District Municipality (LDM) in the Free State Province

Based on the Household Community Survey (2016), the population of the TLM was 29 147 in 2016. The majority of the population were Black African (86.9%), followed by Whites (9.4%) and Coloureds (3.7%). The main first language was Setswana (68.4%), followed by Afrikaans (13.3%) and Sesotho (7.4%). In terms of age breakdown, the under 18 age group made up 37.1%, 18-64 made up 57.4% and the over 65 group the remaining 5.5%.
The dependency ratio for the TLM in 2016 was 37%. The dependency ratio is the ratio of dependents (typically people younger than 15 or older than 64), to the working age population (15-64). A high dependency ratio typically translates into a greater likelihood of grant dependencies and places increasing pressure on local authorities to generate income to cover costs associated with service delivery. Poverty remains a huge socio-economic challenge facing the Free State Province including the TLM. The unemployment rate in 2016 was 13.7% and is possibly higher at present due to the negative economic impacts of the Covid Pandemic. Based on the 2016 Community Survey 11.9% of the population over the age of 20 had an education. The low education levels in the TLM pose a challenge in terms of employment and development.

Municipal Services levels in the TLM in 2016 were as follows:

- Water - 87.9% of households in the TLM were provided with water by a service provider.
- Electricity - 79.4% of households in the TLM had in-house prepaid meters, while 12.4% had conventional meters. 5.1% of households reported having no access to electricity.
- Sanitation - 32.9% of the households in the TLM had flush toilets, while 55.3% relied on pit toilets and 7% on bucket toilets. 4% of households reported that they had no access to sanitation facilities.
- Refuse collection - 40.6% of the households in the TLM disposed of their waste at their own dump, 9.2% used communal dumps. 37.5% had their waste collected by a service provider on a regular basis and 11.5% had irregular waste services from a service provider.

In terms of contribution to GDP, the most important sector was Agriculture (24.6%) followed by Mining (21.6%) and Community Services (20.7%). These three sectors made up ~ 67% of the economic activities in the TLM. In 2008, Tokologo had a growth rate of 12.1%, which declined during the recession to -1.4% and further in 2011 to -9.9% making the TLM the worst performing local municipality in Lejweleputswa in 2011. Economic growth in 2014 was 2.5%.

In terms of employment, the Agricultural sector was the most important sector, making up 38.9% of the employment opportunities, followed by households (28.07%) and Community Services (13.31%). Together these three sectors made up 80.28% of the jobs in the TLM. The COVID 19 pandemic is likely to have had a negative impact on the local economy and employment.

8.8.4 Potential Construction Phase Impacts

The potential construction phase impacts are described as follows:

Potential positive impacts

- **Creation of employment, skills development, and business opportunities** - The construction phase is expected to extend over a period of approximately 12 months and create in the region of 50 employment opportunities.

Potential negative impacts

- **Impacts associated with the presence of construction workers on local communities** - The presence of construction workers can pose a potential risk to family structures and social networks. While the presence of construction workers does not in itself constitute a social impact, the manner in which construction workers conduct themselves can impact on local communities. The most significant negative impact is associated with the disruption of existing family structures and social networks. This risk is linked to potentially risky behaviour, mainly of male construction workers.
- **Impact on local farmers and farming operations** - The presence of and movement of construction workers on and off the site poses a potential safety threat to local famers and farm workers on and in the vicinity of the site. In addition, farm infrastructure, such as fences and gates, may be damaged and stock losses may also result from gates being left open. The presence of construction workers on the site also increases the exposure to local farming operations to the outside world, which, in turn, increases the potential risk of stock theft.
- **Noise, dust (nuisance impacts), and safety impacts of construction related activities and vehicles** - Construction related activities, including the movement of heavy construction vehicles of and on the site, has the potential to create dust, noise and safety impacts and damage to local roads. Given the relatively small number of construction workers and the short construction period the traffic related impacts are likely to be limited. The impacts will be largely local and can be effectively minimised and mitigated.
- **Increased risk of veld fires** - The presence on and movement of construction workers on and off the site and construction related activities such as welding etc., increases the risk of veld fires which pose a risk to livestock, farm infrastructure and crops. The loss of grazing also poses a threat to local livelihoods that are dependent on livestock farming. The risk of veld fires is higher during the dry, windy winter months of May through to October.
- **Loss of farmland** - The activities associated with the construction phase and establishment of the overhead power line will result in the disturbance and loss of farmland. The impact on farmland associated with the construction phase can be mitigated by micro-siting within the alignment corridor and minimising the footprint of the construction related activities and ensuring that disturbed areas are fully rehabilitated on completion of the construction phase.

The construction phase negative impacts have all been assessed as **low** subject to mitigation while the positive impacts have been assessed as **moderate** with enhancement.

8.8.5 Potential Operational Phase Impacts

The potential construction phase impacts are described as follows:

Potential positive impacts

- **Provide energy infrastructure to support renewable energy** - The grid infrastructure is therefore essential to enable the Good Hope PV SEF to connect to the national grid and assist to improve energy security in South Africa by generating alternative energy sources.

- **Creation of employment, skills development, and procurement opportunities** - The potential employment, skills development and business-related opportunities associated with the power line and substation will be limited and confined to periodic maintenance and repairs. The potential socio-economic benefits are therefore likely to be limited. There is limited opportunity to enhance the potential opportunities.
- **Generate income for landowners** - The proponent will enter into a lease/servitude agreement with the affected landowners for the use of the land for the establishment of the proposed transmission line and preferred substation. The additional income would assist to reduce the risks to their livelihoods posed by climate change and fluctuating market prices for livestock, crops, and farming inputs, such as fuel, feed etc. The additional income would improve economic security of farming operations, which in turn would improve job security of farm workers and benefit the local economy.

Potential negative impacts

- **The visual impacts and associated impact on sense of place** - The proposed transmission line and associated substations has the potential to impact on the areas existing rural sense of place. However, the potential impact on the areas sense of place is likely to be limited given the location of the alignment within an area that has been impacted by existing Eskom Perseus substation and associated transmission lines.
- **Impact on tourism** - Based on the findings of the site visit there are no tourist facilities located in close proximity to the study area that would be impacted by the proposed overhead powerline.
- **Impact of maintenance activities on farming activities and operations**- The presence on and movement of maintenance workers on and off the site poses a potential risk to farming operations. Farm fence and gates may be damaged and stock losses may also result from gates being left open. The presence of maintenance workers on the site also increases the exposure of their farming operations and livestock to the outside world, which, in turn, increased the potential risk of stock theft and crime.

The negative impacts have all been assessed as **low** subject to mitigation while the positive impacts have been assessed as **moderate** with enhancement.

8.8.6 Potential Cumulative Impacts

The potential cumulative impacts associated with overhead powerlines are largely related to the 'sense of place' which includes:

- Combined visibility (whether two or more transmission lines) will be visible from one location).
- Sequential visibility (e.g. the effect of seeing two or more two or more transmission lines) along a single journey, e.g. road or walking trail).
- The visual compatibility of different two or more transmission lines in the same vicinity.
- Perceived or actual change in land use across a character type or region.
- Loss of a characteristic element (e.g. viewing type or feature) across a character type caused by developments across that character type.

There are several transmission lines in the area associated with the large Eskom Perseus substation. The potential for cumulative impacts associated with combined visibility (whether two or more power lines will be visible from one location) and sequential visibility (e.g., the effect of seeing two or more power lines along a single journey, e.g., road or walking) does therefore exist. However, the overall cumulative impact on the areas sense of place is likely to be low. In this regard the areas sense of place has been impacted by Perseus substation and associated transmission lines. The project is also located within the Kimberly REDZ and Central Transmission

Corridor. The area has therefore been identified as suitable for the establishment of renewable energy facilities and associated infrastructure. Local stakeholders interviewed in the area did not raise concerns regarding the potential visual impact on the areas sense of place.

The potential cumulative negative impact on sense of place as been assessed as moderate.

8.8.7 Conclusion of the SIA

The energy security related benefits associated with the proposed Good Hope SEF are dependent upon being able to connect the Good Hope SEF via the establishment of grid connection infrastructure.

The findings of the SIA indicate that the significance of the potential negative social impacts for both the construction and operational phase of the proposed 132 kV Good Hope overhead power line are **Low Negative** with mitigation. The potential negative impacts can therefore be effectively mitigated if the recommended mitigation measures are implemented. The project is also located within the Kimberly Renewable REDZ and Central Transmission Corridor. The area has therefore been identified as suitable for the establishment of renewable energy facilities and associated infrastructure.

The establishment of proposed 132 kV Good Hope overhead power line and associated infrastructure is supported by the findings of the SIA.

Based on the above evidence before the EAP, the appointed specialist has not identified any fatal flaws with the project proposal, and it is reasonable to suggest that the proposed Good Hope OHPL corridor is acceptable for the construction and operation of a 132 kV OHPL and the substation site is acceptable for the development and operation of a substation from a social and socio-economic perspective.

Please refer to Section 12 of this Report, which details all the Impacts associated with the construction and operational phase of the proposed OHPL.

8.9 TRAFFIC IMPACT ASSESSMENT

TMG, on behalf of the Applicant appointed ITS Innovative Transport Solutions (C/O Christoff Krogscheepers) (hereafter referred to as the "Traffic Specialist") to undertake a Traffic Impact Assessment (TIA) for the proposed Good Hope OHPL corridor and substation site. The specialist report is presented in Appendix D and this section summarises the information contained in the TIA.

8.9.1 Introduction

This report evaluates the expected traffic impact of the proposed Good Hope substation and OHPL project during the construction phase and during the operational phase. The report identifies the preferred access route to the site, comment on the condition of the existing roads in the site vicinity, identify possible access points to the substation sites and recommend road improvements to the surrounding road network if required.

8.9.2 Current Road Network Conditions

Existing Roadways

The R64 and Andries Pretorius Street are the only major roads in the vicinity of the project site. The existing roadway characteristics are summarised in **Table 20**.

Table 20: Existing Roadway Facilities

Roadway	Type of Road	Posted Speed (km/h)	Sidewalks?
R64	Provincial Road	100	Gravel Shoulders
Andries Pretorius Street	Municipal Street	60	Gravel Shoulders

Existing Cross Sections and Surface Conditions

In the study area, the R64 has a typical rural cross-section with 2 x 3.4m wide lanes with gravel shoulders. There are existing right-turn lanes along the N2 at the R349 intersection.

Existing Traffic Volumes

The table below shows the current annual average daily traffic volumes (AADT), the peak hour volumes and the percentage heavy vehicles on the road network in the site vicinity.

Table 21: Traffic Volumes

Road	AADT	Peak Hour Volume	% Heavy Vehicles
R64	4 950	560	9%
Andries Pretorius Street	640	60	5%

8.9.3 OHPL and Substation Access

Good Hope Substation

The substation will be accessed via the access for the PVSEF.

Good Hope OHPL corridor

Construction and service access to the powerline servitudes will be via gated accesses at the different road crossings. Specific traffic management plans should be confirmed with the road authority prior to any construction activity at the locations where the powerlines cross any public road. The powerline crosses the R64 and Andries Pretorius Street along straight sections of both these roads. No sight distance issues are expected at the construction/service accesses.

8.9.4 Road Crossings

One OHPL crossing is proposed over the R64 at the S322 gravel road intersection. The approximate Google Earth coordinates at the crossing are:

- Latitude 28° 40' 25.54" S
- Longitude 25° 45' 14.49" E

This crossing is along a straight section of the R64 and no sight distance issues are expected during construction activities.

The OHPL corridor will cross over Andries Pretorius Street to the north of the town Dealesville. The approximate Google Earth coordinates at the crossing are:

- Latitude 28° 39' 30.80" S
- Longitude 25° 45' 38.94" E

Some minor disruptions are expected with short road closures during construction at the road crossings. Specific traffic management plans should be confirmed with the road authority prior to any construction activity at the locations where the powerlines cross any public road.

8.9.5 Potential Traffic Impacts

The expected effects of traffic that would be generated by the proposed development during peak hours were analysed as follows:

- The **background traffic** volumes were determined for the study network in the vicinity of the site. These are the traffic volumes that would be on the road network in the absence of the proposed development (No go Alternative);
- A growth factor was applied to account for regional growth
- Construction Phase Traffic
- **Site-generated trips** were estimated for the proposed development;
- The construction phase traffic and the assigned site-generated traffic from the proposed development were added to the **background traffic** volumes to determine the **total traffic** conditions with the development completed.

Year 2028 Background Traffic Conditions (No go alternative)

For the purposes of this study, year 2028 background traffic volumes were developed by applying a 1.5 *percent annual traffic growth rate* to the existing traffic volumes on the major links. This estimated growth rate was assumed to allow for the additional traffic volumes that will be generated by other in-process and future developments in the vicinity of the proposed development. Due to the low traffic volumes during the typical weekday peak hours the current road network will continue to operate at acceptable levels-of-service during the background conditions.

Trip Generation

It is expected that less than 50 trucks will be required delivering equipment and building material during the construction period, depending on the type and size of the power line poles/pylons. The construction period could probably vary between two to four months. It is assumed that delivery of the equipment will occur within and spread over a four-month period. With a possible 100 working days in a six-month period, it means that on average less than 5 trucks will visit a site per day which is insignificant.

Based on information sourced from other similar projects it is assumed that approximately 30 construction workers could be employed during the peak construction period. It can be expected that the bulk of these workers will commute to/from the construction site via bus or minibus taxis. With an average occupancy of 10 passengers per vehicle it equates to approximately 3 taxis visiting the site in the morning and afternoon peak hours. It equates to less than 10 motor vehicle and truck trips during the average weekday, which is insignificant.

Trip Distribution and Assignment

It is expected that most of the equipment will be transported from the Bloemfontein area via the R64. The trucks delivering building material will also come from the larger Bloemfontein area. Construction workers will probably be transported to/from the larger Dealesville area.

Conclusions

This TIA concluded the following:

- The current demand on the existing road network in the site vicinity is low and the road network and intersections operate at acceptable levels of service.
- Access to the various tower sites in the OHPL corridor is possible via the existing public and private road network.
- The proposed OHPL corridor crossings over the public roads are along straight sections of the road and no sight distance issues are expected. These are low traffic volume roads and only minor disruptions are expected due to road closures during stringing of conductor across these roads. Specific traffic management plans should be confirmed with the road authority prior to stringing conductor across public roads.
- The construction phase will generate less than 10 vehicle trips per day.
- The operation of the substation will not require additional employees and hence the expected increase in vehicle trips per day during the operational phase will be minimal.
- Based on this evaluation, the existing road network has sufficient capacity to accommodate the traffic volumes associated with the proposed substation development in the preferred development area and the proposed OHPL in the preferred corridor and the expected traffic impacts of the construction and operational phases are low.

The impact assessment is detailed in Section 12 of this report.

9. PROCESS FOLLOWED TO REACH THE PROPOSED PREFERRED ACTIVITY, SITE AND LOCATION WITHIN THE SITE

In accordance with ***Appendix 1 Regulation 3(h) (i, x and v); of GN R. 326 of the NEMA EIA Regulations (2014, as amended)****:*

2(h) *– A full description of the process followed to reach the proposed development footprint within the approved site, including:*

2(h) i *– Details of the alternatives considered*

2(h) x*- If no alternatives, including alternatives location for the activity were investigates the motivation for not considering such*

2 (h) v *–The impact and risks identified of each alternative including the nature, significance, consequence, extent, duration and probability of impacts including the degree to which these impacts-*

(aa)*- can be reversed*

(bb) *– May cause irreplaceable loss of resources; and*

(cc) *– Can be avoided, managed or mitigated*

9.1 LEGISLATIVE REQUIREMENTS

In terms of the NEMA EIA Regulations (2014, as amended) all Basic Assessment Reports, Scoping Reports and Environmental Impact Reports must contain a description of any feasible and reasonable alternatives that have been identified, including a description and comparative assessment of the advantages and disadvantages that the proposed activity and alternatives will have on the environment and on the community that may be affected by the activity.

Every Basic Assessment process must therefore identify and investigate alternatives, **with feasible and reasonable alternatives** to be comparatively assessed.

Alternatives are defined in the NEMA EIA Regulations as "*different means of meeting the general purpose and requirements of the activity*".

The "*feasibility*" and "*reasonability*" of and the need for alternatives must be determined by considering, *inter alia*, (a) the general purpose and requirements of the activity, (b) need and desirability, (c) opportunity costs, (d) the need to avoid negative impact altogether, (e) the need to minimise unavoidable negative impacts, (f) the need to maximise benefits, and (g) the need for equitable distributional consequences.

"***Alternatives***" in the context of an activity may include alternatives to:

- The "***property***" on which or location where it is proposed to undertake the activity;
- The type of "***activity"*** to be undertaken;
- The "***design or layout"*** of the activity;
- The "***technology"*** be used in the activity; and
- The "***operational"*** aspects of the activity.

The "No-Go" alternative must also be assessed.

An illustrative table is provided below, describing alternatives that are typically referred to during an EIA process, which are strongly influenced by the development opportunities and constraints identified during the process.

Table 22: Illustration of some typical alternatives assessed during an Environmental Application process.

TYPE OF ALTERNATIVE	EXPLANATION/EXAMPLES
Location	Refers to both alternative properties as well as alternative sites on the same property. **Note:** In terms of the Minimum Requirements for Waste Disposal by Landfill, location alternatives must considered during the EIA process.
Activity	Incineration of waste rather than disposal at a landfill site/ Provision of public transport rather than increasing the capacity of roads.
Design or Layout	Design: E.g. Different architectural and or engineering designs Site Layout: Consideration of different spatial configurations of an activity on a particular site (e.g. Siting of a noisy plant away from residences).
Technological	Consideration of such alternatives is to include the option of achieving the same goal by using a different method or process (e.g. 1000 megawatt of energy could be generated using a coal-fired power station or wind turbines.
Demand	Arises when a demand for a certain product or service can be met by some alternative means (e.g. the demand for electricity could be met by supplying more energy or using energy more efficiently by managing demand).
Input	Input alternatives are applicable to applications that may use different raw materials or energy sources in their process (e.g. Industry may consider using either high sulphur coal or natural gas as a fuel source).
Routing	Consideration of alternative routes generally applies to linear developments such as power line servitudes, transportation and pipeline routes.
Scheduling and Timing	Where a number of measures might play a part in an overall programme, but the order in which they are scheduled will contribute to the overall effectiveness of the end result.
Scale and Magnitude	Activities that can be broken down into smaller units and can be undertaken on different scales (e.g. for a housing development there could be the option 10, 15 or 20 housing units. Each of these alternatives may have different impacts).
"No-Go Option"	This is the option of not implementing the activity.

The NEMA Principles states that sustainable development requires the consideration of all relevant factors including the following:

- That the disturbance of ecosystems and loss of biological diversity are avoided, or, where they cannot be altogether avoided, are minimised and remedied;
- that pollution and degradation of the environment are avoided, or, where they cannot be altogether avoided, are minimised and remedied;
- that the disturbance of landscapes and sites that constitute the nation's cultural heritage is avoided, or where it cannot be altogether avoided, is minimised and remedied;
- that waste is avoided, or where it cannot be altogether avoided, minimised and re-used or recycled where possible and otherwise disposed of in a responsible manner;
- that the use and exploitation of non-renewable natural resources is responsible and equitable, and takes into account the consequences of the depletion of the resource;
- that the development, use and exploitation of renewable resources and the ecosystems of which they are part do not exceed the level beyond which their integrity is jeopardised;
- that a risk-averse and cautious approach is applied, which takes into account the limits of current knowledge about the consequences of decisions and actions; and
- that negative impacts on the environment and on people's environmental rights be anticipated and prevented, and where they cannot be altogether prevented, are minimised and remedied.

Based on the available information the following feasible and reasonable alternatives for the Project have been identified and, in conjunction with reference to various specialist opinions have considered that the following alternatives:

- Property Alternative
- Activity Alternative
- Design or Layout Alternative
- Technology Alternatives
- Operational Alternative
- The "No-Go" consideration (this is a mandatory option)

Based on the contextual information presented above, and described in detail below, there is no evidence to suggest that other alternatives should be investigated for the proposed activity.

9.1.1 The Preferred Substation Development Area Alternative

The Applicant undertook a Desk Top Study of the land between the Good Hope PVSEF and the Artemis Substation Site. The direct route eastwards from the Good Hope PVSEF was not possible due to the properties being part of future Solar PV developments. The route to the north presented similar restrictions. This left only the 'preferred corridor' as presented in this BAR. Initially, an alignment with a narrow servitude was considered, but then it was determined, due to preliminary constraints presenting themselves during the environmental screening, that it would be sensible to assess a preferred corridor within which the micro-siting of the OHPL could occur with guidance from the specialists to avoid sensitive environmental features or habitats.

The preferred OHPL corridor alternative has been assessed by the independent specialists and no fatal flaws associated with the proposed corridor have been identified. Opportunities and constraints maps are for the preferred corridor are presented in Section 10 of this BAR. These maps will be used to influence the final alignment of the OHPL along with micro-siting input from the specialists

Based on the above, at this stage, there is no reason to suggest that an alternative OHPL corridor be investigated as it is unlikely that it would meet the general purpose and need of the Good Hope PVSEF.

Therefore, no alternative corridors were investigated for the purpose of this Draft BAR.

9.1.2 Preferred Alternative Route

The Preferred Alternative Route within the above corridor will be determined subject to micro-siting input from the terrestrial biodiversity, avifaunal and aquatic biodiversity specialists during the detailed design phase of the project if environmental authorisation is received.

The preferred site alternative has been assessed by the independent specialists and no fatal flaws associated with the proposed site has been identified. An opportunities and constraints map in Section 10 of this BAR. The preferred site alternative is a feasible and reasonable site alternative.

Please note that the final footprints of the monopoles and/or lattice structures comprising the proposed overhead powerline will be determined prior to construction phase commencing. Micro-siting of the preferred route will determine optimal sizes and positions of the monopoles and/or lattice structures should an Environmental Authorisation be granted.

9.1.3 The Preferred Substation Development Area Alternative

Since the proposed 132 kV back-to-back substation is required to serve the Good Hope PVSEF, there was little scope for development area alternatives for the substation. The substation preferred alternative is located within the remaining open space associated with the authorised layout of the Good Hope PVSEF and the only available connection point for the preferred OHPL corridor. However, the final layout of the substation within the preferred development area will take cognisance of any environmental sensitivities identified by the specialist.

The preferred substation development area has been assessed by the independent specialists and no fatal flaws associated with the development area have been identified.

Based on the above, at this stage, there is no reason to suggest that alternative substation development areas be investigated as these would not meet the general purpose and need of the substation to supply the needs of the Good Hope PVSEF.

Therefore, no alternative sites were investigated for the purpose of this Draft BAR.

9.1.4 The "Activity" Alternative

No activity alternatives were investigated as the purpose of the substation and OHPL development is to connect the Good Hope PVSEF to the Artemis Substation

9.1.5 The "Design or Layout" Alternative

Please note that the final footprints of the monopoles and/or lattice structures comprising the proposed overhead powerline will be determined prior to construction phase commencing. Micro-siting of the preferred route will determine optimal sizes and positions of the monopoles and/or lattice structures should an Environmental Authorisation be granted.

