



**GA Environment**



## **ESKOM MELKSPRUIT TO ROUXVILLE 132kV - PART TWO AMENDMENT**

DRAFT MOTIVATION REPORT FOR A PART TWO AMENDMENT OF THE ENVIRONMENTAL AUTHORISATION FOR THE CONSTRUCTION OF A NEW 38 KILOMETRE 132KV OVERHEAD POWERLINE FROM THE MELKSPRUIT SUBSTATION IN ALIWAL NORTH (WALTER SISULU MUNICIPALITY, EASTERN CAPE) TO ROUXVILLE SUBSTATION (MOHOKARE LOCAL MUNICIPALITY, FREE STATE).



Environmental best practice, safety and sustainability

**DRAFT MOTIVATION REPORT FOR A PART TWO AMENDMENT OF THE ENVIRONMENTAL AUTHORISATION FOR THE 132kV OVERHEAD POWERLINE FROM THE MELKSPRUIT SUBSTATION TO ROUXVILLE SUBSTATION IN THE WALTER SISULU AND MOHOKARE LOCAL MUNICIPALITIES WITHIN THE EASTERN CAPE AND THE FREE STATE PROVINCES**

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**PROJECT INFORMATION**

<b>Title:</b>	Draft Motivation Report for A Part Two Amendment Of The Environmental Authorisation For The 132kv Overhead Powerline From The Melkspruit Substation To Rouxville Substation In The Walter Sisulu And Mohokare Local Municipalities Within The Eastern Cape And The Free State Provinces.
<b>Competent Authority:</b>	Department of Environment, Forestry and Fisheries (DEFF)
<b>Reference No.:</b>	14/12/16/3/3/2/487/AM
<b>Applicant:</b>	Eskom SOC Ltd
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## EXECUTIVE SUMMARY

The Department of Environmental Affairs (DEA), now known as the Department of Environment Forestry and Fisheries (DEFF), issued an Environmental Authorisation (EA) on 13 June 2018 (14/12/16/3/3/1/1847) for the proposed construction of the 132kV overhead power line from the Melkspruit substation to the Rouxville substation in the Walter Sisulu and the Mohokare Local Municipalities within the Eastern Cape and Free State Provinces.

In line with the National Environmental Impact Assessment (EIA) Regulations of 2014, Eskom SoC Ltd has appointed GA Environment (Pty) Ltd as the Independent Environmental Assessment Practitioners to undertake a Part 2 Amendment and Water Use Authorisation process for the Melkspruit to Rouxville 132kV power line. The proposed power line route is located between Aliwal North (Walter Sisulu Municipality, Eastern Cape) and Rouxville Substation (Mohokare Local Municipality, Free State). The site centre coordinates are 30°35'09.45"S; 26° 46' 52.50 "E. Please refer to **Figure 1**.

The Department of Environmental Affairs (DEA) issued an EA on 13 June 2018 (14/12/16/3/3/1/1847) for the Construction of the 132kV power line. The authorised power line route is deviating from its initial alignment around a property for about 6 kilometres as land rights cannot be obtained for a portion of land in the approved development corridor. The proposed distribution line will thus deviate from its approved alignment and requires that Eskom conduct a Part 2 Amendment process in line with The National Environmental Impact Assessment (EIA) Regulations of 2014 as amended.

The development of the power line will also require a Water Use Authorization (WUA) in terms of Section 21 (c) and (i) of the National Water Act (NWA), 1998 (Act No. 36 of 1998). The applicable Water Uses will be confirmed by the Department of Water and Sanitation.

In terms of Regulation 31 and 32 of the 2014 National Environmental Management Act (NEMA) Environmental Impact Assessment (EIA) Regulations, Eskom wishes to apply for a substantive amendment to the EA issued. Regulation 31 (Part 2) of the 2014 NEMA EIA Regulations. A Reference Number, 14/12/16/3/3/2/487/AM was provided by DEFF for this Part 2 Amendment.

Specialist studies, to identify potential impacts, were undertaken for this Part 2 amendment, and included:

- Floral Assessment;
- Wetland/Riparian Delineation and Functional Assessment;
- Avifaunal Assessment;
- Palaeontological Assessment; and
- Phase 1 Heritage Assessment.

A Summary of potential Impacts associated with the 6-kilometre deviation are presented in **Table 1**.