9.1.6 Sustainable "Technology" Alternatives

The overhead powerline will be constructed using monopoles and lattice structures for both strain lines and angled bends, which will be placed approximately 200 to 400 metres apart. This technology is tried and tested and the most effective in supplying electricity.

Alternative technologies have not been considered as the technology to be used is already considered the most appropriate technology and is compliant with Eskom specifications and best international practice. The tower structures proposed for this project will be selected to result in the least impact on avifauna, wet areas, natural vegetation, and visual landscapes.

Based on the information presented within this Basic Assessment Report, it is reasonable to suggest that above-mentioned technology alternatives have been investigated and comprise the preferred alternative.

9.1.7 The "Operational "Alternative

No operational phase alternative was assessed as part of the Report as the independent specialists that have assessed the site have not identified any fatal flaws on the site as a whole and this has been summarised through an opportunities and constraints map, which will be used to inform micro-siting of infrastructure.

Based on the above, at this stage, there is no reason to suggest that alternative operational alternatives are required to be investigated at this stage of the process as these would not meet the general purpose and need of the proposed activity. **Therefore, no alternative sites were investigated for the purpose of this Scoping Report**.

9.1.8 The "No Go" Option (Mandatory Option)

The "no-go" option would result in the proposed activity not being implemented and the status quo on the property remaining.

Should the "No-Go" option be implemented, this will result in a loss of opportunity for the Applicant and Dealesville, in the Tokologo Local Municipality, in the Lejweleputswa District Municipality, Free State Province., and South Africa as a whole as it is recognised as a national priority for 'improvements to infrastructure' to ensure increased access to electricity and a 'transition to a low-carbon economy' as set out in the NDP.

The No-Go alternative usually implies the continuation of the status quo in terms of development potential, zoning and management. The No-Go Alternative would not achieve the general purpose and requirements of the activity, which is to establish an overhead powerline route to connect the authorised Good Hope PVSEF to the existing Aurora substation.

9.2 CONCLUDING STATEMENT INDICATING PREFERRED ALTERNATIVE (SITE, LAYOUT, LOCATION)

*In accordance with **Appendix 1 Regulation 3(g) and (h)(xi) of GN R. 326 of the NEMA EIA Regulations (2014, as amended**):*

> ***3(g)** – A motivation for the **preferred development footprint** within the approved site.*
> ***3(h) xi** – A concluding statement indicating the **preferred alternative development location** within the approved site*

The following **Preferred Alternatives** have been considered by this report:

- Substation development area – a 7 ha area for the establishment of an approximately 1,5 ha substation footprint.
- OHPL corridor – a 400 m wide, 8,6 km long corridor within which to establish the 132 kV Powerline with a servitude width of 33 m

These substation development area and corridor consider the findings of the environmental screening and these preferred alternatives are the feasible and reasonable alternative and has been comparatively assessed against the no-go alternative in this Report.

10. SITE MATRIX BASED ON SENSITIVE AREAS

In accordance with ***Appendix 1 Regulation 3(h) (ix); of GN R. 326 of the NEMA EIA Regulations (2014, as amended)****:*

3(h) ix *– the outcome of the site matrix*

In terms of Regulation 3 (h) and (ix) of GNR 326 as amended in of the NEMA EIA Regulations (2014, as amended) Appendix 1, a matrix is required to form part of this Basic Assessment Report.

The Specialists were requested to provide constraints and opportunity information and/or mapping related to the proposed developments in the posed development areas/corridors.

The constraints and opportunities identified by the specialists are presented in the Figures 39 – 44. The information presented on these maps will be consolidated into a single GIS map overlaying the proposed development sites and corridors. This mapping will be used to determining the footprint of the substation and in the final alignment of the OHPL and the micro-siting of the tower positions in or near areas of sensitivity of development constraints.

10.1 HERITAGE RESROUCES

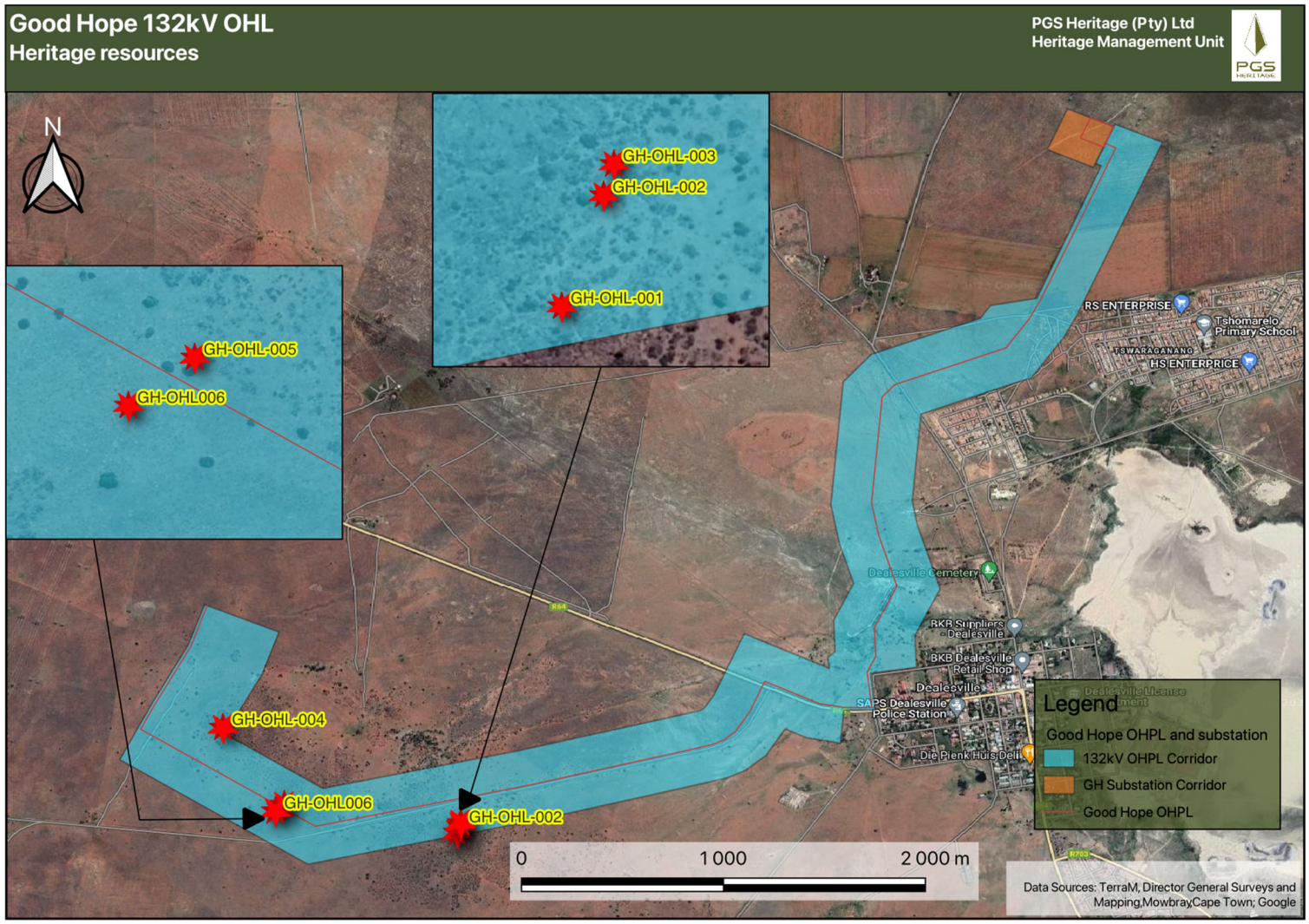

Figure 39: Identified heritage resources within the study area.

10.2 AVIFAUNA

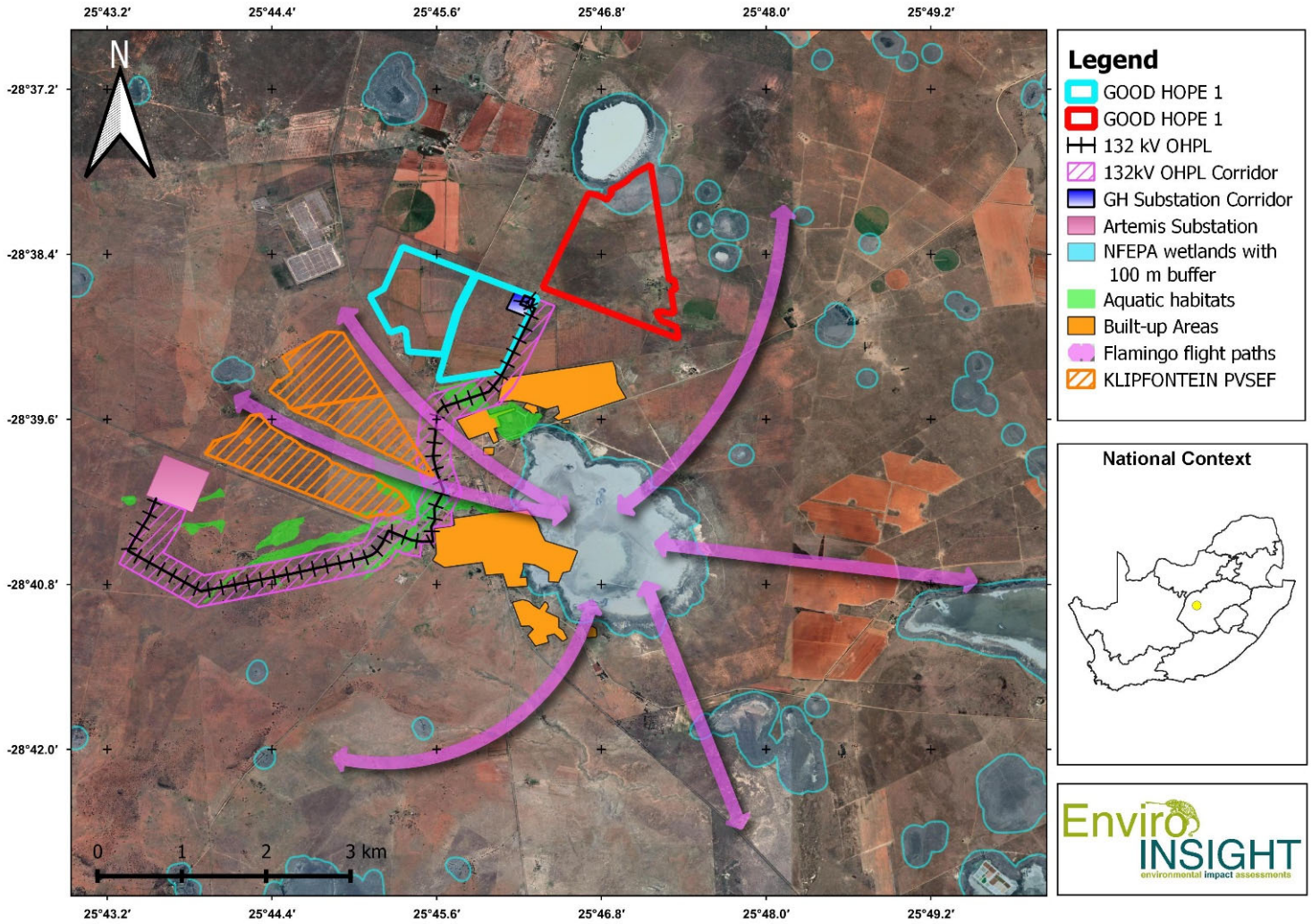

Figure 40: Potential flamingo flight paths in relation to the Good Hope OHPL.

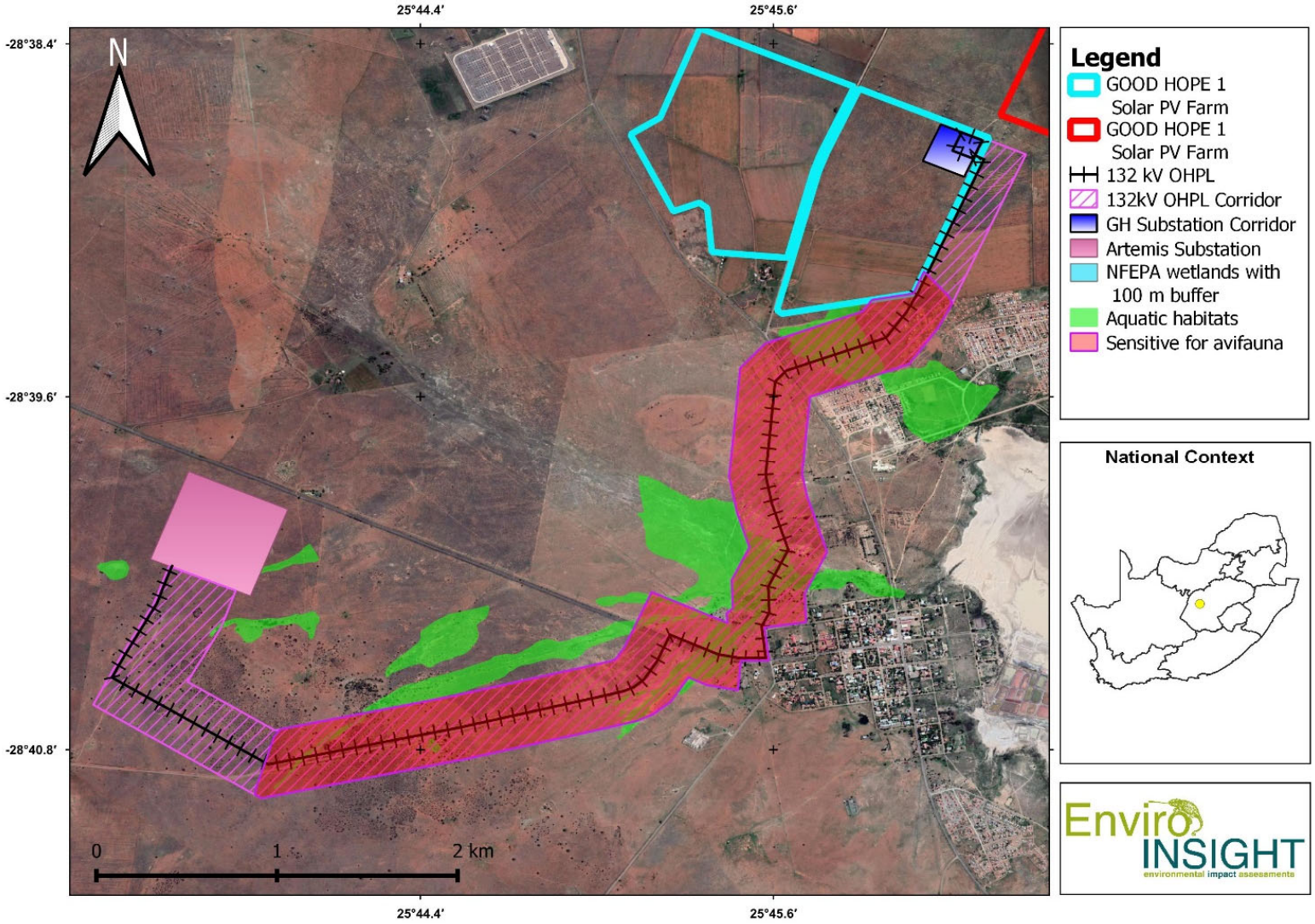

Figure 41: Areas of avifauna sensitivity due to the potential for avifauna collisions with the Good Hope OHPL.

10.3 TERRESTRIAL BIODIVERSITY

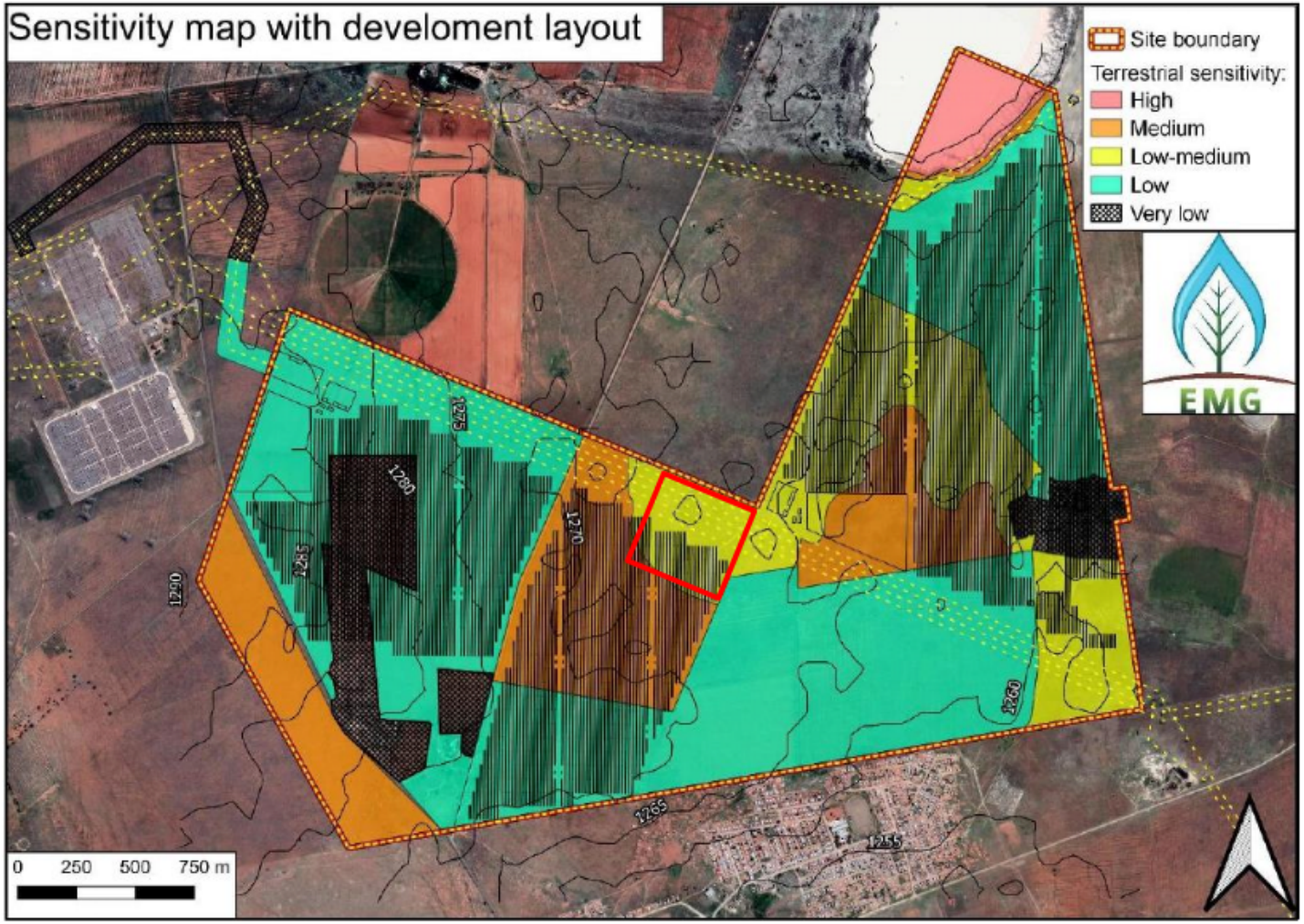

Figure 42: The substation portion of the corridor is located within a degraded areas (red block) which according to Nel, 2022, 'should be excluded from the conservation management desired state of a CBA zone'. (EMG, 2022).

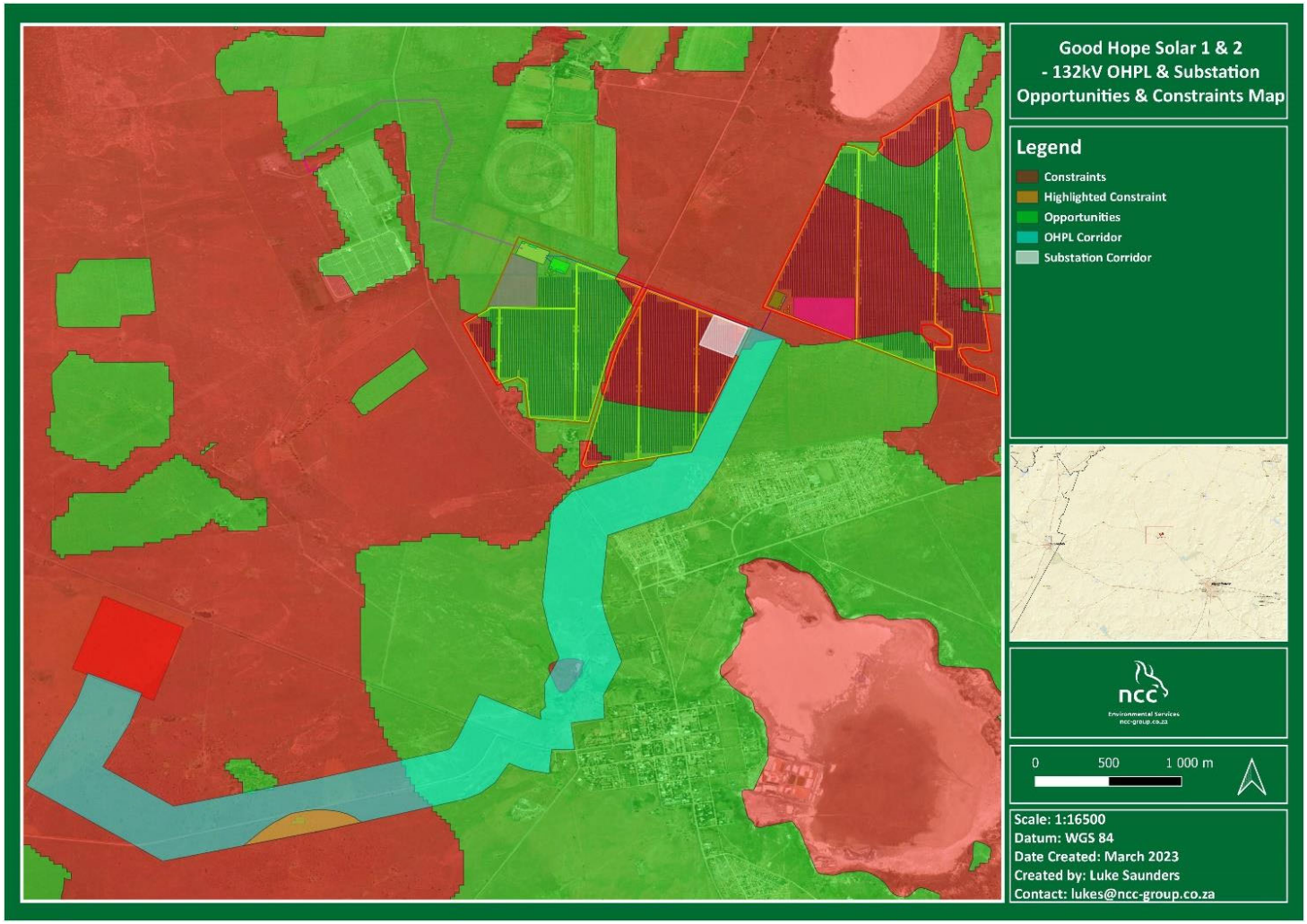

Figure 43: General Terrestrial Biodiversity (only) sensitivity areas of the corridor are shown as 'opportunities and constraints' based on the presence of CBA1 areas, endangered vegetation and other sensitive or variable environments. (

Note: The OHPL within southern portion of the corridor does impede within an area deemed 'Constraint' however the expected impact from the OHPL is not significant, thus not problematic (even though it is within a constraint or 'not ideal' area)).

10.4 FRESHWATER

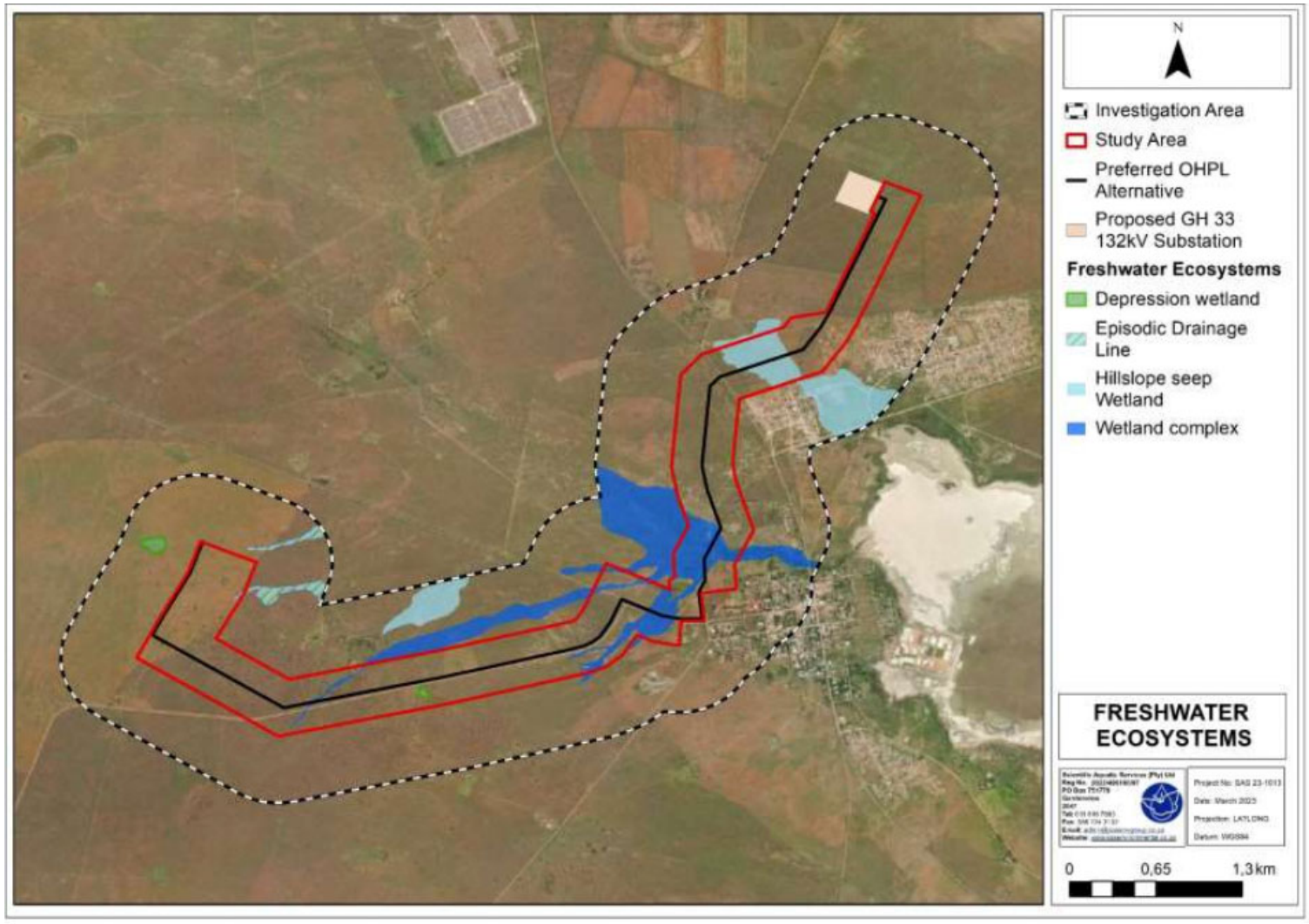

Figure 44: Location of the freshwater ecosystems associated with the study and investigation areas.

11. METHODOLOGY FOR ASSESSMENT OF POTENTIAL IMPACTS

*In accordance with **Appendix 1 Regulation 3(h) (vi) of GN R. 326 of the NEMA EIA Regulations (2014, as amended**):*

> ***3(h) vi** – The methodology used in determining and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks associated with the alternatives,*

The assessment of the potential impacts has been based on extensive experience related to environmental impact assessment and OHLPs as well as informed by specialist assessments and inputs, where applicable on the basis of professional judgement.

In this Basic Assessment Report, the types of potential impacts (direct, indirect, and cumulative) have been considered along with the nature and magnitude (severe, moderate, and low), extent and location of the potential impacts.

A prediction has been made of the timing (construction, operation or decommissioning phase) and duration (short, long term, intermittent or continuous) of the potential impact. A prediction has also been made of the likelihood or probability of impacts occurring and an estimation of the significance of the potential impact (local, regional or global scale).

Mitigation measures have been identified that are required to be implemented to lessen the potential impacts to acceptable levels and an evaluation of the predicted significance of residual impacts after mitigation is put into place, has been made. The assessment of the potential impacts will be carried out in a methodology that has been adapted from best practice guidelines disseminated from the Competent Authority.

These impacts have been identified based on the following:

- Inspection of the site and surroundings (current environmental conditions);
- Discussions with members of the project team;
- Discussions with relevant authorities (DFFE);
- Previous investigations in the area;
- Independent specialist studies;
- Issues and concerns raised during the public participation process; and
- Determining future changes to the environment as a result of the proposed activity.

The descriptors used to assess the impacts are described in **Table 23**.

Table 23: Descriptors of the Impact Assessment Methodology

ITEM	DEFINITION
EXTENT	
Local	Extending only as far as the boundaries of the activity, limited to the site and its immediate surroundings
Regional	Impact on the broader region
National	Will have an impact on a national scale or across international borders
DURATION	
Short-term	0-5 years
Medium-Term	5-15 years

Long-Term	>15 years, where the impact will cease after the operational life of the activity
Permanent	Where mitigation, either by natural process or human intervention, will not occur in such a way or in such a time span that the impact can be considered transient.
MAGNITUDE OR INTENSITY	
Low	Where the receiving natural, cultural or social function/environment is negligibly affected or where the impact is so low that remedial action is not required.
Medium	Where the affected environment is altered, but not severely and the impact can be mitigated successfully and natural, cultural or social functions and processes can continue, albeit in a modified way.
High	Where natural, cultural or social functions or processes are substantially altered to a very large degree. If a negative impact then this could lead to unacceptable consequences for the cultural and/or social functions and/or irreplaceable loss of biodiversity to the extent that natural, cultural or social functions could temporarily or permanently cease.
PROBABILITY	
Improbable	Where the possibility of the impact materialising is very low, either because of design or historic experience
Probable	Where there is a distinct possibility that the impact will occur
Highly Probable	Where it is most likely that the impact will occur
Definite	Where the impact will undoubtedly occur, regardless of any prevention measures
SIGNIFICANCE	
Low	Where a potential impact will have a negligible effect on natural, cultural or social environments and the effect on the decision is negligible. This will not require special design considerations for the project
Medium	Where it would have, or there would be a moderate risk to natural, cultural or social environments and should influence the decision. The project will require modification or mitigation measures to be included in the design
High	Where it would have, or there would be a high risk of, a large effect on natural, cultural or social environments. These impacts should have a major influence on decision making.
Very High	Where it would have, or there would be a high risk of, an irreversible negative impact on biodiversity and irreplaceable loss of natural capital that could result in the project being environmentally unacceptable, even with mitigation. Alternatively, it could lead to a major positive effect. Impacts of this nature must be a central factor in decision making.
STATUS OF IMPACT	
Whether the impact is positive (a benefit), negative (a cost) or neutral (status quo maintained)	
DEGREE OF CONFIDENCE IN PREDICTIONS	
The degree of confidence in the predictions is based on the availability of information and specialist knowledge (e.g. low, medium or high)	
MITIGATION	
Mechanisms used to control, minimise and or eliminate negative impacts on the environment and to enhance project benefits Mitigation measures should be considered in terms of the following hierarchy: (1) avoidance, (2) minimisation, (3) restoration and (4) off-sets.	

To comparatively rank the impacts, each impact has been assigned a score using the scoring system outlined in **Table 24**. This scoring system allows for a comparative, accountable assessment of the indicative cumulative positive or negative impacts of each aspect assessed. A summary of the various impact scores is presented in Table 7 below to allow for easy reference and comparison of the various alternatives scoring.

Table 24: Scoring System for Impact Assessment Ratings

IMPACT PARAMETER	SCORE
Extent (A)	**Rating**
Local	1
Regional	2

National	3	
Duration (B)	**Rating**	
Short term	1	
Medium Term	2	
Long Term	3	
Permanent	4	
Probability (C)	**Rating**	
Improbable	1	
Probable	2	
Highly Probable	3	
Definite	4	
IMPACT PARAMETER	**NEGATIVE IMPACT SCORE**	**POSITIVE IMPACT SCORE**
Magnitude/Intensity (D)	**Rating**	**Rating**
Low	-1	1
Medium	-2	2
High	-3	3
SIGNIFICANCE RATING (F) = (A*B*D)*C	**Rating**	**Rating**
Low	0 to - 40	0 to 40
Medium	- 41 to - 80	41 to 80
High	- 81 to - 120	81 to 120
Very High	> - 120	> 120

The above significance bands have been determined through calculating a maximum potential score of 156 (e.g. positive or negative) using the above methodology. This was then subdivided into broad bands as indicated above to provide a comparative assessment of all impacts in relation to the maximum possible significance score. The overall status of the impact (after mitigation) for the preferred alternative is stated in each impact assessment table.

The potential impacts have been assessed in terms of the requirement to assess "positive and negative impacts that the proposed activity and alternatives will have on the environment and on the community that may be affected focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects".

Only the 'Preferred Site Alternatives' have been comparatively assessed against the 'No-Go Alternative'. The preferred site alternative was determined by conducting site environmental constraints and opportunities assessment at the start of the Basic Assessment Report. As such, the Preferred Site Alternatives are currently considered the most suitable and reasonable alternative.

12. POTENTIAL IMPACTS ASSOCIATED WITH THE PROPOSED DEVELOPMENT

*In accordance with **Appendix 1 Regulation 3(h)(vii and viii) and Regulation 3 (i) and (j)of GN R. 326 of the NEMA EIA Regulations (2014, as amended**):*

***3(h) vii** – Positive and negative impacts that the proposed activity and alternatives will have on the environment and on the community that may be affected focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects*

***3(h) viii** – The possible mitigation measures that could be applied and level of residual risk,*

***Regulation 3(i)** - A full description of the process undertaken to identify, assess and rank the impacts the activity will impose on the preferred location through the life of the activity, including-*

***3(i) (i)** – A description of all environmental issues and risks that were identified during the environmental impact assessment process; and*

***3(i) (ii)** – An assessment of the significance of each issue and risk and an indication of the extent to which the issue and risk could be avoided or addressed by the adoption of mitigation measures*

***Regulation 3 (j)** – An assessment of each identified potentially significant impact and risk, including*

***3(j) (i)** – Cumulative impacts;*

***3(j) (ii)** – The nature, significance, and consequences of the impact and risk*

***3(j) (iii)** – The extent and duration of the impact and risk*

***3(j) (iv)** – The probability of the impact and risk occurring*

***3(j) (v)** – The degree to which the impact and risk can be reversed*

***3(j) (vi)** – The degree to which the impact and risk may cause irreplaceable loss of resources; and*

***3(j) (vii)** - -The degree to which the impact and risk can be mitigated*

The intention of this chapter is to raise awareness about **potential** impacts that may occur through the establishment and operation of the proposed Good Hope OHPL and substation.

The **potential** impacts have been assessed based on available information and through specialist recommendations, which have provided mitigation measures to ensure that the impacts associated with the activity are mitigation to acceptable levels.

Potential environmental impacts and issues that may be associated with the construction, operational and decommissioning phases of the proposed project and a summary of these have been identified and are listed below. Further please refer to the **Figure 45** for a lifecycle depiction of the Project. The applicability and degree and extent of these impacts are anticipated to vary depending on the lifecycle stage of the development.

As part of this Environmental Permitting Process, an Environmental Management Programme (EMPr) will be compiled for the various project life cycle stages to ensure that these impacts are minimised and/or eliminated where feasible.

Figure 45 Project Life Cycle

12.1 PLANNING AND DESIGN / CONSTRUCTION / DECOMISSIONING PHASE

12.1.1 Agricultural Impacts

Based on the available information and the Agricultural Impact Assessment, the following potential impacts of the proposed substation development have been assessed:

12.1.1.1 Agricultural Impact 1 – Loss of Grazing Land

IMPACT NATURE	**Agricultural Impact**		**STATUS**	**LOW NEGATIVE**
Impact Description	Physical and permanent loss of ±7 ha of grazing land			
Impact Source(s)	Clearing of the site to construct the substation platform and the construction of the tower foundations.			
Impact Receptor(s)	The immediate site.			
PARAMETER	**WITHOUT MITIGATION**	**SCORE**	**WITH MITIGATION**	**SCORE**
EXTENT (A)	Preferred Alternative	1	Preferred Alternative	1
	No-Go Alternative:	1	No-Go Alternative:	1
DURATION (B)	Preferred Alternative	3	Preferred Alternative	3
	No-Go Alternative:	1	No-Go Alternative:	1
PROBABILITY (C)	Preferred Alternative	2	Preferred Alternative	2
	No-Go Alternative:	1	No-Go Alternative:	1

INTENSITY OR MAGNITUDE (D)	Preferred Alternative	-1	Preferred Alternative	-1
	No-Go Alternative:	1	No-Go Alternative:	1
SIGNIFICANCE RATING (F) = (A*B*D)*C	Preferred Alternative	**-6**	Preferred Alternative	**-6**
	No-Go Alternative:	**1**	No-Go Alternative:	**1**
CUMULATIVE IMPACTS	This impact will have a low negative cumulative significance due to the small size of the area that will be required for the development of the 32 kV substation.			
CONFIDENCE	High			
MITIGATION MEASURES	1. Minimise the development footprint as far as reasonably possible			

12.1.1.2 Agricultural Impact 2 – Loss of Crop Lands

IMPACT NATURE	**Agricultural Impact**		**STATUS**	**LOW NEGATIVE**
Impact Description	Physical and permanent loss of potential crop land due to footprint occupied by OHPL towers.			
Impact Source(s)	Clearing of the tower footprint area to construct foundations.			
Impact Receptor(s)	The immediate tower footprints in the OHPL servitude.			
PARAMETER	**WITHOUT MITIGATION**	**SCORE**	**WITH MITIGATION**	**SCORE**
EXTENT (A)	Preferred Alternative	1	Preferred Alternative	1
	No-Go Alternative:	1	No-Go Alternative:	1
DURATION (B)	Preferred Alternative	3	Preferred Alternative	3
	No-Go Alternative:	1	No-Go Alternative:	1
PROBABILITY (C)	Preferred Alternative	3	Preferred Alternative	2
	No-Go Alternative:	1	No-Go Alternative:	1
INTENSITY OR MAGNITUDE (D)	Preferred Alternative	-1	Preferred Alternative	-1
	No-Go Alternative:	1	No-Go Alternative:	1
SIGNIFICANCE RATING (F) = ((A*B*D))*C	Preferred Alternative	**-9**	Preferred Alternative	**-6**
	No-Go Alternative:	1	No-Go Alternative:	1
CUMULATIVE IMPACTS	This impact will have a low negative cumulative significance due to the small permanent footprint of the 132 kV towers and the fact that this area is only considered marginal for crop production.			
CONFIDENCE	High			
MITIGATION MEASURES	**Planning and Design Phase** • Align the final trajectory of the power line at existing field edges or close to roads or fences that may delineate fields in the future. • Avoid sensitive areas, if applicable (i.e. wetlands, slopes in excess of 15% and existing soil conservation works such as contours), to prevent the degradation thereof. • Carry out construction during dry periods. **Construction Phase** • Conservation of the topsoil during construction and the proper rehabilitation of the construction sites after construction.			

12.1.2 Terrestrial Biodiversity Impacts

12.1.2.1 Terrestrial Biodiversity Impact 1 – Loss of Indigenous Vaal- Vet Sandy Grassland Vegetation Gh 10 (Endangered - A3)

IMPACT NATURE	**Botanical Impact**		**STATUS**	**MEDIUM NEGATIVE**
Impact Description	Loss of Indigenous Vaal-Vet Sandy Grassland Vegetation			
Impact Source(s)	Clearing of the site to construct the substation platform.			
Impact Receptor(s)	The site vegetation.			
PARAMETER	**WITHOUT MITIGATION**	**SCORE**	**WITH MITIGATION**	**SCORE**
EXTENT (A)	Preferred Alternative	3	Preferred Alternative	3
	No-Go Alternative:	1	No-Go Alternative:	1
DURATION (B)	Preferred Alternative	4	Preferred Alternative	4
	No-Go Alternative:	1	No-Go Alternative:	1
PROBABILITY (C)	Preferred Alternative	4	Preferred Alternative	4
	No-Go Alternative:	1	No-Go Alternative:	1
INTENSITY OR MAGNITUDE (D)	Preferred Alternative	-1	Preferred Alternative	-1
	No-Go Alternative:	1	No-Go Alternative:	1
SIGNIFICANCE RATING (F) = ((A*B*D))*C	Preferred Alternative	**-48**	Preferred Alternative	**-48**
	No-Go Alternative:	1	No-Go Alternative:	1
CUMULATIVE IMPACTS	Medium - Remaining natural area of ecosystem is 28% with more than 72% of the unit cumulatively been lost through various clearings. Even though this development would account for a small (<1%) loss of the overall vegetation type on a national scale, the unit should not face further decline. It is this cumulative spatial loss which has accounted for the units status of Endangered being ascribed. Even though a large area remains in terms of hectares (the 28% - 636720ha), it is an irreplaceable resource for which no further loss, from a botanical point of view, is acceptable. It must however be borne in mind that this section is not pristine having already lost taxa and assemblages and is positioned along in a fragmented locality from where 'natural' gradual decline is likely.			
CONFIDENCE	High			
MITIGATION MEASURES	**Planning and Design Phase** • In the case of the substation site, minimise the development footprint as far as reasonably possible. • In the case of the OHPL, attempt to site final tower positions outside of the vegetation type or within already disturbed/transformed locations within the vegetation unit. • Final siting of the tower positions should be done in consultation with a botanical/ecological specialist. **Construction Phase**			

	• To prevent further loss and aide rehabilitation around these pylons the work areas required should, where possible, not be cleared of vegetation to mineral soil but rather, the vegetation simply flattened and worked on top of in as much as is reasonable. In doing so this will enable the roots to remain and bind the soil thereafter enabling better regeneration, reduce susceptibility to erosion and IAP proliferation.

12.1.2.2 Terrestrial Biodiversity Impact 2 - Biodiversity Planning Impact 1 – Loss of portion of Critical Biodiversity Area 1

IMPACT NATURE	**Biodiversity Planning Impact**		**STATUS**	**LOW NEGATIVE**
Impact Description	Loss of portion of Critical Biodiversity Area 1			
Impact Source(s)	Clearance of the area followed by permanent construction of the substation and towers will destroy the directly impacted area's ability to function within purpose of the biodiversity spatial plan.			
Impact Receptor(s)	Vegetated CBA1 area.			
PARAMETER	**WITHOUT MITIGATION**	**SCORE**	**WITH MITIGATION**	**SCORE**
EXTENT (A)	Preferred Alternative	2	Preferred Alternative	2
	No-Go Alternative:	1	No-Go Alternative:	1
DURATION (B)	Preferred Alternative	4	Preferred Alternative	4
	No-Go Alternative:	1	No-Go Alternative:	1
PROBABILITY (C)	Preferred Alternative	4	Preferred Alternative	4
	No-Go Alternative:	1	No-Go Alternative:	1
INTENSITY OR MAGNITUDE (D)	Preferred Alternative	-1	Preferred Alternative	-1
	No-Go Alternative:	1	No-Go Alternative:	1
SIGNIFICANCE RATING (F) = ((A*B*D))*C	Preferred Alternative	**-32**	Preferred Alternative	**-32**
	No-Go Alternative:	1	No-Go Alternative:	1
CUMULATIVE IMPACTS	Medium - The cumulative loss of areas of specific vegetation types is a primary consideration in the ascription of biodiversity spatial planning categories to these areas (CBA). Cumulative impacts are those impacts linked but not limited to increased loss of vegetation type or the ecosystems listed in the National List of Threatened Terrestrial Ecosystems (Government Gazette, 2011). Any loss within a CBA is therefore not recommended due to this cumulative impact having caused the low levels of remaining ecosystem. In this instance the loss is limited in terms of spatial scale (7ha) compared to the rest of the CBA1 resulting in minimal cumulative loss of unit CBA1 functioning. As such no ecosystem functions or ecological processes of the CBA1 unit as collective whole are expected to be severely impacted by the loss of the proposed portion for the substation.			
CONFIDENCE	High			

MITIGATION MEASURES	**Planning and Design Phase** • In the case of the substation site, minimise the development footprint as far as reasonably possible. • In the case of the OHPL, attempt to site final tower positions outside of the CBA1 areas or within already disturbed/transformed locations within the vegetation unit. • Final siting of the tower positions should be done in consultation with a botanical/ecological specialist. The direct loss of CBA habitat cannot be avoided or mitigated as the habitat will be completely removed in the impacted areas. This is only possible through avoidance of the area which is not probable. Fortunately, it is a relatively small section in terms of the overall CBA1 and as such its functionality it is not likely to experience any significant impact.

12.1.2.3 Terrestrial Biodiversity Impact 3 - Faunal Impact 1 – Loss of Faunal Habitat/Forage areas

IMPACT NATURE	**Faunal Impact - Loss of Faunal Habitat/Forage areas**		**STATUS**	**LOW NEGATIVE**
Impact Description	Clearance of the natural vegetation thereby removing habitat and forage for indigenous species within the area.			
Impact Source(s)	Direct clearance of vegetation for construction of substation platform and tower foundations			
Impact Receptor(s)	Vegetated area followed by fauna			
PARAMETER	**WITHOUT MITIGATION**	**SCORE**	**WITH MITIGATION**	**SCORE**
EXTENT (A)	Preferred Alternative	2	Preferred Alternative	2
	No-Go Alternative:	1	No-Go Alternative:	1
DURATION (B)	Preferred Alternative	4	Preferred Alternative	4
	No-Go Alternative:	1	No-Go Alternative:	1
PROBABILITY (C)	Preferred Alternative	4	Preferred Alternative	4
	No-Go Alternative:	1	No-Go Alternative:	1
INTENSITY OR MAGNITUDE (D)	Preferred Alternative	-1	Preferred Alternative	-1
	No-Go Alternative:	1	No-Go Alternative:	1
SIGNIFICANCE RATING (F) = ((A*B*D))*C	Preferred Alternative	**-32**	Preferred Alternative	**-32**
	No-Go Alternative:	1	No-Go Alternative:	1
CUMULATIVE IMPACTS	Medium - The cumulative loss of areas of faunal habitat is of concern. Each remaining portion has the potential to provide habitat and food for a variety of fauna even in disjointed patches. Even though this would be a permanent loss of a portion of faunal habitat the extent is only regional and intensity low due to the small size of the area of indigenous vegetation being impacted upon (<7ha) in relation to the remaining natural areas within the region.			