*Table 1: Summary of Impact Assessment*

Impact description	Type of impact	Project phase	Significance without mitigation	Significance with mitigation
<b>IMPACT 1: Loss of Floral Habitat</b>	Negative	Construction	Medium	Low
	Negative	Operation	Medium	Low
<b>IMPACT 2: Loss of Floral Species Diversity -</b>	Negative	Construction	Medium	Low
	Negative	Operation	Medium	Low
<b>IMPACT 3: Loss of Floral SCC, Protected and TOPS-listed species</b>	Negative	Construction	High	Medium
	Negative	Operation	Medium	Low
<b>IMPACT 4: Changes in sediment entering and exiting the system</b>	Negative	Construction	Low	Low
	Negative	Operation	Low	Low
<b>IMPACT 5: Changes in water flow</b>	Negative	Construction	Medium	Low
	Negative	Operation	Medium	Low
<b>IMPACT 6: Introduction and spread of alien vegetation</b>	Negative	Construction	Medium	Low
	Negative	Operation	Medium	Low
<b>IMPACT 7: Changes in water quality due to foreign materials and increased nutrients</b>	Negative	Construction	Medium	Low
	Negative	Operation	Low	Low
<b>IMPACT 8: Avifauna collisions and electrocution</b>	Negative	Construction	High	Medium
	Negative	Operation	High	Medium
<b>IMPACT 9: Possible destruction of fossil heritage</b>	Negative	Construction	Medium	Medium
	Negative	Operation	Medium	Low
<b>IMPACT 10: Impact on burial ground and graves</b>	Negative	Construction	High (PGS Heritage Very High)	Low
	Negative	Operation	Medium	Low
<b>IMPACT 11: Impact on archaeological sites</b>	Negative	Construction	Medium	Low
	Negative	Operation	Medium	Low

The proposed amendment will not result in any significant changes to the impacts that have already been assessed in the Basic Assessment Report compiled by NSTV Consultants in 2018. The mitigation measures as provided in the EMPr undertaken by NSTV Consultants (2018) as well as the additional mitigation measures provided under Section 8 of the EMPr shall be adequate to manage any of the potential impacts identified.

## LEGISLATIVE REQUIREMENTS FOR AN AMENDMENT APPLICATION

The National Environmental Management Act (No. 107 of 1998) [NEMA] EIA Regulations of 2014 provide for **PART 1** (“non-substantive”) and **PART 2** (“substantive”) amendment processes. **PART 1** amendment process is required when the changes will not change the scope of a valid Environmental Authorisation (EA) and is not likely to adversely affect the environment or the rights or interests of other parties. The latter is applicable to project amendments resulting in a change in scope of a valid EA where such change will also result in an increased level or change in the nature of impacts. Considering the potential change in the scope and significance of environmental impacts associated with the proposed amendment to the Eskom EA, this would be regarded as a “substantive amendment”. **Table 2** below provides the process and consideration of application for a **PART 2** amendment in terms of Section 32 the NEMA EIA Regulations (2014) with reference to the relevant sections of this report where these requirements are addressed.

Table 2: Requirements of a Part 2 Amendment Process

Section	Content	Section in report
	A Part 2 Amendment process must contain the information that is necessary for the competent authority to consider and come to a decision on the application, and must include-	
32 (1) (a)(i)	The applicant must within 90 days of receipt by the competent authority of the application made in terms of regulation 31, submit to the competent authority— <i>(a) a report, reflecting—</i> (i) an assessment of all impacts related to the proposed change;	6
32 (1) (a)(ii)	(ii) advantages and disadvantages associated with the proposed change;	7.1 & 7.2
32 (1) (a)(iii)	(iii) measures to ensure avoidance, management and mitigation of impacts associated with such proposed change; and	6.3
32 (1) (a)(iv)	(iv) any changes to the EMP	8
32 (2) (aa)	(aa) had been subjected to a public participation process, which had been agreed to by the competent authority, and which was appropriate to bring the proposed change to the attention of potential and registered interested and affected parties, including organs of state, which have jurisdiction in respect of any aspect of the relevant activity, and the competent authority, <b>and</b>	9
32 (2) (bb)	(bb) reflects the incorporation of comments received, including any comments of the competent authority; <b>or</b>	In progress
32 (2) (bb) (b)	(b) a notification in writing that the report will be submitted within 140 days of receipt of the application by the competent authority, as significant changes have been made or significant new information has been added to the report, which changes or information was not contained in the report	Not applicable