CONFIDENCE	High
MITIGATION MEASURES	**Planning and Design Phase** • In the case of the substation site, minimise the development footprint as far as reasonably possible. • In the case of the OHPL, attempt to site final tower positions outside of the vegetation type or within already disturbed/transformed locations within the vegetation unit. • Final siting of the tower positions should be done in consultation with a botanical/ecological specialist. The direct loss of faunal habitat cannot be mitigated. The portion of faunal habitat will be completely removed and cannot be recreated elsewhere.

12.1.2.4 Terrestrial Biodiversity Impact 4 - Botanical Impact - Loss of Provincially Protected Flora

IMPACT NATURE	**Botanical Impact - Loss of Provincially Protected Flora**		**STATUS**	**LOW NEGATIVE**
Impact Description	Clearance of the natural vegetation thereby potentially destroying specimens of protected flora.			
Impact Source(s)	Direct clearance of vegetation			
Impact Receptor(s)	Vegetated areas and provincially protected flora			
PARAMETER	**WITHOUT MITIGATION**	**SCORE**	**WITH MITIGATION**	**SCORE**
EXTENT (A)	Preferred Alternative	2	Preferred Alternative	1
	No-Go Alternative:	1	No-Go Alternative:	1
DURATION (B)	Preferred Alternative	4	Preferred Alternative	2
	No-Go Alternative:	1	No-Go Alternative:	1
PROBABILITY (C)	Preferred Alternative	3	Preferred Alternative	2
	No-Go Alternative:	1	No-Go Alternative:	1
INTENSITY OR MAGNITUDE (D)	Preferred Alternative	-2	Preferred Alternative	-1
	No-Go Alternative:	1	No-Go Alternative:	1
SIGNIFICANCE RATING (F) = ((A*B*D))*C	Preferred Alternative	**-48**	Preferred Alternative	**-4**
	No-Go Alternative:	1	No-Go Alternative:	1
CUMULATIVE IMPACTS	Medium - Provincially listed Schedule 6 species are more common in the area than nationally listed SCC (which are absent). Their numbers have however declined due to cumulative impacts reducing their overall numbers. It is however unlikely that large amounts of these will be found on the site and a significant cumulative impact occurring			
CONFIDENCE	High			

MITIGATION MEASURES	**Planning and Design Phase and Construction Phase** Botanical Search and rescue prior to construction starting can be used to minimise protected species loss by relocating geophytic and succulent plants (with a permit from the provincial authority) to other suitable areas. Provincially protected trees should be avoided and only destroyed under a permit from DFFE.

12.1.2.5 Terrestrial Biodiversity Impact 5 - Faunal Impact - Loss of Provincially Protected Fauna

IMPACT NATURE	**Faunal Impact - Loss of Provincially Protected Fauna**		**STATUS**	**LOW NEGATIVE**
Impact Description	Direct clearance of vegetation and associated impact on fauna			
Impact Source(s)	Direct clearance of vegetation			
Impact Receptor(s)	Provincially Protected Fauna			
PARAMETER	**WITHOUT MITIGATION**	**SCORE**	**WITH MITIGATION**	**SCORE**
EXTENT (A)	Preferred Alternative	2	Preferred Alternative	1
	No-Go Alternative:	1	No-Go Alternative:	1
DURATION (B)	Preferred Alternative	4	Preferred Alternative	2
	No-Go Alternative:	1	No-Go Alternative:	1
PROBABILITY (C)	Preferred Alternative	3	Preferred Alternative	2
	No-Go Alternative:	1	No-Go Alternative:	1
INTENSITY OR MAGNITUDE (D)	Preferred Alternative	-2	Preferred Alternative	-1
	No-Go Alternative:	1	No-Go Alternative:	1
SIGNIFICANCE RATING (F) = ((A*B*D))*C	Preferred Alternative	**-48**	Preferred Alternative	**-4**
	No-Go Alternative:	1	No-Go Alternative:	1
CUMULATIVE IMPACTS	Medium - Provincially listed Schedule 1 species are more common in the area than nationally listed SCC. Their numbers have however declined due to cumulative impacts reducing their overall numbers. It is however unlikely that any large amounts of these will be found on the site and a significant cumulative impact occurring.			
CONFIDENCE	Medium			
MITIGATION MEASURES	**Planning and Design Phase and Construction Phase** Fauna search and rescue (with a permit from the provincial authority) can be conducted prior to construction starting to minimise provincially protected species loss by relocating these to suitable habitats within the vicinity.			

12.1.2.6 Terrestrial Biodiversity Impact 6 - Ecological Impact - Establishment and spread of NEMBA listed Invasive Alien Plants

IMPACT NATURE	Ecological Impact - Establishment and spread of NEMBA listed Invasive Alien Plants		STATUS	LOW NEGATIVE
Impact Description	Establishment and spread of NEMBA listed Invasive Alien Plants			
Impact Source(s)	Ruderal invader plants proliferating from soil disturbance			
Impact Receptor(s)	Natural vegetation and surrounding areas			
PARAMETER	**WITHOUT MITIGATION**	**SCORE**	**WITH MITIGATION**	**SCORE**
EXTENT (A)	Preferred Alternative	2	Preferred Alternative	1
	No-Go Alternative:	1	No-Go Alternative:	1
DURATION (B)	Preferred Alternative	3	Preferred Alternative	1
	No-Go Alternative:	1	No-Go Alternative:	1
PROBABILITY (C)	Preferred Alternative	4	Preferred Alternative	2
	No-Go Alternative:	1	No-Go Alternative:	1
INTENSITY OR MAGNITUDE (D)	Preferred Alternative	-3	Preferred Alternative	-1
	No-Go Alternative:	1	No-Go Alternative:	1
SIGNIFICANCE RATING (F) = ((A*B*D))*C	Preferred Alternative	**-72**	Preferred Alternative	**-2**
	No-Go Alternative:	1	No-Go Alternative:	1
CUMULATIVE IMPACTS	High - Invasive alien plants can transform areas totally replacing indigenous vegetation. It is the fact that they spread cumulatively which results in mass proliferations and the problematic results of their presence.			
CONFIDENCE	High			
MITIGATION MEASURES	**Construction Phase** Mitigation would include the drafting of and adopting an alien vegetation management programme ("AVCP") according to the 30 September 2015 MONITORING, CONTROL & ERADICATION PLANS GUIDELINES FOR SPECIES LISTED AS INVASIVE IN TERMS OF SECTION 70 OF NATIONAL ENVIRONMENTAL MANAGEMENT: BIODIVERSITY ACT, 2004			

12.1.2.7 Terrestrial Biodiversity Impact 7 - Ecological Impact - Soil Erosion

IMPACT NATURE	Ecological Impact - Soil Erosion	STATUS	LOW NEGATIVE
Impact Description	Soil erosion from disturbance of soil		
Impact Source(s)	Direct clearance of vegetation and construction		
Impact Receptor(s)	Direct footprint and adjacent areas if any erosion spreads		

PARAMETER	WITHOUT MITIGATION	SCORE	WITH MITIGATION	SCORE
EXTENT (A)	Preferred Alternative	2	Preferred Alternative	1
	No-Go Alternative:	1	No-Go Alternative:	1
DURATION (B)	Preferred Alternative	3	Preferred Alternative	1
	No-Go Alternative:	1	No-Go Alternative:	1
PROBABILITY (C)	Preferred Alternative	2	Preferred Alternative	1
	No-Go Alternative:	1	No-Go Alternative:	1
INTENSITY OR MAGNITUDE (D)	Preferred Alternative	-2	Preferred Alternative	-1
	No-Go Alternative:	1	No-Go Alternative:	1
SIGNIFICANCE RATING (F) = ((A*B*D))*C	Preferred Alternative	**-24**	Preferred Alternative	**-1**
	No-Go Alternative:	1	No-Go Alternative:	1
CUMULATIVE IMPACTS	Low - Erosion can begin as minor rills and with time form large gulley's. Cumulatively this can result in significant loss of topsoil, vegetation, and negative impacts of downstream areas. This is especially important in riparian zones where erosion is more likely due to the geohydrology and soft soils.			
CONFIDENCE	High			
MITIGATION MEASURES	Mitigation would include the drafting and adopting of a rehabilitation plan for the construction phase to ensure that erosion does not result during, or after, construction and if it does that it is remediated timeously.			

12.1.3 Avifaunal Impacts

12.1.3.1 Avifaunal Impact 1 - Direct loss of avifaunal habitat

IMPACT NATURE	Avifaunal Impacts - Direct loss of avifaunal habitat	STATUS	LOW NEGATIVE
Impact Description	Clearing of natural vegetation for the construction and establishment of the OHPL and substation can result in the loss, degradation and fragmentation of foraging and nesting habitat for avifauna. However, this impact is expected to be limited due to the small footprint required for the installation of OHPL and the tower foundations. The most likely loss of habitat to occur will be through the clearing habitat for servitude roads and removing trees that could interact with the OHPL.		
Impact Source(s)	Servitude, substation and OHPL corridor clearing		
Impact Receptor(s)	Secretarybird, Blue Korhaan.		

PARAMETER	WITHOUT MITIGATION	SCORE	WITH MITIGATION	SCORE
EXTENT (A)	Preferred Alternative	1	Preferred Alternative	1

	No-Go Alternative:		No-Go Alternative:	
DURATION (B)	Preferred Alternative	1	Preferred Alternative	1
	No-Go Alternative:		No-Go Alternative:	
PROBABILITY (C)	Preferred Alternative	4	Preferred Alternative	2
	No-Go Alternative:		No-Go Alternative:	
INTENSITY OR MAGNITUDE (D)	Preferred Alternative	-1	Preferred Alternative	-1
	No-Go Alternative:		No-Go Alternative:	
SIGNIFICANCE RATING (F) = (A*B*D)*C	Preferred Alternative	**-4**	Preferred Alternative	**-2**
	No-Go Alternative:	**0**	No-Go Alternative:	**0**
CUMULATIVE IMPACTS	Unlikely to occur since the actual impact is anticipated to be so low.			
CONFIDENCE	High			
MITIGATION MEASURES	**Planning and Design Phase** • Avoidance of sensitive habitats when locating towers. Limit the areas cleared for construction purposes (e.g. laydown areas). • Prioritise existing roads for servitudes and align OHPLs with existing roads wherever possible. **Construction Phase** • Do not implement a bare earth policy for construction of servitudes. • Rehabilitate all areas disturbed immediately after construction. • Develop and implement an Alien and Invasive Plant Control Plan to manage such plants in all cleared areas • All staff must undergo a strict induction process to inform them of the importance of nature and in preventing fires.			

12.1.3.2 Avifaunal Impact 2 – Collision and Electrocution

IMPACT NATURE	**Avifaunal Impacts - Collision and Electrocution - Direct mortality through collision and electrocution**	**STATUS**	**LOW NEGATIVE**
Impact Description	Mortality from collision and electrocution is a potential impact to avifauna from OHPLs. This risk is likely to be highest in close proximity to areas of high habitat complexity and resource availability where bird abundances are higher (e.g. pans). In addition, vehicle induced collisions (direct collisions with vehicles or vehicle induced flushes into fence infrastructure) can pose significant direct mortality risk, especially to large ground dwelling species. Several SCC are likely/known to occur in the region of the proposed development which have a wingspan large enough (>1.5 m) to bridge gaps between live and earthed components or between phases of powerlines. In addition, electrocution of birds within the substations/switching areas is also possible.		
Impact Source(s)	Electrical transmission lines and substations		
Impact Receptor(s)	All birds but particularly water birds, raptors and other large-bodied species with low power to weight ratios and in-flight manoeuvrability. Major receptors include flamingos, Secretarybirds and all of the bustard species known to be present within the region.		

PARAMETER	WITHOUT MITIGATION	SCORE	WITH MITIGATION	SCORE
EXTENT (A)	Preferred Alternative	2	Preferred Alternative	1
	No-Go Alternative:		No-Go Alternative:	
DURATION (B)	Preferred Alternative	4	Preferred Alternative	4
	No-Go Alternative:		No-Go Alternative:	
PROBABILITY (C)	Preferred Alternative	3	Preferred Alternative	2
	No-Go Alternative:		No-Go Alternative:	
INTENSITY OR MAGNITUDE (D)	Preferred Alternative	-3	Preferred Alternative	-3
	No-Go Alternative:		No-Go Alternative:	
SIGNIFICANCE RATING (F) = (A*B*D)*C	Preferred Alternative	**-72**	Preferred Alternative	**-24**
	No-Go Alternative:	**0**	No-Go Alternative:	**0**
CUMULATIVE IMPACTS	Without appropriate mitigation, the cumulative impacts on the receptors most at risk from collisions with powerlines will be marked. Even with typical mitigation such as bird flight diverters, collisions are not unavoidable and there is likely to be an appreciable cumulative impact on certain species in the region. .			
CONFIDENCE	Moderate			
MITIGATION MEASURES	**Planning and Design Phase** • It is recommended that wherever possible, alignment to existing electrical transmission infrastructure is undertaken. • Where the creation of new transmission lines is necessary attempts should be made to minimise the route length to the closest existing substation and that the route be aligned with existing powerlines/roads as far as possible. Additionally, the route should avoid or minimise wetland/riverine crossings. • Install Eskom-approved bird flight diverters (flappers or coils) on new transmission lines (particularly the earth wire). This can help to increase the visibility of transmission lines especially the thinner earth line with which most collisions tend to be associated. • Bird flight diverters need to be closely spaced (<15 m) and must glow in the dark or have a light source to make the transmission lines more visible in the sensitive avifauna area indicated in the Avifauna Impact Assessment. This is specifically to prevent collisions by flamingos that migrate at night. • Design of overhead electrical lines must consider potential for electrocution by large species and pre-emptively avoid the likelihood of this by increasing distances between spans to avoid faecal “streamers” or large open wings creating a short. • In all areas where service road intersect with semi natural or natural habitat, all fences must be set back at least (strictly) 75 metres from the edge of every service road in order to allow for vulnerable species such as bustards, storks, cranes and korhaans to obtain adequate height after being flushed by vehicle traffic. Alternatively, the fences must be placed completely adjacent to the roads with a maximum of			

	3 metres buffer and marked with fence flappers in order to reduce flush-related collisions.

12.1.3.3 Avifaunal Impact 3 – Disturbance

IMPACT NATURE	**Avifaunal Impacts - Sensory disturbance**		**STATUS**	**LOW NEGATIVE**
Impact Description	Sensory disturbances to avifauna are inevitable but are unlikely to negatively impact upon SCC and is mainly likely to be restricted to the construction phase. Although dust, noise and human activity during construction is unavoidable, much can be done to reduce the effect of these sensory disturbance impacts on avifauna.			
Impact Source(s)	Machinery, influx of people, noise, dust, light.			
Impact Receptor(s)	All avifauna, particularly large terrestrial birds and raptors			
PARAMETER	**WITHOUT MITIGATION**	**SCORE**	**WITH MITIGATION**	**SCORE**
EXTENT (A)	Preferred Alternative	1	Preferred Alternative	1
	No-Go Alternative:		No-Go Alternative:	
DURATION (B)	Preferred Alternative	1	Preferred Alternative	1
	No-Go Alternative:		No-Go Alternative:	
PROBABILITY (C)	Preferred Alternative	3	Preferred Alternative	2
	No-Go Alternative:		No-Go Alternative:	
INTENSITY OR MAGNITUDE (D)	Preferred Alternative	-1	Preferred Alternative	-1
	No-Go Alternative:		No-Go Alternative:	
SIGNIFICANCE RATING (F) = (A*B*D)*C	Preferred Alternative	**-3**	Preferred Alternative	**-2**
	No-Go Alternative:	**0**	No-Go Alternative:	**0**
CUMULATIVE IMPACTS	Disturbances to birds from the construction of the OHPL is likely to be short lived and therefore unlikely to represent a significant cumulative impact.			
CONFIDENCE	High			

MITIGATION MEASURES	**Construction Phase** • Adopt temporal avoidance strategies to prevent executing the most intensive activities generating noise and dust during the most sensitive period of breeding activity for SCC. Secretarybirds can breed throughout the year but usually breeding is more likely August to March. This is also the most likely time that waterbirds will be attracted the pans and wetlands due to the presence of water (December to March). Therefore, intensive activities should be scheduled as far as practically possible between April-July. Note that light activities such as normal vehicle use of the roads are not affected by this mitigation measure and these may proceed year-round. • Minimise light pollution and fit external lighting with downward facing hoods at the substation. • Enforce a speed limit of 40 km/h on dust roads. • If necessary apply dust-suppression measures (road wetting) to limit dust during construction.

12.1.3.4 Avifaunal Impact 4 – Attraction to the OHPL or Substation

IMPACT NATURE	**Avifaunal Impacts - Attraction of birds**		**STATUS**	**LOW NEGATIVE**
Impact Description	Certain (mainly commensal species) are often attracted by the establishment of an OHPL as it presents additional resources in the form of perching and nesting habitat. This artificial increase in the abundance of some species places these opportunistic species and their predators at risk of collision and electrocution.			
Impact Source(s)	All infrastructure..			
Impact Receptor(s)	Commensal and opportunistic species but also their predators			
PARAMETER	**WITHOUT MITIGATION**	**SCORE**	**WITH MITIGATION**	**SCORE**
EXTENT (A)	Preferred Alternative	1	Preferred Alternative	1
	No-Go Alternative:		No-Go Alternative:	
DURATION (B)	Preferred Alternative	1	Preferred Alternative	1
	No-Go Alternative:		No-Go Alternative:	
PROBABILITY (C)	Preferred Alternative	3	Preferred Alternative	2

	No-Go Alternative:		No-Go Alternative:	
INTENSITY OR MAGNITUDE (D)	Preferred Alternative	-1	Preferred Alternative	-1
	No-Go Alternative:		No-Go Alternative:	
SIGNIFICANCE RATING (F) = (A*B*D)*C	Preferred Alternative	**-3**	Preferred Alternative	**-2**
	No-Go Alternative:	**0**	No-Go Alternative:	**0**
CUMULATIVE IMPACTS	Expected to be very low.			
CONFIDENCE	Moderate			
MITIGATION MEASURES	**Planning and Construction Phase:** Install bird deterrent devices on pylons and / or monopoles to limit perching and minimise collision and electrocution risk.			

12.1.4 Freshwater/Aquatic Impacts

12.1.4.1 Freshwater Impact 1 – Loss of freshwater ecosystem vegetation and associated disturbance of soil.

IMPACT NATURE	**Loss of freshwater ecosystem vegetation and associated disturbance of soil.**		**STATUS**	**LOW NEGATIVE**
Impact Description	• Loss of freshwater ecosystem vegetation, associated habitat and ecosystem services; • Transportation of construction materials can result in disturbances to soils, and increased risk of sedimentation/erosion; • Soil and stormwater contamination from oils and hydrocarbons originating from construction vehicles.			
Impact Source(s)	• Excavation of pits for the support structures • Construction vehicle movement and removal of vegetation.			
Impact Receptor(s)	Wetland Complex and Hillslope seep wetland			
PARAMETER	**WITHOUT MITIGATION**	**SCORE**	**WITH MITIGATION**	**SCORE**
EXTENT (A)	Preferred Alternative	1	Preferred Alternative	1
	No-Go Alternative:	1	No-Go Alternative:	1
DURATION (B)	Preferred Alternative	1	Preferred Alternative	1
	No-Go Alternative:	1	No-Go Alternative:	1
PROBABILITY (C)	Preferred Alternative	4,0	Preferred Alternative	3
	No-Go Alternative:	1	No-Go Alternative:	1
INTENSITY OR MAGNITUDE (D)	Preferred Alternative	-3,0	Preferred Alternative	-2
	No-Go Alternative:	1,0	No-Go Alternative:	1
SIGNIFICANCE RATING (F) = ((A*B*D) + (E))*C	Preferred Alternative	-12	Preferred Alternative	-6
	No-Go Alternative:	1	No-Go Alternative:	1

CUMULATIVE IMPACTS	• Loss of freshwater vegetation; • Loss of ecoservice provisioning; • Alien and Invasive Plant (AIP) encroachment • Erosion and Sedimentation.
CONFIDENCE	Medium
MITIGATION MEASURES	**Planning and Design Phase** • All support structures must be placed outside the delineated extent of the freshwater ecosystems and the associated NEMA 32m ZoR wherever possible. However, in instances where this may not be practically or feasibly possible (such as the northern hillslope seep and wetland complex) due to the width of the wetland and the maximum stringing span, support structures must be located in the temporary zones of the wetlands; • No supporting infrastructure may be located within the permanent or seasonal zones of the wetlands; • The northern hillslope seep and wetland complex is in a largely to seriously modified ecological condition, as such, placing the supporting infrastructure in the historically disturbed areas or adjacent existing infrastructure such as roads would reduce the potential risk significantly; **Construction Phase** • All activities during the construction phase should be micro sited in consultation with a suitably qualified Freshwater Ecologist • It is imperative that all construction works be undertaken during low rainfall periods when the flow/level of water is very low in the freshwater ecosystems • Due to the accessibility of the sites, no unnecessary crossing of the freshwater ecosystems may be permitted. This will limit edge effects, erosion and sedimentation of the wetlands during the construction phase; • Contractor laydown areas, vehicle re-fuelling areas and material storage facilities to remain outside of the freshwater ecosystem areas and their associated 32 m NEMA Zone of Regulation (ZoR); • Any material stockpiled should be kept to a minimum. Should the vegetation not be suitable for reinstatement after the construction phase or be alien/invasive vegetation species, all material must be disposed of at a registered garden refuse site and may not be burned or mulched on site.

12.1.4.2 Freshwater Impact 2 – Loss of freshwater ecosystem vegetation and associated disturbance of soil.

IMPACT NATURE	**Loss of freshwater ecosystem vegetation and associated disturbance of soil.**	**STATUS**	**LOW NEGATIVE**

Impact Description	• Disturbances of soils leading to potential impacts to the freshwater ecosystems vegetation, increased alien vegetation proliferation in the footprint areas, and in turn to altered freshwater ecosystem habitat; • Altered runoff patterns, leading to increased erosion and sedimentation of the freshwater ecosystems			
Impact Source(s)	• Excavation of pits for the support structures; • Construction vehicle movement and removal of vegetation.			
Impact Receptor(s)	Wetland Complex and Hillslope seep wetland			
PARAMETER	**WITHOUT MITIGATION**	**SCORE**	**WITH MITIGATION**	**SCORE**
EXTENT (A)	Preferred Alternative	1	Preferred Alternative	1
	No-Go Alternative:	1	No-Go Alternative:	1
DURATION (B)	Preferred Alternative	1	Preferred Alternative	1
	No-Go Alternative:	1	No-Go Alternative:	1
PROBABILITY (C)	Preferred Alternative	4,0	Preferred Alternative	3
	No-Go Alternative:	1	No-Go Alternative:	1
INTENSITY OR MAGNITUDE (D)	Preferred Alternative	-3,0	Preferred Alternative	-2
	No-Go Alternative:	1,0	No-Go Alternative:	1
SIGNIFICANCE RATING (F) = ((A*B*D) + (E))*C	Preferred Alternative	-12	Preferred Alternative	-6
	No-Go Alternative:	1	No-Go Alternative:	1
CUMULATIVE IMPACTS	• Loss of freshwater vegetation • Loss of ecoservice provisioning; • Alien and Invasive Plant (AIP) encroachment • Erosion and Sedimentation.			
CONFIDENCE	Medium			

MITIGATION MEASURES	**Construction Phase** • It is imperative that all construction works be undertaken during low rainfall periods when the flow is low in the freshwater ecosystems, and no diversion of flow would be necessary • The construction period should be kept as short as possible and construction activities within the delineated freshwater ecosystems should be avoided • Protect exposed stockpiles from wind and limit the time in which the stockpiled soil is exposed, by covering with a suitable geotextile such as hessian sheeting; • When the powerline is spun between the supporting structures, no vehicles may indiscriminately drive through the freshwater ecosystems, use must be made of the dedicated access roads. **Control measures for concrete mixing on site**: • No mixed concrete may be deposited outside of the designated construction footprint; As far as possible, concrete mixing should be restricted to the contractor laydown area. Additionally, batter / dagga board mixing trays and impermeable sumps should be provided, onto which any mixed concrete can be deposited while it awaits placing; • Any concrete spilled outside of the demarcated area must be promptly removed and taken to a suitably licensed waste disposal facility • With regards to backfilling of the concrete encasing; • Soil removed for excavating the pit should be used as backfill material; • All excavated pits must be compacted to natural soil compaction levels to prevent the formation of preferential surface flow paths and subsequent erosion. Conversely, areas compacted as a result of construction activities (within the 5 m buffer zone) must be loosened to natural soil compaction levels; • Any remaining soil following the completion of backfilling of the pits are to be spread out thinly surrounding the installed supporting structures (outside the freshwater ecosystems) to aid in the natural reclamation process; • The construction footprint must be limited to the pit area (to allow for the stockpiling and movement of personnel). The area must be rehabilitated after the completion of the construction phase, including revegetation thereof with indigenous vegetation. In addition, alien vegetation eradication of the footprint area must be undertaken.

12.1.4.3 Freshwater Impact 3 – Loss of freshwater ecosystem vegetation and associated disturbance of soil.

IMPACT NATURE	**Loss of freshwater ecosystem vegetation and associated disturbance of soil.**	**STATUS**	**LOW NEGATIVE**
Impact Description	• Disturbances of soils leading to potential impacts to the freshwater ecosystems vegetation, increased alien vegetation proliferation in the footprint areas, and in turn to altered freshwater ecosystem habitat; • Altered runoff patterns, leading to increased erosion and sedimentation of the freshwater ecosystems		
Impact Source(s)	• Excavation of pits for the support structures; • Construction vehicle movement and removal of vegetation.		
Impact Receptor(s)	Wetland Complex and Hillslope seep wetland		

PARAMETER	WITHOUT MITIGATION	SCORE	WITH MITIGATION	SCORE
EXTENT (A)	Preferred Alternative	1	Preferred Alternative	1
	No-Go Alternative:	1	No-Go Alternative:	1
DURATION (B)	Preferred Alternative	1	Preferred Alternative	1
	No-Go Alternative:	1	No-Go Alternative:	1
PROBABILITY (C)	Preferred Alternative	4,0	Preferred Alternative	3
	No-Go Alternative:	1	No-Go Alternative:	1
INTENSITY OR MAGNITUDE (D)	Preferred Alternative	-3,0	Preferred Alternative	-2
	No-Go Alternative:	1,0	No-Go Alternative:	1
SIGNIFICANCE RATING (F) = ((A*B*D) + (E))*C	Preferred Alternative	-12	Preferred Alternative	-6
	No-Go Alternative:	1	No-Go Alternative:	1
CUMULATIVE IMPACTS	• Loss of freshwater vegetation • Loss of ecoservice provisioning; • Alien and Invasive Plant (AIP) encroachment • Erosion and Sedimentation.			
CONFIDENCE	Medium			
MITIGATION MEASURES	**Construction Phase** • It is imperative that all construction works be undertaken during low rainfall periods when the flow is low in the freshwater ecosystems, and no diversion of flow would be necessary • The construction period should be kept as short as possible and construction activities within the delineated freshwater ecosystems should be avoided • Protect exposed stockpiles from wind and limit the time in which the stockpiled soil is exposed, by covering with a suitable geotextile such as hessian sheeting; • When the powerline is spun between the supporting structures, no vehicles may indiscriminately drive through the freshwater ecosystems, use must be made of the dedicated access roads. **Control measures for concrete mixing on site**: • No mixed concrete may be deposited outside of the designated construction footprint; As far as possible, concrete mixing should be restricted to the contractor laydown area. Additionally, batter / dagga board mixing trays and impermeable sumps should be provided, onto which any mixed concrete can be deposited while it awaits placing; • Any concrete spilled outside of the demarcated area must be promptly removed and taken to a suitably licensed waste disposal facility. • Soil removed for excavating the pit should be used as backfill material; • All excavated pits must be compacted to natural soil compaction levels to prevent the formation of preferential surface flow paths and subsequent erosion. Conversely, areas compacted as a result of construction activities (within the 5 m buffer zone) must be loosened to natural soil compaction levels; • Any remaining soil following the completion of backfilling of the pits are to be spread out thinly surrounding the installed supporting structures (outside the freshwater ecosystems) to aid in the natural reclamation process; • The construction footprint must be limited to the pit area (to allow for the stockpiling and movement of personnel). The area must be			

	rehabilitated after the completion of the construction phase, including revegetation thereof with indigenous vegetation. In addition, alien vegetation eradication of the footprint area must be undertaken.

12.1.4.4 Freshwater Impact 4 – Loss of freshwater ecosystem vegetation and associated disturbance of soil.

IMPACT NATURE	**Loss of freshwater ecosystem vegetation and associated disturbance of soil.**		**STATUS**	**LOW NEGATIVE**
Impact Description	• Disturbances of soils leading to potential impacts to the freshwater ecosystems vegetation, increased alien vegetation proliferation in the footprint areas, and in turn to altered freshwater ecosystem habitat; • Altered runoff patterns, leading to increased erosion and sedimentation of the freshwater ecosystems			
Impact Source(s)	Maintenance vehicle movement and associated soil disturbance			
Impact Receptor(s)	Wetland Complex and Hillslope seep wetland			
PARAMETER	**WITHOUT MITIGATION**	**SCORE**	**WITH MITIGATION**	**SCORE**
EXTENT (A)	Preferred Alternative	1	Preferred Alternative	1
	No-Go Alternative:	1	No-Go Alternative:	1
DURATION (B)	Preferred Alternative	1	Preferred Alternative	1
	No-Go Alternative:	1	No-Go Alternative:	1
PROBABILITY (C)	Preferred Alternative	3,0	Preferred Alternative	1
	No-Go Alternative:	1	No-Go Alternative:	1
INTENSITY OR MAGNITUDE (D)	Preferred Alternative	-2,0	Preferred Alternative	-1
	No-Go Alternative:	1,0	No-Go Alternative:	1
SIGNIFICANCE RATING (F) = ((A*B*D) + (E))*C	Preferred Alternative	-6	Preferred Alternative	-1
	No-Go Alternative:	1	No-Go Alternative:	1
CUMULATIVE IMPACTS	• Loss of freshwater vegetation • Loss of ecoservice provisioning; • Alien and Invasive Plant (AIP) encroachment • Erosion and Sedimentation.			
CONFIDENCE	Medium			

MITIGATION MEASURES	**Construction Phase** • Maintenance vehicles must make use of dedicated access roads and no indiscriminate movement in the freshwater ecosystems may be permitted; • During periodic maintenance activities of the powerline, monitoring for erosion should be undertaken; • Should erosion be noted at the base of the support structures, the area must be rehabilitated by infilling the erosion gully and revegetation thereof with suitable indigenous vegetation; • Monitoring for the establishment of alien and invasive vegetation species must be undertaken, specifically where support structures are located within and in close proximity (within 32 m) to the freshwater ecosystems. Should alien and invasive plant species be identified, they must be removed and disposed of as per an alien and invasive species control plan and the area must be revegetated with suitable indigenous vegetation.

12.1.5 Heritage Impacts

12.1.5.1 Heritage Impact 1 - Loss of replicable heritage resources

IMPACT NATURE	**Heritage Archaeological (Construction) Impacts.**		**STATUS**	**LOW NEGATIVE**
Impact Description	The potential destruction of sites GH-OHL001-003 during construction of the OHPL			
Impact Source(s)	Construction activities			
Impact Receptor(s)	Heritage resources			
PARAMETER	**WITHOUT MITIGATION**	**SCORE**	**WITH MITIGATION**	**SCORE**
EXTENT (A)	Preferred Alternative	1	Preferred Alternative	1
	No-Go Alternative:	0	No-Go Alternative:	0
DURATION (B)	Preferred Alternative	4	Preferred Alternative	1
	No-Go Alternative:	0	No-Go Alternative:	0
PROBABILITY (C)	Preferred Alternative	2	Preferred Alternative	1
	No-Go Alternative:	0	No-Go Alternative:	0
INTENSITY OR MAGNITUDE (D)	Preferred Alternative	-3	Preferred Alternative	-1
	No-Go Alternative:	0	No-Go Alternative:	0
SIGNIFICANCE RATING (F) = (A*B*D) *C	Preferred Alternative	-24	Preferred Alternative	-1
	No-Go Alternative:	0	No-Go Alternative:	0
CUMULATIVE IMPACTS	The overall cumulative impact of the GHOHPL is rated as low due to the amount of low-significance heritage resources identified in the GHOHPL corridor.			
CONFIDENCE	High			

MITIGATION MEASURES	**Construction Phase** • Archaeological Monitoring during construction in the vicinity of sites GH-OHL004-006 • Avoidance of the low dolerite outcrop that contains site GH-OHL-001 to 003. It is recommended that the alignment keep to the norther side of the dirt road opposite the dolerite outcrop. • Demarcate the outcrop at GH-OHL-001 to 003 as a n-go area during construction. • Develop and implement a Chance finds procedure for construction of the OHPL.

12.1.6 Social Impacts

12.1.6.1 Social Impact 1 - Creation of Local Employment, Training and Business Opportunities

The construction phase is expected to extend over a period of approximately 12 months and create in the region of 50 employment opportunities. A percentage of the low and semi-skilled employment opportunities could benefit community members from local towns in the area, such as Dealesville. A percentage of the wage bill will be spent in the local economy which will also create opportunities for local businesses in the local towns in the area.

The capital expenditure will create opportunities for local engineering and construction companies. Implementing the enhancement measures listed below can enhance these opportunities. The local service sector will also benefit from the construction phase. These benefits will be linked to accommodation, catering, cleaning, transport, and security, etc. associated with the construction workers. However, given the relatively small scale of the project and short duration of the construction phase these benefits will be limited.

IMPACT NATURE	**Employment and business opportunities**		**STATUS**	**LOW POSITIVE**
Impact Description	Creation of employment and business opportunities during the construction phase			
Impact Source(s)	Construction and decommissioning activities			
Receptor(s)	Local and regional community			
PARAMETER	**WITHOUT MITIGATION**	**SCORE**	**WITH MITIGATION**	**SCORE**
EXTENT (A)	Preferred Alternative:	2	Preferred Alternative:	2
	No-Go Alternative:	0	No-Go Alternative:	
DURATION (B)	Preferred Alternative:	2	Preferred Alternative:	2
	No-Go Alternative:	0	No-Go Alternative:	
PROBABILITY (C)	Preferred Alternative:	3	Preferred Alternative:	4
	No-Go Alternative:	0	No-Go Alternative:	
INTENSITY OR MAGNITUDE (D)	Preferred Alternative:	2	Preferred Alternative:	4
	No-Go Alternative:	0	No-Go Alternative:	
SIGNIFICANCE RATING (F) = (A*B*D)*C	Preferred Alternative:	**18**	Preferred Alternative:	**32**
	No-Go Alternative:	**0**	No-Go Alternative:	**0**
CUMULATIVE IMPACTS	This impact is direct and considered temporary			
RESIDUAL IMPACTS	Opportunity to up-grade and improve skills levels in the area			
CONFIDENCE	High			

CAN IMPACT BE ENHANCED	Yes
ENHANCEMENT MEASURES	In order to enhance local employment and business opportunities associated with the construction phase the following measures should be implemented: **Employment** • Where reasonable and practical, the proponent should appoint local contractors and implement a 'locals first' policy, especially for semi and low-skilled job categories. However, due to the low skills levels in the area, the majority of skilled posts are likely to be filled by people from outside the area. • Where feasible, efforts should be made to employ local contactors that are compliant with Broad Based Black Economic Empowerment (BBBEE) criteria. • Before the construction phase commences the proponent should meet with representatives from the MM to establish the existence of a skills database for the area. If such as database exists, it should be made available to the contractors appointed for the construction phase. • The local authorities, community representatives, and organisations on the interested and affected party database should be informed of the final decision regarding the project and the potential job opportunities for locals and the employment procedures that the proponent intends following for the construction phase of the project. • Where feasible, training and skills development programmes for locals should be initiated prior to the initiation of the construction phase. • The recruitment selection process should seek to promote gender equality and the employment of women wherever possible. **Business** • The proponent should liaise with the TLM with regards the establishment of a database of local companies, specifically BBBEE companies, which qualify as potential service providers (e.g., construction companies, catering companies, waste collection companies, security companies etc.) prior to the commencement of the tender process for construction service providers. These companies should be notified of the tender process and invited to bid for project-related work. Note that while preference to local employees and companies is recommended, it is recognised that a competitive tender process may not guarantee the employment of local labour for the construction phase. •

12.1.6.2 Social Impact 2 - Impact of construction workers on local communities

The presence of construction workers poses a potential risk to family structures and social networks. While the presence of construction workers does not in itself constitute a social impact, the manner in which construction workers conduct themselves can impact on local communities. The most significant negative impact is associated with the disruption of existing family structures and social networks. This risk is linked to potentially risky behaviour, mainly of male construction workers.

Given the relatively short duration of the construction phase and small number of construction workers, namely ~ 50, the potential impact on the local community is likely to be negligible.

IMPACT NATURE	**Social impact of construction workers**	**STATUS**	**LOW NEGATIVE**
Impact Description	Potential impacts on family structures and social networks associated with the presence of construction workers		
Impact Source(s)	Construction and decommissioning activities		
Receptor(s)	Local and regional community		

PARAMETER	WITHOUT MITIGATION	SCORE	WITH MITIGATION	SCORE
EXTENT (A)	Preferred Alternative:	2	Preferred Alternative:	1
	No-Go Alternative:	0	No-Go Alternative:	0
DURATION (B)	Preferred Alternative:	2	Preferred Alternative:	2
	No-Go Alternative:	0	No-Go Alternative:	0
PROBABILITY (C)	Preferred Alternative:	2	Preferred Alternative:	2
	No-Go Alternative:	0	No-Go Alternative:	0
INTENSITY OR MAGNITUDE (D)	Preferred Alternative:	-2	Preferred Alternative:	-1
	No-Go Alternative:	0	No-Go Alternative:	0
SIGNIFICANCE RATING (F) = (A*B*D)*C	Preferred Alternative:	**-16**	Preferred Alternative:	**-4**
	No-Go Alternative:	**0**	No-Go Alternative:	**0**
Reversibility	No in the case of HIV and AIDs			
CUMULATIVE IMPACTS	This impact is direct and considered temporary			
RESIDUAL IMPACTS	Impacts on family and community relations that may, in some cases, persist for a long period of time. Also, in cases where unplanned / unwanted pregnancies occur or members of the community are infected by an STD, specifically HIV and or AIDS, the impacts may be permanent and have long term to permanent residual/cumulative impacts on the affected individuals and/or their families and the community.			
CONFIDENCE	High			
CAN IMPACT BE MITIGATED	Yes, to some degree. However, the risk cannot be eliminated			
MITIGATION MEASURES	• Where possible, the proponent should make it a requirement for contractors to implement a 'locals first' policy for construction jobs, specifically for semi and low-skilled job categories. • The proponent and contractor should develop a Code of Conduct (CoC) for construction workers. The code should identify which types of behaviour and activities are not acceptable. Construction workers in breach of the code should be subject to appropriate disciplinary action and/or dismissed. All dismissals must comply with the South African labour legislation. The CoC should be signed by the proponent and the contractors before the contractors move onto site. The CoC should form part of the CHSSP. • The proponent and the contractor should implement an HIV/AIDS, COVID-19 and Tuberculosis (TB) awareness programme for all construction workers at the outset of the construction phase. The programmes should form part of the CHSSP. • The contractor should provide transport for workers to and from the site on a daily basis. This will enable the contactor to effectively manage and monitor the movement of construction workers on and off the site. • The contractor must ensure that all construction workers from outside the area are transported back to their place of residence within 2 days for their contract coming to an end. • No construction workers, with the exception of security personnel, should be permitted to stay over-night on the site.			

12.1.6.3 Social Impact 3 - Risk to safety, livestock, and farm infrastructure

The presence on and movement of construction workers on and off the site poses a potential safety threat to local famers and farm workers in the vicinity of the site. In addition, farm infrastructure, such as fences and

gates, may be damaged and stock losses may also result from gates being left open and/or fences being damaged, or stock theft linked either directly or indirectly to the presence of farm workers on the site.

IMPACT NATURE	**Farm safety**		**STATUS**	**LOW NEGATIVE**
Impact Description	Potential risk to safety of farmers and farm workers, livestock and damage to farm infrastructure associated with the presence of construction workers on site			
Impact Source(s)	Construction and decommissioning activities			
Receptor(s)	Local and regional community			
PARAMETER	**WITHOUT MITIGATION**	**SCORE**	**WITH MITIGATION**	**SCORE**
EXTENT (A)	Preferred Alternative:	2	Preferred Alternative:	1
	No-Go Alternative:	0	No-Go Alternative:	0
DURATION (B)	Preferred Alternative:	2	Preferred Alternative:	2
	No-Go Alternative:	0	No-Go Alternative:	0
PROBABILITY (C)	Preferred Alternative:	3	Preferred Alternative:	2
	No-Go Alternative:	0	No-Go Alternative:	0
INTENSITY OR MAGNITUDE (D)	Preferred Alternative:	-3	Preferred Alternative:	-2
	No-Go Alternative:	0	No-Go Alternative:	0
SIGNIFICANCE RATING (F) = (A*B*D)*C	Preferred Alternative:	**-36**	Preferred Alternative:	**-8**
	No-Go Alternative:	**0**	No-Go Alternative:	**0**
Reversibility	Yes, compensation paid for stock losses and damage to farm infrastructure etc.			
CUMULATIVE IMPACTS	This impact is direct and considered temporary			
RESIDUAL IMPACTS	No, provided losses are compensated for.			
CONFIDENCE	Low			
CAN IMPACT BE MITIGATED	Yes			
MITIGATION MEASURES	• The proponent should enter into an agreement with the local farmers in the area whereby damages to farm property etc. during the construction phase will be compensated for. The agreement should be signed before the construction phase commences. • All farm gates must be closed after passing through. • Contractors appointed by the proponent should provide daily transport for low and semi-skilled workers to and from the site. • The proponent should consider the option of establishing a MF (see above) that includes local farmers and develop a Code of Conduct for construction workers. This committee should be established prior to commencement of the construction phase. The Code of Conduct should be signed by the proponent and the contractors before the contractors move onto site. • The proponent should hold contractors liable for compensating farmers and communities in full for any stock losses and/or damage to farm infrastructure that can be linked to construction workers. This should be contained in the Code of Conduct to be signed between the proponent, the contractors, and neighbouring landowners. The agreement should also cover loses and costs associated with fires caused by construction workers or construction related activities (see below). • The Environmental Management Plan (EMP) must outline procedures for managing and storing waste on site, specifically plastic waste that poses a threat to livestock if ingested.			

	• Contractors appointed by the proponent must ensure that all workers are informed at the outset of the construction phase of the conditions contained in the Code of Conduct, specifically consequences of stock theft and trespassing on adjacent farms. • Contractors appointed by the proponent must ensure that construction workers who are found guilty of stealing livestock and/or damaging farm infrastructure are dismissed and charged. This should be contained in the Code of Conduct. All dismissals must be in accordance with South African labour legislation. • It is recommended that no construction workers, except for security personnel, should be permitted to stay over-night on the site.

12.1.6.4 Social Impact 4 - Increased risk of grass fires

The presence on and movement of construction workers on and off the site and construction related activities such as welding etc., increases the risk of veld fires which pose a risk to livestock, farm infrastructure and crops. The loss of grazing also poses a threat to local livelihoods that are dependent on livestock farming. The risk of veld fires is higher during the dry, windy winter months of May through to October.

IMPACT NATURE	Fire damage		**STATUS**	**LOW NEGATIVE**
Impact Description	Potential loss of livestock, crops and houses, damage to farm infrastructure and threat to human life associated with increased incidence of grass fires			
Impact Source(s)	Construction and decommissioning activities			
Receptor(s)	Local and regional community			
PARAMETER	**WITHOUT MITIGATION**	**SCORE**	**WITH MITIGATION**	**SCORE**
EXTENT (A)	Preferred Alternative:	2	Preferred Alternative:	1
	No-Go Alternative:	0	No-Go Alternative:	0
DURATION (B)	Preferred Alternative:	2	Preferred Alternative:	2
	No-Go Alternative:	0	No-Go Alternative:	0
PROBABILITY (C)	Preferred Alternative:	3	Preferred Alternative:	2
	No-Go Alternative:	0	No-Go Alternative:	00
INTENSITY OR MAGNITUDE (D)	Preferred Alternative:	-3	Preferred Alternative:	-2
	No-Go Alternative:	0	No-Go Alternative:	0
SIGNIFICANCE RATING (F) = (A*B*D)*C	Preferred Alternative:	**30**	Preferred Alternative:	**16**
	No-Go Alternative:	**0**	No-Go Alternative:	**0**
Reversibility	Yes, compensation paid for stock and crop losses etc.			
CUMULATIVE IMPACTS	This impact is direct and considered temporary			
RESIDUAL IMPACTS	No, provided losses are compensated for.			
CONFIDENCE	LOW			
CAN IMPACT BE MITIGATED	Yes			
MITIGATION MEASURES	• The proponent should enter into an agreement with the local farmers in the area whereby damages to farm property etc., during the construction phase will be compensated for. The agreement should be signed before the construction phase commences.			

	• Contractor should ensure that open fires on the site for cooking or heating are not allowed except in designated areas. • Smoking on site should be confined to designated areas. • Contractor should ensure that construction related activities that pose a potential fire risk, such as welding, are properly managed and are confined to areas where the risk of fires has been reduced. Measures to reduce the risk of fires include avoiding working in high wind conditions when the risk of fires is greater. In this regard special care should be taken during the high-risk dry, windy winter months. • Contractor should provide adequate fire-fighting equipment on-site, including a fire fighting vehicle. • Contractor should provide fire-fighting training to selected construction staff. • No construction staff, except for security staff, to be accommodated on site overnight.