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	consulted on during the initial public participation process contemplated in subregulation (1)(a) and that the revised report will be subjected to another public participation process of at least 30 days.	
2)	2) In the event where subregulation (1)(b) applies, the report, which reflects the incorporation of comments received, including any comments of the competent authority, must be submitted to the competent authority within 140 days of receipt of the application by the competent authority.	In progress

**DRAFT MOTIVATION REPORT FOR A PART TWO AMENDMENT OF THE ENVIRONMENTAL  
AUTHORISATION FOR THE 132KV OVERHEAD POWERLINE FROM THE MELKSPRUIT  
SUBSTATION TO ROUXVILLE SUBSTATION IN THE WALTER SISULU AND MOHOKARE LOCAL  
MUNICIPALITIES WITHIN THE EASTERN CAPE AND THE FREE STATE PROVINCES.**

TABLE OF CONTENTS

<b>1. INTRODUCTION AND PURPOSE OF REPORT .....</b>	<b>15</b>
<b>1.1 Introduction .....</b>	<b>15</b>
<b>1.2 Project Background and Location .....</b>	<b>16</b>
<b>1.3 Existing Environmental Authorisation (EA).....</b>	<b>17</b>
<b>1.4 Department of Environmental Affairs Screening Tool.....</b>	<b>18</b>
<b>2. ENVIRONMENTAL SETTING .....</b>	<b>21</b>
<b>2.1 Topography and Geology .....</b>	<b>21</b>
<b>2.2 Climate.....</b>	<b>21</b>
<b>2.3 Drainage and Surface Water.....</b>	<b>22</b>
<b>2.4 Vegetation.....</b>	<b>22</b>
<b>3. LEGAL REQUIREMENTS.....</b>	<b>24</b>
<b>3.1 Amendment of the Environmental Authorisation .....</b>	<b>24</b>
<b>3.2 Part 2 Amendment Process .....</b>	<b>24</b>
<b>3.3 Timeframes .....</b>	<b>24</b>
<b>3.4 Content of the Amendment Report .....</b>	<b>25</b>
<b>4. MOTIVATION FOR THE PROPOSED AMENDMENT .....</b>	<b>26</b>
<b>4.1 Floral Specialist Assessment.....</b>	<b>26</b>
<b>4.1.1 Methodology Employed .....</b>	<b>26</b>
<b>4.1.2 Vegetation Biodiversity .....</b>	<b>28</b>
<b>4.1.3 Vegetation Units. ....</b>	<b>29</b>
<b>4.1.4 Ecological drivers and Processes. ....</b>	<b>29</b>
<b>4.1.5 Floral Sensitivity.....</b>	<b>31</b>
<b>4.1.6 Impacts and Mitigation .....</b>	<b>31</b>
<b>4.2 Wetland/Riparian Delineation and Functional Assessment .....</b>	<b>33</b>
<b>4.2.1 Methodology Employed .....</b>	<b>33</b>
<b>4.2.2 Watercourse Characteristics .....</b>	<b>33</b>
<b>4.2.3 Wetland Functional Assessment .....</b>	<b>34</b>
<b>4.2.4 Impacts and Mitigation .....</b>	<b>34</b>