12.1.6.5 Social Impact 5 – Nuisance Impacts

Construction related activities, including the movement of heavy construction vehicles of and on the site, has the potential to create dust, noise and safety impacts and damage to local roads. Given the relatively small number of construction workers and the short construction period the traffic related impacts are likely to be limited. The impacts will be largely local and can be effectively minimised and mitigated.

IMPACT NATURE	**Nuisance impacts**		**STATUS**	**LOW NEGATIVE**
Impact Description	Potential noise, dust and safety impacts associated with construction related activities			
Impact Source(s)	Construction and decommissioning activities			
Receptor(s)	Local and regional community			
PARAMETER	**WITHOUT MITIGATION**	**SCORE**	**WITH MITIGATION**	**SCORE**
EXTENT (A)	Preferred Alternative:	2	Preferred Alternative:	1
	No-Go Alternative:	0	No-Go Alternative:	0
DURATION (B)	Preferred Alternative:	2	Preferred Alternative:	2
	No-Go Alternative:	0	No-Go Alternative:	0
PROBABILITY (C)	Preferred Alternative:	2	Preferred Alternative:	2
	No-Go Alternative:	0	No-Go Alternative:	0
INTENSITY OR MAGNITUDE (D)	Preferred Alternative:	-3	Preferred Alternative:	-2
	No-Go Alternative:	0	No-Go Alternative:	0
SIGNIFICANCE RATING (F) = (A*B*D)*C	Preferred Alternative:	**21**	Preferred Alternative:	**12**
	No-Go Alternative:	**0**	No-Go Alternative:	**0**
Reversibility	Yes, compensation paid for stock and crop losses etc.			
CUMULATIVE IMPACTS	This impact is direct and considered temporary			
RESIDUAL IMPACTS	If damage to local farm roads is not repaired then this will affect the farming activities in the area and result in higher maintenance costs for vehicles of local farmers and other road users. The costs will be borne by road users who were no responsible for the damage.			
CONFIDENCE	HIGH			
CAN IMPACT BE MITIGATED	Yes			
MITIGATION MEASURES	The potential impacts associated with heavy vehicles can be effectively mitigated. The mitigation measures include:			

	• Timing of construction activities should be planned to avoid / minimise impact on key farming activities, including planting and harvesting operations. • The proponent should inform affected landowners of the construction activities I prior to commencement. • The proponent should implement a Grievance Mechanism that provides local farmers and other road users with an effective and efficient mechanism to address issues related to construction related impacts, including damage to local gravel farm roads. • Implementation of a road maintenance programme throughout the construction phase to ensure that the affected roads maintained in a good condition and repaired once the construction phase is completed. • Repair of all affected road portions at the end of construction period where required. • Dust suppression measures must be implemented where necessary on un-surfaced roads, such as wetting on a regular basis and ensuring that vehicles used to transport building materials are fitted with tarpaulins or covers. • All vehicles must be roadworthy, and drivers must be qualified and made aware of the potential road safety issues and need for strict speed limits.

12.1.6.6 Social Impact 6 – Impacts associated with loss of farmland

The activities associated with the construction phase and establishment of the proposed project and associated infrastructure will result in the disturbance and loss of land available for grazing. The impact on farmland associated with the construction phase can be mitigated by minimising the footprint of the construction related activities and ensuring that disturbed areas are fully rehabilitated on completion of the construction phase.

IMPACT NATURE	**Loss of farmland**		**STATUS**	**LOW NEGATIVE**
Impact Description	The activities associated with the construction phase, such as establishment of access roads and the construction camp, movement of heavy vehicles and preparation of foundations for the project etc. will damage farmlands and result in a loss of farmlands for grazing.			
Impact Source(s)	Construction and decommissioning activities			
Receptor(s)	Local and regional community			
PARAMETER	**WITHOUT MITIGATION**	**SCORE**	**WITH MITIGATION**	**SCORE**
EXTENT (A)	Preferred Alternative:	2	Preferred Alternative:	1
	No-Go Alternative:	0	No-Go Alternative:	0
DURATION (B)	Preferred Alternative:	2	Preferred Alternative:	2
	No-Go Alternative:	0	No-Go Alternative:	0
PROBABILITY (C)	Preferred Alternative:	3	Preferred Alternative:	3
	No-Go Alternative:	0	No-Go Alternative:	0
INTENSITY OR MAGNITUDE (D)	Preferred Alternative:	-4	Preferred Alternative:	2
	No-Go Alternative:	0	No-Go Alternative:	0
SIGNIFICANCE RATING (F) = (A*B*D)*C	Preferred Alternative:	**40**	Preferred Alternative:	**-24**
	No-Go Alternative:	**0**	No-Go Alternative:	**0**
Reversibility	Yes, disturbed areas can be rehabilitated			
CUMULATIVE IMPACTS	This impact is direct and considered temporary			

RESIDUAL IMPACTS	Overall loss of farmland could affect the livelihoods of the affected farmers, their families, and the workers on the farms and their families. However, disturbed areas can be rehabilitated.
CONFIDENCE	HIGH
CAN IMPACT BE MITIGATED	Yes
MITIGATION MEASURES	The potential impacts associated with damage to, and loss of farmland can be effectively mitigated. The aspects that should be covered include: • The loss of high-quality agricultural land should be avoided and or minimised by careful planning of the final layout of the proposed OHPL withing the assessment corridor. The recommendations of the agricultural / soil assessment should be implemented. • Affected landowners should be consulted about the timing of construction related activities in advance. • The footprint associated with the construction related activities (access roads, construction platforms, workshop etc.) should be minimised. • An Environmental Control Officer (ECO) should be appointed to monitor the establishment phase of the construction phase. • All areas disturbed by construction related activities, such as access roads on the site, construction platforms, workshop area etc., should be rehabilitated at the end of the construction phase. • The implementation of a rehabilitation programme should be included in the terms of reference for the contractor/s appointed. • The implementation of the Rehabilitation Programme should be monitored by the ECO.

12.1.7 Visual Impacts

12.1.7.1 OHPL Visual Impact

IMPACT NATURE	**Loss of landscape character due to the construction of the monopoles and conductor**		**STATUS**	**LOW NEGATIVE**
Impact Description	Change in sense of place to rural landscape character from the placement of monopoles and associated cabling using large vehicles and cranes.			
Impact Source(s)	Construction activities			
Impact Receptor(s)	Local Community and tourists			
PARAMETER	**WITHOUT MITIGATION**	**SCORE**	**WITH MITIGATION**	**SCORE**
EXTENT (A)	Preferred Alternative	1	Preferred Alternative	1
	No-Go Alternative:	0	No-Go Alternative:	0
DURATION (B)	Preferred Alternative	1	Preferred Alternative	1
	No-Go Alternative:	0	No-Go Alternative:	0
PROBABILITY (C)	Preferred Alternative	4	Preferred Alternative	1
	No-Go Alternative:	0	No-Go Alternative:	0
INTENSITY OR MAGNITUDE (D)	Preferred Alternative	-2	Preferred Alternative	-1
	No-Go Alternative:	0	No-Go Alternative:	0
SIGNIFICANCE RATING (F) = (A*B*D) *C	Preferred Alternative	-8	Preferred Alternative	-1
	No-Go Alternative:	0	No-Go Alternative:	0

CUMULATIVE IMPACTS	The area reflects higher VAC levels as a result of the numerous existing Eskom power lines located in the vicinity of the Dealsville residential area. With mitigation the visual intrusion is likely to be reduced, and the landscape change is unlikely to result in undue intervisibility impacts to the receptors.
CONFIDENCE	High
MITIGATION MEASURES	None

12.1.7.2 Substation Visual Impact

IMPACT NATURE	**Loss of landscape character due to the construction of the substation.**		**STATUS**	**LOW NEGATIVE**
Impact Description	Change in sense of place to rural landscape character from the placement of monopoles and associated cabling using large vehicles and cranes.			
Impact Source(s)	Construction activities			
Impact Receptor(s)	Local Community and tourists			
PARAMETER	**WITHOUT MITIGATION**	**SCORE**	**WITH MITIGATION**	**SCORE**
EXTENT (A)	Preferred Alternative	1	Preferred Alternative	1
	No-Go Alternative:	0	No-Go Alternative:	0
DURATION (B)	Preferred Alternative	1	Preferred Alternative	1
	No-Go Alternative:	0	No-Go Alternative:	0
PROBABILITY (C)	Preferred Alternative	4	Preferred Alternative	1
	No-Go Alternative:	0	No-Go Alternative:	0
INTENSITY OR MAGNITUDE (D)	Preferred Alternative	-2	Preferred Alternative	-1
	No-Go Alternative:	0	No-Go Alternative:	0
SIGNIFICANCE RATING (F) = (A*B*D) *C	Preferred Alternative	-8	Preferred Alternative	-1
	No-Go Alternative:	0	No-Go Alternative:	0
CUMULATIVE IMPACTS	The area reflects higher VAC levels as a result of the numerous existing Eskom power lines, as well as the surrounding PV structures (once constructed). Cumulative impacts area expected to be Low as the landscape change is unlikely to result in undue intervisibility impacts to the Low Exposure receptors.			
CONFIDENCE	High			
MITIGATION MEASURES	None			

12.1.8 Traffic Impact

12.1.8.1 Traffic Impact 1 – Construction Phase

IMPACT NATURE	Traffic Impacts		STATUS	LOW NEGATIVE
Impact Description	Increased traffic volumes during construction phase			
Impact Source(s)	Construction and decommissioning of the OHPL and the associated infrastructure.			
Impact Receptor(s)	Roads in vicinity of the substation and OHPL - General public/Road users			
PARAMETER	**WITHOUT MITIGATION**	**SCORE**	**WITH MITIGATION**	**SCORE**
EXTENT (A)	Preferred Alternative	1	Preferred Alternative	1
	No-Go Alternative:	1	No-Go Alternative:	1
DURATION (B)	Preferred Alternative	1	Preferred Alternative	1
	No-Go Alternative:	1	No-Go Alternative:	1
PROBABILITY (C)	Preferred Alternative	3	Preferred Alternative	2
	No-Go Alternative:	3	No-Go Alternative:	2
INTENSITY OR MAGNITUDE (D)	Preferred Alternative	-1	Preferred Alternative	-1
	No-Go Alternative:	-1	No-Go Alternative:	-1
SIGNIFICANCE RATING (F) = ((A*B*D))*C	Preferred Alternative	-3	Preferred Alternative	-2
	No-Go Alternative:	-3	No-Go Alternative:	-2
CUMULATIVE IMPACTS	There are several planned renewable energy projects within a 30km radius from the Good Hope 1 & 2 Solar Energy Facility. The construction and decommissioning phases of these projects are the only significant traffic generators. These are short term phases and the impacts on the surrounding road network is temporary. Even if all these projects are constructed or decommissioned simultaneously, the surrounding road network has sufficient capacity to accommodate the trips associated with the construction and decommissioning activities. This impact will have a low negative cumulative significance.			
CONFIDENCE	High			
MITIGATION MEASURES	• Construction traffic should not be allowed on the public road network during the typical weekday a.m. and p.m. peak hours. • These measures will be included in the Transport Management Plan			

12.1.8.1 Traffic Impact 2 – Construction Phase

It is not expected that there will be permanent staff employed at the substations except for the periodic repairs and maintenance. The operational phase of this project is not expected to generate any traffic volumes during the typical weekday peak hours.

12.1.9 Waste Impact

Based on the available information it is reasonable to suggest that the impact will potentially have a **low negative** impact.

IMPACT NATURE	Waste Management Impacts		STATUS	LOW NEGATIVE
Impact Description	Potential waste impacts as a result from improper waste management practices on site during the construction of Good Hope OHPL and substation.			
Impact Source(s)	Construction and Decommissioning phases			
Impact Receptor(s)	The immediate site and surrounds			
PARAMETER	**WITHOUT MITIGATION**	**SCORE**	**WITH MITIGATION**	**SCORE**
EXTENT (A)	Preferred Alternative	1	Preferred Alternative	1
	No-Go Alternative:	1	No-Go Alternative:	1
DURATION (B)	Preferred Alternative	1	Preferred Alternative	1
	No-Go Alternative:	1	No-Go Alternative:	1
PROBABILITY (C)	Preferred Alternative	2	Preferred Alternative	1
	No-Go Alternative:	1	No-Go Alternative:	1
INTENSITY OR MAGNITUDE (D)	Preferred Alternative	-1	Preferred Alternative	-1
	No-Go Alternative:	1	No-Go Alternative:	1
SIGNIFICANCE RATING (F) = (A*B*D)*C	Preferred Alternative	-2	Preferred Alternative	-1
	No-Go Alternative:	1	No-Go Alternative:	1
CUMULATIVE IMPACTS	This impact will have a low negative cumulative significance.			
CONFIDENCE	High			
MITIGATION MEASURES	• Mitigation measures included in the EMPr pertaining to waste management to be implemented.			

12.1.10 Dust Impact

Based on the available information it is reasonable to suggest that the impact will potentially have a **low negative** impact.

IMPACT NATURE	Dust Impacts	STATUS	LOW NEGATIVE
Impact Description	Potential dust impacts as a result from improper management practices on site during the construction phase		
Impact Source(s)	Construction and Decommissioning phases.		
Impact Receptor(s)	The immediate site and surrounds		

PARAMETER	WITHOUT MITIGATION	SCORE	WITH MITIGATION	SCORE
EXTENT (A)	Preferred Alternative	2	Preferred Alternative	1
	No-Go Alternative:	1	No-Go Alternative:	1
DURATION (B)	Preferred Alternative	1	Preferred Alternative	1
	No-Go Alternative:	1	No-Go Alternative:	1
PROBABILITY (C)	Preferred Alternative	2	Preferred Alternative	2
	No-Go Alternative:	1	No-Go Alternative:	1
INTENSITY OR MAGNITUDE (D)	Preferred Alternative	-2	Preferred Alternative	-1
	No-Go Alternative:	1	No-Go Alternative:	1
SIGNIFICANCE RATING (F) = (A*B*D)*C	Preferred Alternative	**-8**	Preferred Alternative	**-2**
	No-Go Alternative:	1	No-Go Alternative:	1
CUMULATIVE IMPACTS	This impact will have a low negative cumulative significance.			
CONFIDENCE	High			
MITIGATION MEASURES	• Mitigation measures included in the EMPr pertaining to dust control to be implemented.			

12.1.11 Noise Impact

Based on the available information it is reasonable to suggest that the impact will potentially have a **low negative** impact.

IMPACT NATURE	Noise Impacts	STATUS	LOW NEGATIVE
Impact Description	Potential noise impacts as a result from improper management practices on site during construction.		
Impact Source(s)	Construction and Decommissioning of The Aurora OHPL.		
Impact Receptor(s)	The immediate site and surrounds		

PARAMETER	WITHOUT MITIGATION	SCORE	WITH MITIGATION	SCORE
EXTENT (A)	Preferred Alternative	1	Preferred Alternative	1
	No-Go Alternative:	1	No-Go Alternative:	1
DURATION (B)	Preferred Alternative	2	Preferred Alternative	2
	No-Go Alternative:	1	No-Go Alternative:	1
PROBABILITY (C)	Preferred Alternative	4	Preferred Alternative	4
	No-Go Alternative:	1	No-Go Alternative:	1
INTENSITY OR MAGNITUDE (D)	Preferred Alternative	-1	Preferred Alternative	-0,5
	No-Go Alternative:	1	No-Go Alternative:	1
SIGNIFICANCE RATING (F) = (A*B*D)*C	Preferred Alternative	**-8**	Preferred Alternative	**-4**
	No-Go Alternative:	1	No-Go Alternative:	1

CUMULATIVE IMPACTS	This impact will have a very low negative cumulative significance.
CONFIDENCE	High
MITIGATION MEASURES	• Mitigation measures included in the EMPr pertaining to noise levels to be implemented.

12.1.12 Fire Impact

Based on the available information it is reasonable to suggest that the impact will potentially have a **low negative** impact.

IMPACT NATURE	**Fire Management Impacts**		**STATUS**	**LOW NEGATIVE**
Impact Description	Potential on fire safety impacts as a result from improper management practices on site during construction			
Impact Source(s)	Construction and Decommissioning phases			
Impact Receptor(s)	The immediate site and surrounds			
PARAMETER	**WITHOUT MITIGATION**	**SCORE**	**WITH MITIGATION**	**SCORE**
EXTENT (A)	Preferred Alternative	2	Preferred Alternative	1
	No-Go Alternative:	1	No-Go Alternative:	1
DURATION (B)	Preferred Alternative	1	Preferred Alternative	1
	No-Go Alternative:	1	No-Go Alternative:	1
PROBABILITY (C)	Preferred Alternative	2	Preferred Alternative	1
	No-Go Alternative:	1	No-Go Alternative:	1
INTENSITY OR MAGNITUDE (D)	Preferred Alternative	-3	Preferred Alternative	-1
	No-Go Alternative:	1	No-Go Alternative:	1
SIGNIFICANCE RATING (F) = ((A*B*D) + (E))*C	Preferred Alternative	**-12**	Preferred Alternative	**-1**
	No-Go Alternative:	1	No-Go Alternative:	1
CUMULATIVE IMPACTS	This impact will have a low negative cumulative significance.			
CONFIDENCE	High			
MITIGATION MEASURES	• No fires to be allowed on site. • Welding and cutting activities will only be permitted inside the working areas. • Adequate firefighting equipment to be available on site and be in good working order. • At least one person trained in fire safety and familiar with firefighting equipment on site must be present on the site at all times.			

12.2 POTENTIAL OPERATIONAL IMPACTS:

Based on the information assessed within this Basic Assessment Report the following operational impacts are likely to be prevalent during the operational phase of the Project.

The Preferred Alternative will be comparatively assessed against the No-Go Alternative as this is the most feasible and reasonable alternative, in terms of the impacts assessed by the Professional Team, considering all necessary mitigation measures, which ensure the least impact on the environment.

The potential operational impacts, have been assessed and all mitigation measures pertaining to the impacts identified, are detailed in the Environmental Management Programme (EMPr), which is presented in Appendix F.

12.2.1 Agricultural Impacts

Based on the available information and the Agricultural Eco-Agric Impact Assessment, no potential impacts on agriculture are expected during the operational phase of the proposed Good Hope OHPL or substation.

12.2.2 Terrestrial Biodiversity Impacts

The potential biodiversity impacts are associated with the completed OHPL and substation and their location in association to sensitive landscapes/habitats. Addressing these potential impacts is undertaken during the design phase and these impacts are therefore assessed in the construction phase as all design requirements to mitigate against impacts should be finalised prior to construction.

The following potential operational phase impact, associated with maintenance, has been assessed as follows.

12.2.2.1 Terrestrial biodiversity Impact 1 – Floral habitat and diversity

Based on the available information it is reasonable to suggest that the impact will potentially have a **low negative** impact.

IMPACT NATURE	**Impact – floral habitat and diversity**		**STATUS**	**LOW NEGATIVE**
Impact Description	Loss of vegetation due to OHPL servitude management			
Impact Source(s)	Regular vegetation maintenance; Decrease in biodiversity and habitat integrity due to AIP proliferation; and continuing erosion because of ongoing activities			
Impact Receptor(s)	Terrestrial vegetation			
PARAMETER	**WITHOUT MITIGATION**	**SCORE**	**WITH MITIGATION**	**SCORE**
EXTENT (A)	Preferred Alternative	1	Preferred Alternative	1
	No-Go Alternative:	1	No-Go Alternative:	1
DURATION (B)	Preferred Alternative	2	Preferred Alternative	1
	No-Go Alternative:	1	No-Go Alternative:	1
PROBABILITY (C)	Preferred Alternative	2	Preferred Alternative	1
	No-Go Alternative:	1	No-Go Alternative:	1
INTENSITY OR MAGNITUDE (D)	Preferred Alternative	-2	Preferred Alternative	-1
	No-Go Alternative:	-2	No-Go Alternative:	-2
	Preferred Alternative	-8	Preferred Alternative	-1

SIGNIFICANCE RATING (F) = ((A*B*D) + (E))*C	No-Go Alternative:	-2	No-Go Alternative:	-2
CUMULATIVE IMPACTS	Proliferation of poorly managed AIP species which can result in an overall cumulative loss of native floral communities within the area.			
CONFIDENCE	High			
MITIGATION MEASURES	• Activity and movement should be limited within already existing access roads and/or new access road, with limited exposure or access to the surrounding natural areas; • Edge effects arising from the proposed development, such as erosion and alien plant species proliferation, which may affect adjacent natural areas, need to be strictly managed. Specific mention in this regard is made of Category 1b AIP species (as listed in the NEMBA Alien species lists, 2020), in line with the NEMBA Alien and Invasive Species Regulations (2020); • Implement erosion control measures where necessary to ensure that further habitat loss does not occur; and • All soils compacted because of maintenance activities should be ripped and reprofiled to natural levels and revegetated with indigenous vegetation. Establishment of reintroduced vegetation within such disturbed areas must be monitored as part of maintenance activities to ensure no cumulative loss of floral habitat.			

12.2.3 Avifaunal Impacts

The potentially significant avifauna impacts are associated with the completed OHPL and substation structures and their location in association to sensitive landscapes. Addressing these potential impacts is undertaken during the design phase and these impacts are therefore assessed in the construction phase as all design requirements to mitigate against impacts should be finalised prior to construction. The operational phase will require the ongoing maintenance of these fixtures to ensure the continued management of the potential negative impacts to avifauna.

12.2.4 Aquatic Impacts

Most of the potential impacts to surface water resources are associated with the completed OHPL and substation structures and their location in association to aquatic environments associated with the development site. Addressing these potential impacts is undertaken during the design phase and these impacts are therefore assessed in the construction phase as all design requirements to mitigate against impacts should be finalised prior to construction. However, operational activities do have the potential to cause contamination of surface water if not properly managed.

12.2.4.1 Aquatic Impact 1 – Surface Water Quality Impacts

Minor contamination of surface water run-off could occur because of leaks and spills from the few on site vehicles and equipment. In addition, the washing of the PV panels to remove dust and debris could also contribute to surface water contamination.

IMPACT NATURE	**Surface water quality impact**	**STATUS**	**LOW NEGATIVE**

Impact Description	Contaminated run-off from areas where spills or leaks in the substation from chemical storage facilities or from maintenance vehicles on the OHPL servitude occur could impact negatively on surface water quality			
Impact Source(s)	Operation/maintenance of overhead powerline and access to the powerline			
Impact Receptor(s)	Aquatic vegetation and soil			
PARAMETER	**WITHOUT MITIGATION**	**SCORE**	**WITH MITIGATION**	**SCORE**
EXTENT (A)	Preferred Alternative	1	Preferred Alternative	1
	No-Go Alternative:	0	No-Go Alternative:	0
DURATION (B)	Preferred Alternative	1	Preferred Alternative	1
	No-Go Alternative:	0	No-Go Alternative:	0
PROBABILITY (C)	Preferred Alternative	1	Preferred Alternative	1
	No-Go Alternative:	0	No-Go Alternative:	0
INTENSITY OR MAGNITUDE (D)	Preferred Alternative	-1	Preferred Alternative	-1
	No-Go Alternative:	0	No-Go Alternative:	0
SIGNIFICANCE RATING (F) = ((A*B*D) *C	Preferred Alternative	-1	Preferred Alternative	-1
	No-Go Alternative:	0	No-Go Alternative:	-0
CUMULATIVE IMPACTS	The impact could be cumulative.			
CONFIDENCE	High			
MITIGATION MEASURES	• Regular inspection of maintenance vehicles • Use of drip trays • Inspection of chemical/oil storage facilities in the substation. • Development of spill response for the substation.			

12.2.5 Visual Impacts

The potential visual impacts are associated with the completed OHPL and substation and their location in association to sensitive receptors. Addressing these potential impacts is undertaken during the design phase and these impacts are therefore assessed in the planning and design section. However, the overall visual impact of the OHPL and substation have been assessed.

12.2.5.1 OHPL Visual Impact

Eskom power lines already define the landscape along the northern portions of the routing. While the township residential receptors are located in Very High Exposure areas, with a buffer of 50m the intensity of the landscape change can be reduced to some degree. The southern area, where there is some remaining landscape value, is identified as a PV expansion area, and the new Eskom Artmis substation and associated infrastructure, will result in further degradation of the visual resources.

IMPACT NATURE	**Loss of landscape character due to the operation of the transmission line.**	**STATUS**	**LOW NEGATIVE**
Impact Description	Change in sense of place to rural landscape character from the long-term towers and conductor in the landscape.		
Impact Source(s)	OHPL		

Impact Receptor(s)	Local Community and tourists			
PARAMETER	**WITHOUT MITIGATION**	**SCORE**	**WITH MITIGATION**	**SCORE**
EXTENT (A)	Preferred Alternative	1	Preferred Alternative	1
	No-Go Alternative:	0	No-Go Alternative:	0
DURATION (B)	Preferred Alternative	4	Preferred Alternative	4
	No-Go Alternative:	0	No-Go Alternative:	0
PROBABILITY (C)	Preferred Alternative	3	Preferred Alternative	2
	No-Go Alternative:	0	No-Go Alternative:	0
INTENSITY OR MAGNITUDE (D)	Preferred Alternative	-2	Preferred Alternative	-1
	No-Go Alternative:	0	No-Go Alternative:	0
SIGNIFICANCE RATING (F) = (A*B*D) *C	Preferred Alternative	-24	Preferred Alternative	-8
	No-Go Alternative:	0	No-Go Alternative:	0
CUMULATIVE IMPACTS	The existing local landscape is already defined as a power line corridor and substation area. This effect will be moderately enhanced with the addition of the new power line. However, intervisibility is likely to be reduced to some degree by the trees around the Dealsville houses and along the central section of the routing. As the area is identified as a Powerline Corridor and RE development area, cumulative effects from intervisibility are expected, and it is likely that other PV development will be attracted to the locality if there is capacity for the connection to the existing, or new substation.			
CONFIDENCE	High			
MITIGATION MEASURES	• Maintenance of OHPL structures. • Soil erosion on the servitude access tracks needs to be adequately monitored on a Bi-Annual basis.			

12.2.5.2 Substation Visual Impact

The existing Eskom power lines already define the landscape along the northern portions of the routing. As the development would be effectively screened by the proposed PV structures to the south, with powerlines to the north, the only potential negative influence could be the light spillage from security lights. This can be effectively managed.

IMPACT NATURE	**Loss of landscape character due to the long-term operation of the substation structures and infrastructure.**	**STATUS**	**LOW NEGATIVE**
Impact Description	Change in sense of place to rural landscape character from the long-term operation of the substation in the landscape.		
Impact Source(s)	Substation infrastructure		
Impact Receptor(s)	Local Community and tourists		

PARAMETER	**WITHOUT MITIGATION**	**SCORE**	**WITH MITIGATION**	**SCORE**
EXTENT (A)	Preferred Alternative	1	Preferred Alternative	1
	No-Go Alternative:	0	No-Go Alternative:	0

DURATION (B)	Preferred Alternative	4	Preferred Alternative	4
	No-Go Alternative:	0	No-Go Alternative:	0
PROBABILITY (C)	Preferred Alternative	3	Preferred Alternative	2
	No-Go Alternative:	0	No-Go Alternative:	0
INTENSITY OR MAGNITUDE (D)	Preferred Alternative	-2	Preferred Alternative	-1
	No-Go Alternative:	0	No-Go Alternative:	0
SIGNIFICANCE RATING (F) = (A*B*D) *C	Preferred Alternative	-24	Preferred Alternative	-8
	No-Go Alternative:	0	No-Go Alternative:	0
CUMULATIVE IMPACTS	The existing local landscape is already defined as a power line corridor and substation area. As the area is identified as a Powerline Corridor and RE development area, cumulative effects from intervisibility are expected, and it is likely that other PVSEF developments will be attracted to the locality if there is capacity for the connection to the existing, or new substation.			
CONFIDENCE	High			
MITIGATION MEASURES	• Effective management of security lights at night with no overhead lighting used to reduce light spillage.			

12.2.6 Social Impacts

Based on the available information, it is reasonable to suggest that the following social impacts are likely to be prevalent during the operational phase of this Project. The following impacts have been assessed in this Basic Assessment Report.

12.2.6.1 Social Impact 2 – Creation of Employment Opportunities

The potential employment, skills development and business-related opportunities associated with the power line and substation will be limited and confined to periodic maintenance and repairs. The potential socio-economic benefits are therefore likely to be limited. There is limited opportunity to enhance the potential opportunities.

IMPACT NATURE	**Employment and business opportunities**		**STATUS**	**LOW POSITIVE**
Impact Description	Creation of employment and business opportunities during the construction phase			
Impact Source(s)	Construction and decommissioning activities			
Receptor(s)	Local and regional community			
PARAMETER	**WITHOUT MITIGATION**	**SCORE**	**WITH MITIGATION**	**SCORE**
EXTENT (A)	Preferred Alternative:	1	Preferred Alternative:	1
	No-Go Alternative:	0	No-Go Alternative:	0
DURATION (B)	Preferred Alternative:	4	Preferred Alternative:	4
	No-Go Alternative:	0	No-Go Alternative:	0
PROBABILITY (C)	Preferred Alternative:	4	Preferred Alternative:	4
	No-Go Alternative:	0	No-Go Alternative:	0
INTENSITY OR MAGNITUDE (D)	Preferred Alternative:	2	Preferred Alternative:	2
	No-Go Alternative:	0	No-Go Alternative:	0
SIGNIFICANCE RATING (F) = (A*B*D)*C	Preferred Alternative:	**32**	Preferred Alternative:	**32**
	No-Go Alternative:	**0**	No-Go Alternative:	**0**

CUMULATIVE IMPACTS	This impact is direct
RESIDUAL IMPACTS	Opportunity to up-grade and improve skills levels in the area
CONFIDENCE	High
CAN IMPACT BE ENHANCED	Yes
ENHANCEMENT MEASURES	In order to enhance local employment and business opportunities associated with the construction phase the following measures should be implemented: **Employment** • Where reasonable and practical, the proponent should appoint local contractors and implement a 'locals first' policy, especially for semi and low-skilled job categories. However, due to the low skills levels in the area, most skilled posts are likely to be filled by people from outside the area. • Where feasible, efforts should be made to employ local contactors that are compliant with Broad Based Black Economic Empowerment (BBBEE) criteria. • Before the construction phase commences the proponent should meet with representatives from the MM to establish the existence of a skills database for the area. If such as database exists, it should be made available to the contractors appointed for the construction phase. • The local authorities, community representatives, and organisations on the interested and affected party database should be informed of the final decision regarding the project and the potential job opportunities for locals and the employment procedures that the proponent intends following for the construction phase of the project. • Where feasible, training and skills development programmes for locals should be initiated prior to the initiation of the construction phase. • The recruitment selection process should seek to promote gender equality and the employment of women wherever possible. **Business** • The proponent should liaise with the TLM with regards the establishment of a database of local companies, specifically BBBEE companies, which qualify as potential service providers (e.g., construction companies, catering companies, waste collection companies, security companies etc.) prior to the commencement of the tender process for construction service providers. These companies should be notified of the tender process and invited to bid for project-related work. Note that while preference to local employees and companies is recommended, it is recognised that a competitive tender process may not guarantee the employment of local labour for the construction phase.

12.2.6.2 Social Impact 2 – Generate income for affected landowners

The proponent will enter into a lease/servitude agreement with the affected landowners for the use of the land for the establishment of the proposed transmission line and preferred substation. The additional income would assist to reduce the risks to their livelihoods posed by climate change and fluctuating market prices for livestock, crops, and farming inputs, such as fuel, feed etc. The additional income would improve economic security of farming operations, which in turn would improve job security of farm workers and benefit the local economy.

IMPACT NATURE	**Income generation for landowner**	**STATUS**	**HIGH POSITIVE**

Impact Description	The generation of additional income represents a significant benefit for the local affected farmer(s) and reduces the risks to their livelihoods posed by droughts and fluctuating market prices for sheep and farming inputs, such as feed etc.			
Impact Source(s)	Operational of the PVSEF			
Receptor(s)	Local communities			
PARAMETER	**WITHOUT MITIGATION**	**SCORE**	**WITH MITIGATION**	**SCORE**
EXTENT (A)	Preferred Alternative:	1	Preferred Alternative:	2
	No-Go Alternative:	0	No-Go Alternative:	0
DURATION (B)	Preferred Alternative:	4	Preferred Alternative:	4
	No-Go Alternative:	0	No-Go Alternative:	0
PROBABILITY (C)	Preferred Alternative:	3	Preferred Alternative:	5
	No-Go Alternative:	0	No-Go Alternative:	0
INTENSITY OR MAGNITUDE (D)	Preferred Alternative:	2	Preferred Alternative:	3
	No-Go Alternative:	0	No-Go Alternative:	0
SIGNIFICANCE RATING (F) = (A*B*D)*C	Preferred Alternative:	**24**	Preferred Alternative:	**120**
	No-Go Alternative:	**0**	No-Go Alternative:	**0**
CUMULATIVE IMPACTS	This impact is cumulative			
RESIDUAL IMPACTS	Support for local agricultural sector and farming			
CONFIDENCE	High			
CAN IMPACT BE ENHANCED	Yes			
ENHANCEMENT MEASURES	Implement agreements with affected landowners.			

12.2.6.3 Social Impact 3 – Impact on Tourism

Based on the findings of the site visit there are no tourist facilities located close to the study area that would be impacted by the proposed OHPL in the proposed corridor.

IMPACT NATURE	**Impact on tourism operations**		**STATUS**	**LOW NEGATIVE**
Impact Description	**Nature:** Potential impact of power line on local tourism. This is usually linked to the visual impact associated with the proposed facility and the potential impact on the areas rural sense of place.			
Impact Source(s)	Visual affect of the OHPL			
Receptor(s)	Local communities and tourists			
PARAMETER	**WITHOUT MITIGATION**	**SCORE**	**WITH MITIGATION**	**SCORE**
EXTENT (A)	Preferred Alternative:	2	Preferred Alternative:	2
	No-Go Alternative:	2	No-Go Alternative:	2
DURATION (B)	Preferred Alternative:	4	Preferred Alternative:	4
	No-Go Alternative:	4	No-Go Alternative:	4
PROBABILITY (C)	Preferred Alternative:	1	Preferred Alternative:	1
	No-Go Alternative:	1	No-Go Alternative:	1
INTENSITY OR MAGNITUDE (D)	Preferred Alternative:	-2	Preferred Alternative:	-1
	No-Go Alternative:	1	No-Go Alternative:	1
	Preferred Alternative:	**-16**	Preferred Alternative:	**-8**

SIGNIFICANCE RATING (F) = (A*B*D)*C	No-Go Alternative:	**8**	No-Go Alternative:	**8**
CUMULATIVE IMPACTS	This impact is cumulative			
RESIDUAL IMPACTS	Linked to visual impact on sense of place.			
CONFIDENCE	High			
CAN IMPACT BE MITIGATED	Yes			
MITIGATION MEASURES	The recommendations contained in the VIA should be implemented.			

12.2.6.4 Social Impact 4 – Impact on farming operations during maintenance

The presence on and movement of maintenance workers on and off the site poses a potential risk to farming operations. Farm fence and gates may be damaged and stock losses may also result from gates being left open. The presence of maintenance workers on the site also increases the exposure of their farming operations and livestock to the outside world, which, in turn, increased the potential risk of stock theft and crime.

The key issues raised are linked to the construction phase but are also valid for the maintenance phase. These include:

- Impact of maintenance related activities and movement of maintenance vehicles on the cropped areas and the veld.
- Farm gates left open by maintenance contractors and Eskom employees.
- Damage to farm fences. The damage to farm fences poses the same risks to farming operations as leaving farm gates open.
- Lack of awareness amongst contractors of the impacts that their activities can have on farming operations.

Based on experience with maintenance of the existing Eskom power lines this is an issue that will need to be addressed. The potential risks (safety, livestock, and farm infrastructure) can be effectively mitigated by ensuring the maintenance teams take care to ensure that gates are kept closed and affected property owners are kept informed about timing of maintenance operations. Mitigation measures to address these risks are outlined below.

IMPACT NATURE	**Impact on farming operations during maintenance**		**STATUS**	**LOW NEGATIVE**
Impact Description	Damage caused to farmlands / loss of livestock due to maintenance activities on the OHPL			
Impact Source(s)	Maintenance activities in the OHPL servitude			
Receptor(s)	Farmers/ landowners			
PARAMETER	**WITHOUT MITIGATION**	**SCORE**	**WITH MITIGATION**	**SCORE**
EXTENT (A)	Preferred Alternative:	2	Preferred Alternative:	2
	No-Go Alternative:	0	No-Go Alternative:	0
DURATION (B)	Preferred Alternative:	2	Preferred Alternative:	2
	No-Go Alternative:	0	No-Go Alternative:	0
PROBABILITY (C)	Preferred Alternative:	4	Preferred Alternative:	3

	No-Go Alternative:	0	No-Go Alternative:	0
INTENSITY OR MAGNITUDE (D)	Preferred Alternative:	-3	Preferred Alternative:	-2
	No-Go Alternative:	0	No-Go Alternative:	0
SIGNIFICANCE RATING (F) = (A*B*D)*C	Preferred Alternative:	**-48**	Preferred Alternative:	**-24**
	No-Go Alternative:	**0**	No-Go Alternative:	**0**
CUMULATIVE IMPACTS	None			
RESIDUAL IMPACTS	No, provided losses are compensated for.			
CONFIDENCE	High			
CAN IMPACT BE MITIGATED	Yes			
MITIGATION MEASURES	• Affected property owners should be notified in advance of the timing and duration of maintenance activities. • Maintenance teams must ensure that all farm gates must be closed after passing through. • Property owners should be compensated for damage to farm property and or loss of livestock or game associated maintenance related activities. • Movement of traffic and maintenance related activities should be strictly contained within designated areas associated with transmission lines and substations. • Strict traffic speed limits must be enforced on the farm. • No maintenance workers should be allowed to stay over-night on the affected properties.			

12.2.7 Renewable Energy Impacts

Based on the available information it is reasonable to suggest that the impact will potentially have a **medium positive** impact.

12.2.8 Renewable Energy Impacts

The proposed Good Hope OHPL and substation will be responsible for transmitting power generated by the Good Hope PVSEF to the Artemis Substation to be fed into the National Grid. In this way this proposed infrastructure is central to the Good Hope PVSEF contributing to RSAs renewable energy goals.

IMPACT NATURE	**Contribution to RSAs renewable energy goals**		**STATUS**	**HIGH POSITIVE**
Impact Description	The project facilitates renewable energy distribution for the country.			
Impact Source(s)	Operation of the Good Hope PVSEF, OHPL and substation			
Impact Receptor(s)	Local, provincial and national society			
PARAMETER	**WITHOUT MITIGATION**	**SCORE**	**WITH MITIGATION**	**SCORE**
EXTENT (A)	Preferred Alternative	3	Preferred Alternative	3
	No-Go Alternative:	1	No-Go Alternative:	1

DURATION (B)	Preferred Alternative	4	Preferred Alternative	4
	No-Go Alternative:	4	No-Go Alternative:	4
PROBABILITY (C)	Preferred Alternative	4	Preferred Alternative	4
	No-Go Alternative:	4	No-Go Alternative:	4
INTENSITY OR MAGNITUDE (D)	Preferred Alternative	3	Preferred Alternative	3
	No-Go Alternative:	-3	No-Go Alternative:	=3
SIGNIFICANCE RATING (F) = ((A*B*D) + (E))*C	Preferred Alternative	144	Preferred Alternative	144
	No-Go Alternative:	-48	No-Go Alternative:	-48
CUMULATIVE IMPACTS	The proposed Good Hope OHPL is expected to contribute a slight positive cumulative impact on renewable energy distribution in South Africa.			
CONFIDENCE	High			
MITIGATION MEASURES	None Required			

12.3 SUMMARY OF POTENTIAL IMPACTS

Based on consideration of the information presented in this report and the assessment of the identified impacts as presented in the Impact Assessment section of this report, the potential impacts (post-mitigation) of the development of the proposed Good Hope 132 kV OHPL in the preferred corridor and the Good Hope 132 kV back-to-back electrical substation om the preferred site are summarised in **Table 25 and Table 26**.

Table 25: Planning & Design/ Construction / Decommissioning Phase Impact Assessment Summary (Post-mitigation)

Impact Type	Applicable to:	Significance Ranking - Post Mitigation	
		Preferred Alternative	'No Go' Alternative
Agricultural Impacts:	Substation and OHPL		
Loss of grazing land		Low –'ve	Low –'ve
Loss of croplands		Low –'ve	Low –'ve
Terrestrial Biodiversity Impacts:	Substation and OHPL		
Loss of Indigenous Vaal- Vet Sandy Grassland Vegetation (En)		Medium –'ve	Low –'ve
Loss of portion of Critical Biodiversity Area 1		Low –'ve	Low –'ve
Loss of Faunal Habitat/Forage areas		Low –'ve	Low –'ve
Loss of Provincially Protected Flora		Low –'ve	Low –'ve
Loss of Provincially Protected Fauna		Low –'ve	Low –'ve
Establishment and spread of NEMBA listed Invasive Alien Plants		Low –'ve	Low –'ve
Ecological Impact - Soil Erosion		Low –'ve	Low –'ve
Avifaunal Impacts	Substation and OHPL		
Direct loss of avifaunal habitat		Low –'ve	Low –'ve
Mortality through collision and electrocution		Low –'ve	Low –'ve
Sensory disturbance		Low –'ve	Low –'ve
Attraction of birds		Low –'ve	Low –'ve
Freshwater/Aquatic Impacts Loss of freshwater ecosystem vegetation and associated disturbance of soil.	Substation and OHPL	Low –'ve	Low –'ve
Heritage Impacts potential destruction of a heritage sites	OHPL	Low –'ve	Low –'ve
Social Impacts	Substation and OHPL		
Creation of Local Employment/ Business Opportunities		Low +'ve	Low –'ve
Impact of construction workers on local communities		Low –'ve	Low –'ve
Risk to safety, livestock, and farm infrastructure		Low –'ve	Low –'ve
Increased risk of grass fires Nuisance Impacts		Low –'ve	Low –'ve 0
Impacts associated with loss of farmland		Low –'ve	Low –'ve
Visual Impact Change in sense of place	Substation and OHPL	Low –'ve	Low –'ve
Traffic Impact	Substation and OHPL	Low –'ve	Low –'ve
Waste Management Impacts	Substation and OHPL	Low –'ve	Low –'ve

Impact Type	Applicable to:	Significance Ranking - Post Mitigation	
		Preferred Alternative	'No Go' Alternative
Dust Impacts	Substation and OHPL	Low –'ve	Low –'ve
Noise Impacts	Substation and OHPL	Low –'ve	Low –'ve
Fire Impacts	Substation and OHPL	Low –'ve	Low –'ve
Overall Impact Ranking		Low –'ve	Low –'ve

Table 26: Operational Phase Impact Assessment Summary (Post-mitigation)

Impact Type	Applicable to:	Significance Ranking - Post Mitigation	
		Preferred Alternative	'No Go' Alternative
Agricultural Impacts:	Substation and OHPL	None	None
Terrestrial Biodiversity Impacts: Loss of vegetation due to OHPL servitude management	Substation and OHPL	Low –'ve	Low –'ve
Avifaunal Impacts Mortality through collision and electrocution Sensory disturbance Attraction of birds	Substation and OHPL	 Low –'ve Low –'ve Low –'ve	 Low –'ve Low –'ve Low –'ve
Freshwater/Aquatic Impacts Spills or leaks of chemicals and hydrocarbons during maintenance activities	Substation and OHPL	Low –'ve	Low –'ve
Heritage Impacts potential destruction of a heritage sites	OHPL	Low –'ve	Low –'ve
Social Impacts Creation of Local Employment Generate income for affected landowners Impact on tourism Impact on farming operations during maintenance	Substation and OHPL	 Low +'ve High +'ve Low –'ve Low –'ve	 Low –'ve Low –'ve None None
Visual Impact OHPL visual impact – sense of place Substation visual impact – sense of place	Substation and OHPL	 Low –'ve Low –'ve	 None None
Traffic Impact	Substation and OHPL	Low –'ve	Low –'ve
Renewable Energy Impacts	Substation and OHPL	High +'ve	Low –'ve
Overall Impact Ranking		Low –'ve	Low –'ve

12.4 CUMULATIVE IMPACTS

*In accordance with **Appendix 1 Regulation 3(j) (i) of GN No. R. 326 of the NEMA EIA Regulations (2014, as amended):** the following information is presented*

> ***3(i)(i)** – an assessment of each identified potentially significant impact and risk, including cumulative impacts.*

As identified and assessed in the Impact sections, the proposed development of the Good Hope Substation and the Good Hope 132kV OHPL may have positive and negative impacts on the biophysical and social environments. The impact section (refer to section 12.1 and 12.2) described the anticipated impacts associated with the proposed Good Hope substation and OHPL. As defined by the NEMA EIA Regulations (2014 as amended), a cumulative impact refers to: in relation to an activity, means the past, current and reasonably foreseeable future impact of an activity, considered together with the impact of activities associated with that activity, that in itself may not be significant, but may become significant when added to the existing and reasonably foreseeable impacts eventuating from similar or diverse activities. Thus, based on the above definition, it is the understanding of the EAP that the activity must be assessed in relation to the carrying capacity of the region which considers all other similar and/or diverse activities. As detailed in Section 8 of this Report the Professional Team have provided statements and assessed the cumulative impacts of their respective areas of expertise. Therefore, the cumulative impacts per each area of expertise can be summarised as follows:

12.4.1 Cumulative Agricultural Impact

The agricultural specialist has confirmed that the agricultural potential of the area is low in the absence of water sources for irrigation. The proposed Good Hope substation and OHPL development will not result in the physical loss of large areas of good potential agricultural land. The tower footprints of the OHPL will be small and grazing can continue under the OHPL. The cumulative negative impact on the agricultural potential is therefore considered low/insignificant.

12.4.2 Cumulative Terrestrial Biodiversity Impact

The cumulative loss of areas of specific vegetation types is a primary consideration in the ascription of biodiversity spatial planning categories to these areas (CBA). In this instance the loss is limited in terms of spatial scale (7ha) compared to the rest of the CBA1 resulting in minimal cumulative loss of unit CBA1 functioning. As such no ecosystem functions or ecological processes of the CBA1 unit as collective whole are expected to be severely impacted by the loss of the proposed portion for the substation and the tower footprints of the OHPL. The cumulative negative impact (post mitigation) on Terrestrial Biodiversity is therefore considered to be low.