<b>4.3 Avifaunal Assessment .....</b>	<b>35</b>
<b>4.3.1 Methodology Employed .....</b>	<b>35</b>
<b>4.3.2 Impacts and Mitigation .....</b>	<b>36</b>
<b>4.4 Palaeontological Assessment .....</b>	<b>37</b>
<b>4.4.1 Methodology Employed .....</b>	<b>37</b>
<b>4.4.2 Impacts and Mitigation .....</b>	<b>37</b>
<b>4.5 Phase 1 Heritage Impact Assessment.....</b>	<b>39</b>
<b>4.5.1 Methodology Employed .....</b>	<b>39</b>
<b>4.5.2 Fieldwork.....</b>	<b>41</b>
<b>4.5.3 Impacts.....</b>	<b>43</b>
<b>4.5.4 Mitigation.....</b>	<b>44</b>
<b>5. PROPOSED AMENDMENT OF THE EA .....</b>	<b>47</b>
<b>6. IMPACT ASSESSMENT .....</b>	<b>50</b>
<b>6.1 Impact Assessment Methodology.....</b>	<b>50</b>
<b>6.2 Assessment Criteria .....</b>	<b>52</b>
<b>6.3 Description and Assessment of Environmental Impacts.....</b>	<b>55</b>
<b>6.3.1 IMPACT 1: Loss of Floral Habitat .....</b>	<b>55</b>
<b>6.3.2 IMPACT 2: Loss of Floral Species Diversity .....</b>	<b>58</b>
<b>6.3.3 IMPACT 3: Loss of Floral SCC, Protected Species and Tops-Listed Species .....</b>	<b>59</b>
<b>6.3.4 IMPACT 4: Changes in sediment entering and exiting the system impact.....</b>	<b>62</b>
<b>6.3.5 IMPACT 5: Changes in Water Flow Rating.....</b>	<b>63</b>
<b>6.3.6 IMPACT 6: Introduction and spread of alien vegetation. ....</b>	<b>64</b>
<b>6.3.7 IMPACT 7: Changes in water quality due to foreign materials and increased nutrients. .</b>	<b>65</b>
<b>6.3.8 IMPACT 8: Avifauna collisions and electrocution .....</b>	<b>66</b>
<b>6.3.9 IMPACT 9: Possible destruction of fossil heritage .....</b>	<b>67</b>
<b>6.3.10 IMPACT 10: Impact on burial ground and graves .....</b>	<b>68</b>
<b>6.3.11 IMPACT 11: Impact on archaeological sites .....</b>	<b>69</b>
<b>6.3 Summary of Impact Assessment Ratings.....</b>	<b>72</b>
<b>6.3.12 Other Environmental impacts .....</b>	<b>73</b>
<b>6.4 Acceptability of proposal and Specialist Opinion.....</b>	<b>73</b>
<b>6.5 National Water Act .....</b>	<b>75</b>
<b>7. ADVANTAGES AND DISADVANTAGES OF THE PROPOSED AMENDMENT .....</b>	<b>78</b>
<b>7.1 Disadvantages of the Amendment.....</b>	<b>78</b>

<b>7.2 Advantages of the Amendment</b> .....	<b>78</b>
<b>8. ADDITIONS TO THE EMPr</b> .....	<b>79</b>
<b>9. PUBLIC PARTICPATION</b> .....	<b>84</b>
<b>9.1 Placement of Site Notices</b> .....	<b>84</b>
<b>9.2 Notification Letters</b> .....	<b>84</b>
<b>9.3 Placement of Newspaper Advertisement</b> .....	<b>85</b>
<b>9.4 Availability of the Draft Amendment Report for Review</b> .....	<b>85</b>
<b>9.5 I&amp;AP Register/database and Comments and response report</b> .....	<b>85</b>
<b>9.6 Public Open day &amp; Focus Group Meetings</b> .....	<b>85</b>
<b>10. CONCLUSION</b> .....	<b>86</b>
<b>11. REFERENCES</b> .....	<b>87</b>

#### LIST OF FIGURES

Figure 1: Locality Map.....	16
Figure 2: Vegetation units identified within the study area.....	23
Figure 3: Part 2 Amendment Process .....	25
Figure 4: Representative photographs of certain protected floral species recorded during the field assessment. A) Aloe broomii var. broomii; B) Euphorbia clavarioides; C) Pelargonium sidoides; and D) Brunsvigia radulosa (Field and Form, 2020) .....	28
Figure 5: Vegetation Units .....	29
Figure 6: Provincially Protected Floral Species (Field and Form 2020).....	30
Figure 7: Location and extent of wetland areas. (Limosella 2020).....	35
Figure 8: Rocky outcrop in study area. (Banzai Environmental 2020).....	38
Figure 9: Heritage Screening map. Source: Department of Environmental Affairs.....	40
Figure 10: Locality of the heritage resource .....	42

#### LIST OF TABLES

Table 1: Summary of Impact Assessment.....	6
Table 2: Requirements of a Part 2 Amendment Process .....	8
Table 3: Listed Activities applied for .....	17
Table 4:Environmental Sensitivity of Project Area (DEFF Screening Tool) .....	18
Table 5: Specialist Assessments Identified .....	19
Table 6: Plant Species of Conservation Concern in High and Very High sensitivity areas .....	31
Table 7: Landform type.....	40
Table 8: Area identified during the heritage survey .....	42
Table 9: Proposed lead times for permitting and mobilization. ....	46
Table 10: Project phases in a development.....	52
Table 11: Assessment Criteria.....	53