12.4.3 Cumulative Impact to Avifauna

Given the large number of threatened bird species which have collisions/electrocutions with OHPLs (as reported by the IUCN), it is evident that these species are already experiencing cumulative impacts to their populations in South Africa. Even with the best mitigation measures applied there are still cumulative negative impacts expected to large-bodied species in the region due to their propensity for collision with overhead powerlines. The most recently information on existing and planned transmission lines available from ESKOM was mapped in relation to the proposed Good Hope OHPL. The mapping confirms the presence of a is shows many existing OHPLs in the area around Dealesville, many of which are connected to the ESKOM Perseus substation. Many of these OHPLs do not have bird flight diverters and it can be hypothesized that many bird collisions must occur from such a dense network of OHPLs. Adding an additional OHPL into the interior of a large space relatively free

of existing lines and near the major pan utilised by several avifauna SCC must therefore be carefully mitigated proposed by the Avifauna Specialist to avoid contributing significantly to the potential impacts from OHPLs in the region.

12.4.4 Cumulative Aquatic Ecosystem Impact

The most significant impact on the aquatic environment in the impacted study area in the foreseeable future is that an additional housing development is planned within the hillslope seep wetland (north of the existing high density residential area) adjacent to the crossing by the proposed OHPL. The impacts of the proposed substation and OHPL on the reach of the identified freshwater ecosystems are unlikely to significantly add to the cumulative negative impacts on the systems, specifically if the recommended mitigation measures are implemented.

12.4.5 Cultural / Heritage Cumulative Impact

The Heritage Specialist has concluded that the potential overall cumulative impact of the proposed Good Hope substation and OHPL is low since only a few heritage resource sites of low significance were identified in the proposed corridor and substation site and the likelihood, post mitigation, of the developments directly affecting these resources is very low.

12.4.6 Cumulative Visual Impact

The potential cumulative visual impacts because of the proposed substation development are expected to be Low as the landscape change is unlikely to result in undue intervisibility impacts to the Low Exposure receptors.

In terms of the OHPL, the existing local landscape is already defined as a visible overhead power line corridor. This effect will be moderately enhanced with the addition of the proposed Good Hope OHPL. However, intervisibility is likely to be reduced to some degree by the trees around the Dealville houses and along the central section of the proposed corridor alignment. As the area is identified as a Powerline and Renewable Energy development area, cumulative effects from intervisibility are expected. It is also likely that other PV development will be attracted to the region if there is increased capacity for the connection to the existing, or new substation.

12.4.7 Cumulative Social Impact

There are existing OHPL transmission lines associated with the Eskom Perseus and Beta substations. The potential for cumulative social impacts associated with combined visibility (whether two or more power lines will be visible from one location) and sequential visibility (e.g., the effect of seeing two or more power lines along a single journey, e.g., road or walking) does therefore exist. However, the cumulative impact by the proposed Good Hope OHPL and substation on the regions 'sense of place' is likely to be low. In this regard the areas sense of place is dominated by the Perseus substation and associated transmission lines.

A positive cumulative social impact is expected associated with the increased income earning potential to the region as the proposed development will contribute to the success of renewable energy projects in the area which are providing income potential opportunities into the foreseeable future.

12.4.8 Cumulative Traffic Impact

There are several planned renewable energy projects within a 30km radius from the Good Hope 1 & 2 Solar Energy Facility. The construction and decommissioning phases of these projects are the only

significant traffic generators. These are short term phases and the impacts on the surrounding road network is temporary. Even if all these projects are constructed or decommissioned simultaneously, the surrounding road network has sufficient capacity to accommodate the trips associated with the construction and decommissioning activities.

Based on the information contained in this section (as provided by the specialists), it is reasonable to suggest that the establishment of the proposed Good Hope Substation and OHPL will have low cumulative, negative impact on the affected social and biophysical environment, and are predicted to be within the within the carrying capacity of the region for the foreseeable future.

13. BULK SERVICES (E.G. SEWAGE, WATER, ELECTRICITY AND SOLID WASTE)

13.1 ROADS

Maximum use of existing servitudes and roads shall be done in order to gain access to construction sites and the servitude. Any area outside the servitude area required to facilitate access, construction activities, construction camps or material storage areas, shall be negotiated with the affected Landowner and written agreements shall be obtained.

13.2 WATER

Water supplies required during the construction phase will be brought on site by Licensed Contractors.

13.3 ELECTRICITY

Electricity required during the construction phase will be sourced from generator sets that will be placed on site.

13.4 SEWAGE

Portable toilets required during construction phase; sufficient hygienic facilities will be made available for all workers employed on the site.

13.5 SOLID WASTE

Solid waste accumulated during construction will be removed off site by a Licensed Contractor and disposed at a Licensed Landfill site.

14. PUBLIC PARTICIPATION PROCESS

*In accordance with **Appendix 1 Regulation 2(h)(ii, iii) of GN R. 326 of the NEMA EIA Regulations (2014, as amended**), the following information is presented in Section 12:*

***2(h) ii** – Details of the Public Participation Process undertaken in terms of Regulation 41 of the Regulations, including copies of the supporting documents and inputs*
***2(h) iii** – A summary of the issues raised by interested and affected parties and an indication of the way the issues were incorporated or the reasons for not including them.*

14.1 OBJECTIVES OF THE PUBLIC PARTICIPATION PROCESS

The public consultation process is required by the NEMA EIA Regulations (2014, as amended) GNR 326 Regulation 41. The Regulation aims to ensure that all information pertaining to this Environmental Permitting Process is adequately circulated to all Interested and Affected Parties (I&APs) and further provides the I&APs with timeframes within which to provide feedback throughout the Basic Assessment process. This PPP thus aims at providing organisations and individuals with an opportunity to raise concerns and make comments and suggestions regarding the proposed Project. By being part of the assessment process, stakeholders can influence the Project layout and design as well as the plan of study of the BAR.

The principles for the BA that determine communication with all I&APs at large are included in the principles of the National Environmental Management Act (NEMA) (Act 107 of 1998, as amended) and are further highlighted in the DEA&DP EIA Guideline and Information Document Series (March 2013) which states that: "*Public participation process means a process by which potential interested and affected parties are given an opportunity to comment on, or raise issues relevant to an application*."

The public participation process is designed to provide sufficient and accessible information to Interested and Affected Parties (I&APs) in an objective manner.

14.2 STEPS TAKEN TO NOTIFY POTENTIALLY INTERESTED AND AFFECTED PARTIES

Identification of Stakeholders
After obtaining the relevant site information, the Landowner, Competent and Commenting Authorities were contacted to obtain owner/occupant details for directly adjacent erven as well as key stakeholders for this Project. In terms of the NEMA EIA Regulations (2014, as amended), notification of directly adjacent landowners and occupiers is required. The EAP is satisfied that the Public Participation Process will be consistent with the requirements of Regulations.

Communication with Stakeholders
- In terms of the NEMA EIA Regulations (2014), potential Interested and Affected Parties (I&AP's) must be given **30 calendar days** within which to register as an I&AP (initial notification) and provide comment.
- Further, registered I&AP's must be given an opportunity to comment on reports that will be submitted to the relevant authority.
- The initial commenting period commences on **03 April 2023** and will conclude on **08 May 2023**.
- One regional newspaper advert was published in *Bloemfontein News* on **30 March 2023**.
- Two site notices were placed at highly visible locations at the subject site **on 29 March 2023.**
- Please refer to Appendix E for a full account of Stakeholders notified as part of this Public Participation Period.

- All issues and concerns raised by I&APs during the above-mentioned initial commenting period will be recorded and addressed in the Comments and Responses Report; this will be submitted with the final BAR to the Competent Authority for decision making.

14.3 AUTHORITY CONSULTATION

The following Commenting Authorities have been consulted with on the Project as part of the BAR for Public Participation process:

The following Authorities have been consulted with on the Project as part of the EIA Report Public Participation process:

- The National Department of Forestry, Fisheries and Environment ("DFFE")
- The National Department of Water and Sanitation ("DWS") - Water, Wetland and Wet Areas
- Tokologo Local Municipality
- Lejweleputswa District Municipality
- National Department of Fisheries, Forestry and Agriculture ("DAFF") - Agricultural
- Provincial Department of Agriculture ("DoA") - Agriculture
- South Africa Heritage Resource Association ("SAHRA") - Heritage
- Civil Aviation Authority ("SACAA") - Aviation
- South African Air Force ("SAAF") - Aviation
- National Department of Energy (DOE)
- Eskom
- Birdlife South Africa
- SACAA

15. NEXT STEPS IN THE ENVIRONMENTAL APPLICATION PROGRAMME

Once the statutory 30-day Public Participation Process (PPP) has completed for this Draft Basic Assessment Report for Comment, the Basic Assessment Report for Decision will be finalised and will contain a Comments and Responses Report, which addresses and registers all comments raised during this initial PPP. The Basic Assessment Report for Decision will be submitted for a decision to the Competent Authority.

This Basic Assessment Report is anticipated to be submitted to the Competent Authority for decision in June 2023.

16. REQUIRED INFORMATION REQUESTED BY THE COMPETENT AUTHORITY

*In accordance with **Appendix 1 Regulation 3(t) of GN No. R. 326 of the NEMA EIA Regulations (2014, as amended**):*
Any specific information that may be required by the competent authority

No specific information request has been received to date from the competent authority for inclusion in this section.

17. ASSUMPTIONS, UNCERTAINTIES AND GAPS IN KNOWLEDGE

*In accordance with **Appendix 1 Regulation 3(o) of GN No. R. 326 of the NEMA EIA Regulations (2014, as amended**):*
A description of any assumptions, uncertainties and gaps in knowledge which relate to the assessment and mitigation measures proposed;

Based on the available information assessed during the basic assessment, it is reasonable to suggest that the following assumptions and limitations have been used throughout this Report:

- That the information provided by the Specialists, Applicant and Developer are true and correct.
- That the applicant will act in a responsible manner and take appropriate and prompt action when incidents occur at the site, in order to (1) determine the cause of the incident and, (2) rectify the cause of the problem.
- That the development will be used for the activities proposed.
- That the information provided by the applicant and the specialists are deemed accurate and unbiased.
- That the applicant will adhere to the mitigation measures presented in this Basic Assessment Report and EMPr.
- That the full recommendations of the specialist studies are implemented.
- That the monitoring and auditing programmes suggested are implemented.
- That decommissioning activity, should this be required, will be conducted by experienced person/s (contractors and principle agents).
- That an experienced independent environmental control officer (ECO) will be appointed for the construction phase of this project and that regular ECO site visits will occur to ensure that the EMPr is complied with and that every effort is made to minimise environmental impacts.

18. EAP OPINION AND RECOMMENDATIONS AND CERTAIN CONDITIONS ADOPTED AS PART OF THE ENVIRONMENTAL AUTHORISATION

*In accordance with **Appendix 1 Regulation 3(n), 3(p) and 3(q) of GN No. R. 326 of the NEMA EIA Regulations (2014, as amended**):*

***3(n)** - Any aspects which were conditional to the findings of the assessment either by the EAP or specialist which are to be included as conditions of authorisation*
***3(p)** - A reasoned opinion as to whether the proposed activity should or should not be authorised, and if the opinion is that it should be authorised, any conditions that should be made in respect of that authorisation;*
***3(q)** - Where the proposed activity does not include operational aspects, the period for which the environmental authorisation is required and the date on which the activity will be concluded and the post construction monitoring requirements finalised.*

The investigations of potential environmental impacts associated with the proposed development of a 132 kV OHPL in the preferred corridor and the development of the proposed 132 kV back-to-back substation on the preferred site indicate that, whilst there are negative environmental impacts associated with certain aspects of the development, there are also positive impacts in addition to significant positive opportunities. Where negative impacts have been identified these can be avoided or mitigated.

18.1 EAP OPINION AND RECOMMENDATION

Based on the information presented in this BAR Report, as informed by the statutory requirements, and the associated independent specialist studies, the findings of this draft Basic Assessment indicate that the Project,

in the form of the preferred substation development area and the preferred OHPL corridor, (read strictly in conjunction with the mitigation measures stipulated in Section 18.2 of this Draft Basic Assessment Report as well as the attached EMPr, which must form part of the Conditions of the Environmental Authorisation) will not result in unacceptable negative social or environmental impacts.

The Preferred Alternative for this Project is described as follows:

- From the assessment of the selected route and corridor, the Preferred Layout is deemed a reasonable and feasible site alternative, which can be implemented on the site.
- Micro-siting of the preferred route will determine optimal sizes and positions of the monopoles and/or lattice structures should an Environmental Authorisation be granted.
- The construction of the overhead powerline addresses a national and regional need for the generation of clean, renewable energy and greater access to electricity through the construction of necessary infrastructure. This goal is reflected in national plans and policies as well as regional SDF's, IDP's and Development Programmes.

The Preferred Alternative is the most feasible and reasonable alternative and has been comparatively assessed against the no-go alternative in this Report. Please kindly refer to Section 12 for the impact assessment.

Therefore, the **Preferred Alternative** for the purposes of this Report refers to a Project alternative that takes into consideration and implements the findings and recommendations of the professional team, which have been noted above in terms of operational, layout and technology alternatives considered to date, and which have all been informed through independent expert assessments.

In conclusion and based on:

- the Specialist Study Findings undertaken by the Professional Team appointed to this this Project and represented in Section 8 of this Basic Assessment Report;
- the assessment undertaken by the EAP in conjunction with the Specialist Findings and represented in Sections 8 and 12 of the Basic Assessment Report; and
- the motivation of Alternatives in Section 9.

it is reasonable to suggest the overall impact associated with the substation development area and the OHPL corridor will be mitigated to an acceptable environmental level. In the opinion of the EAP the proposed expansion of Alumicor as described in this Basic Assessment Report is not fatally flawed and all potential negative construction and operation of the 132 kV back-to-back Good Hope Substation and 132 kV Good Hope OHPL impacts can be mitigated to an acceptable level. It is **therefore it is reasonable to suggest that there is no reason why the Competent Authority should not authorise the preferred alternative.** The following should form specific clauses in the environmental authorisation to be issued by DFFE:

18.2 CERTAIN CONDITIONS TO FORM PART OF THE ENVIRONMENTAL AUTHORISATION

General recommendations that should be considered by the relevant authority are listed below:

- The recommendations and mitigation measures as highlighted in the Specialist Section 8 and 18 of this report must be carefully integrated into the Conditions of Authorisation.
- The Environmental Management Programme (EMPr) contained in *Appendix F* must be followed for the lifecycle of the development and the decommissioning phase must be monitored by a suitably experienced Environmental Control Officer.
- Regular auditing (e.g., every 12 months) by an experienced, suitably qualified, independent environmental professional must be undertaken to ensure that the conditions of the EMPr, which are related to the key findings of the specialists and this EIA, are implemented. This will ensure that the design

intent of the development is carried through the lifecycle of the development. This should include, but not necessarily be limited to, provision for specialist consultation in the case of water quality monitoring, visual impact monitoring and wetland environments monitoring.

18.2.1 Recommended Mitigation Measures to form part of the Conditions of the EA and EMPr:

18.2.1.1 Agricultural Mitigation Measures

Appropriate mitigation measures should form an important part of the planning process, to minimise impacts on agricultural activities.

These include:

- To prevent the impact, it is recommended that construction is carried out during the off-season (i.e., the dry summer months).
- The alignment of the power line assessed is mostly in close proximity to the edges of cultivated fields.
- The final alignment of the Good Hope OHPL is to be aligned outside or at filed edges.

18.2.1.2 Avifaunal Mitigation Measures

A few mitigation strategies should be considered, and it is encouraged to ensure that the impact on the present bird community is kept to a minimum.

These include:

- Avoidance of sensitive habitats when locating towers.
- Limit the areas cleared for construction purposes (e.g. laydown areas).
- Prioritise existing roads for servitudes and align OHPLs with existing roads wherever possible.
- . It is recommended that wherever possible, alignment to existing electrical transmission infrastructure is undertaken.
- Where the creation of new transmission lines is necessary attempts should be made to minimise the route length to the closest existing substation and that the route be aligned with existing powerlines/roads as far as possible. Additionally, the route should avoid or minimise wetland/riverine crossings.
- Install Eskom-approved bird flight diverters (flappers or coils) on new transmission lines (particularly the earth wire). This can help to increase the visibility of transmission lines especially the thinner earth line with which most collisions tend to be associated.
- Bird flight diverters need to be closely spaced (<15 m) and must glow in the dark or have a light source to make the transmission lines more visible in the sensitive avifauna area indicated in the Avifauna Impact Assessment. This is specifically to prevent collisions by flamingos that migrate at night.
- Design of overhead electrical lines must consider potential for electrocution by large species and pre-emptively avoid the likelihood of this by increasing distances between spans to avoid faecal “streamers” or large open wings creating a short.
- In all areas where service road intersect with semi natural or natural habitat, all fences must be set back at least (strictly) 75 metres from the edge of every service road in order to allow for vulnerable species such as bustards, storks, cranes and korhaans to obtain adequate height after being flushed by vehicle traffic. Alternatively, the fences must be placed completely adjacent to the roads with a maximum of 3 metres buffer and marked with fence flappers to reduce flush-related collisions.
- Install bird deterrent devices on pylons and / or monopoles to limit perching and minimise collision and electrocution risk.

18.2.1.3 Terrestrial Biodiversity Impact Mitigation Measures

Appropriate mitigation measures should form an important part of the planning process, to minimise impacts on terrestrial biodiversity.

These include:

- In the case of the substation site, minimise the development footprint as far as reasonably possible.
- In the case of the OHPL, attempt to site final tower positions outside of the vegetation type or within already disturbed/transformed locations within the vegetation unit.
- Final siting of the tower positions should be done in consultation with a botanical/ecological specialist.
- Botanical Search and rescue prior to construction starting can be used to minimise protected species loss by relocating geophytic and succulent plants (with a permit from the provincial authority) to other suitable areas. Provincially protected trees should be avoided and only destroyed under a permit from DFFE.
- Fauna search and rescue (with a permit from the provincial authority) can be conducted prior to construction starting to minimise provincially protected species loss by relocating these to suitable habitats within the vicinity.

18.2.1.4 **Aquatic Impact Mitigation Measures**

Mitigation measures to avoid impacts on wet areas should be implemented.

These include:

- All support structures must be placed outside the delineated extent of the freshwater ecosystems and the associated NEMA 32m ZoR wherever possible. However, in instances where this may not be practically or feasibly possible (such as the northern hillslope seep and wetland complex) due to the width of the wetland and the maximum stringing span, support structures must be located in the temporary zones of the wetlands;
- No supporting infrastructure may be located within the permanent or seasonal zones of the wetlands;
- The northern hillslope seep and wetland complex is in a largely to seriously modified ecological condition, as such, placing the supporting infrastructure in the historically disturbed areas or adjacent existing infrastructure such as roads would reduce the potential risk significantly;
- It is imperative that all construction works be undertaken during low rainfall periods when the flow is low in the freshwater ecosystems, and no diversion of flow would be necessary
- The construction period should be kept as short as possible and construction activities within the delineated freshwater ecosystems should be avoided

18.2.1.5 Heritage and Archaeology Impact Mitigation Measures

Mitigation measures to avoid impacts on archaeological occurrences should be implemented where possible.

These include:

- Archaeological Monitoring during construction in the vicinity of sites GH-OHL004-006
- Avoidance of the low dolerite outcrop that contains site GH-OHL-001 to 003. It is recommended that the alignment keep to the norther side of the dirt road opposite the dolerite outcrop.
- Demarcate the outcrop at GH-OHL-001 to 003 as a n-go area during construction.
- Develop and implement a Chance finds procedure for construction of the OHPL.

18.2.1.6 Traffic Impact Mitigation Measures

Mitigation measures to avoid impacts on traffic and road networks should be implemented. These include:

- The specific access positions should be confirmed with the Road's Authority during the design stage of the project.
- Specific traffic management plans should be confirmed with the roads authority prior to any construction activity at the locations where the powerlines cross any public road

18.2.1.7 Visual Mitigation Measures

Mitigation measures to mitigate visual impacts should be implemented. These include:

- Align power line as far from identified receptors as possible within the identified corridor.
- Reinstate and monitor any areas of vegetation that have been disturbed during construction.
- Remove all temporary works.
- Monitor rehabilitated areas post-construction and implement remedial actions.
- Minimise disturbance and maintain existing vegetation as far as is possible both within and surrounding the development area.
- Rehabilitate and monitor areas post-decommissioning and implement remedial actions.

18.3 Conclusion

Based on the environmental permitting process and rigorous professional assessments undertaken for this project to date, there is no reason to suggest that the Preferred substation development area and the preferred OHPL corridor cannot be authorised for implementation.

Further, this BAR and supporting documentation is considered to be adequate in meeting the requirements of the relevant legislation and those of the Competent Authority and the EAP believes that sufficient information is presented for the purposes of decision-making.

In this regard, no further studies are envisaged.

19. OATH OF EAP UNDERTAKING ASSESSMENT

*In accordance with **Appendix 1 Regulation 3(r) of GN No. R. 326 of the NEMA EIA Regulations (2014, as amended**), the following information is presented in Section 16.*

***R3(r)** – An undertaking under oath of affirmation by the EAP in relation to:*

- ***R3(r) (i)** – The correctness of the information provided in the reports*
- ***R3(r) (ii)** – The inclusion of comments and inputs from stakeholders and I&APs*
- ***R3(r) (iii)** – The inclusion of inputs and recommendations form the specialist reports where relevant; and*
- ***R3(r) (iv)** – Any information provided by the EAP to interested and affected parties and any responses by the EAP to comments or inputs made by interested or affected parties.*

I, Natasha Williams, as the appointed Principal EAP hereby declare/affirm (on behalf of the Terramanzi Group):

- the correctness of the information provided as part of this Report;
- that all the comments and inputs from stakeholders and I&APs have been included in this Report;
- that all the inputs and recommendations from the specialist reports, if specialist reports were produced, have been included in this Report;
- any information provided by me to I&APs and any responses by me to the comments or inputs made by I&APs;
- that I have maintained my independence throughout this EIA process, or if not independent, that the review EAP has reviewed my work (Note: a declaration by the review EAP must be submitted);
- that I have throughout this EIA process met all of the general requirements of EAPs as set out in Regulation 13;
- I have throughout this EIA process disclosed to the applicant, the specialist (if any), the Department and I&APs, all material information that has or may have the potential to influence the decision of the Department or the objectivity of any report, plan or document prepared as part of the application;
- have ensured that information containing all relevant facts in respect of the application was distributed or was made available to I&APs and that participation by I&APs was facilitated in such a manner that all I&APs were provided with a reasonable opportunity to participate and to provide comments;
- have ensured that the comments of all I&APs were considered, recorded and submitted to the Department in respect of the application;
- have ensured the inclusion of inputs and recommendations from the specialist reports in respect of the application, if specialist inputs and recommendations were produced;
- have kept a register of all I&APs that participated during the PPP; and
- am aware that a false declaration is an offence in terms of Regulation 48 of the EIA Regulations, 2014 (as amended).

Should you require any further information, please do not hesitate to contact the undersigned.

Yours faithfully,

Natasha Williams
Senior Environmental Consultant (EAPASA)
On behalf of The Terramanzi Group (Pty) Ltd