Table 12: Assessment and Ratings Associated with Impact 1 .....	56
Table 13: Assessment and Ratings associated with Impact 2.....	59
Table 14: Assessment and Ratings associated with Impact 3.....	60
Table 15: Assessment and Ratings associated with Impact 4.....	62
Table 16: Assessment and Ratings associated with Impact 5.....	64
Table 17: Assessment and Ratings associated with Impact 6.....	65
Table 18: Assessment and Ratings associated with Impact 7.....	65
Table 19: Assessment and Ratings associated with Impact 8.....	67
Table 20: Assessment and Ratings associated with Impact 9.....	68
Table 21: Assessment and Ratings associated with Impact 10.....	69
Table 22: Assessment and Ratings associated with Impact 11.....	70
Table 23: Summary .....	72
Table 24: Risk Matrix.....	77
Table 25: Mitigation Measures during the Construction and Operation Phase to be included in EMPr .....	79

## LIST OF APPENDICES

**Appendix A:** Maps

**Appendix B:** Design Layout

**Appendix C:** Site Photographs

**Appendix D:** Correspondence with the Competent Authority

**Appendix D1:** Department of Environment, Forestry and Fisheries: Pre-Application Meeting

**Appendix D2:** Public Participation Plan

**Appendix D3:** Environmental Authorisation

**Appendix E:** Public Participation Process

**Appendix E1:** Newspaper Advert

**Appendix E2:** Notification Letter

**Appendix E3:** Site Notice and Proof of placement

**Appendix E4:** Proof of Consultation with Authorities

**Appendix E5:** Interested and Affected Parties Register

**Appendix E6:** Comments and Responses Report

**Appendix F:** Specialist Reports

**Appendix F1:** Floral Specialist Assessment (Field and Form);

**Appendix F1:** Floral SCI (Field and Form);

**Appendix F2:** Wetland/Riparian Delineation and Functional Assessment (Limosella);

**Appendix F3:** Avifauna Assessment (Albert Froneman Consulting);

**Appendix F4:** Palaeontological Assessment (Banzai Environmental); and

**Appendix F5:** Phase1 Heritage Assessment (PGS Heritage).

**Appendix G:** Environmental Management Programme

**Appendix H:** Curriculum Vitae of Environmental Assessment Practitioner

**Appendix I:** Other Reports

**Appendix I1:** Department of Environment, Forestry and Fisheries: Screening Tool

#### LIST OF ABBREVIATIONS/ACRONYMS

DEA	Department of Environmental Affairs
DEFF	Department of Environmental, Forestry and Fisheries
EA	Environmental Authorisation
EAP	Environmental Assessment Practitioner
EMPr	Environmental Management Programme
NEMA	National Environmental Management Act (Act 107 of 1998)

## 1. INTRODUCTION AND PURPOSE OF REPORT

### 1.1 Introduction

Eskom SOC Ltd, Free State Operating Unit - Distribution, (hereafter Eskom) intends to amend the Environmental Authorisation for the Construction of the 132kV overhead powerline from the Melkspruit Substation to the Rouxville Substation in the Walter Sisulu and Mohokare Local Municipalities with the Eastern Cape and Free State Provinces. In line with the Environmental Impact Assessment (EIA) Regulations 2014 (as amended), National Environmental Act (Act No. 107 of 1998), Eskom appointed GA Environment (Pty) Ltd as Independent Environmental Consultants to conduct a Part two amendment of the Environmental Authorisation (EA), in terms of Regulation 31 of the EIA Regulations of 2014, as amended.

Regulation 31 of NEMA EIA Regulations states that *“An environmental authorisation may be amended by following the process prescribed in this Part if the amendment will result in a change to the scope of a valid environmental authorisation where such change will result in an increased level or nature of impact where such level or nature of impact was not (a) assessed and included in the initial application for environmental authorisation; or (b) taken into consideration in the initial environmental authorisation; and the change does not, on its own, constitute a listed or specified activity”*. Eskom has reviewed the existing EA and having considered the need to amend the Authorisation. The locality map showing the location of the section where the amendment is proposed is presented in **Figure 1**.

The amendment is required as the authorised power line route is deviating from its initial alignment around a property for about 6 kilometres as land rights cannot be obtained for a portion of land in the approved development corridor. The impacts associated with the 6-kilometre deviation were assessed by means of:

- Floral Assessment (Field and Form);
- Wetland/Riparian Delineation and Functional Assessment (Limosella);
- Avifauna Assessment (Albert Froneman Consulting);
- Palaeontological Assessment (Banzai Environmental); and
- Phase1 Heritage Assessment (PGS Heritage)

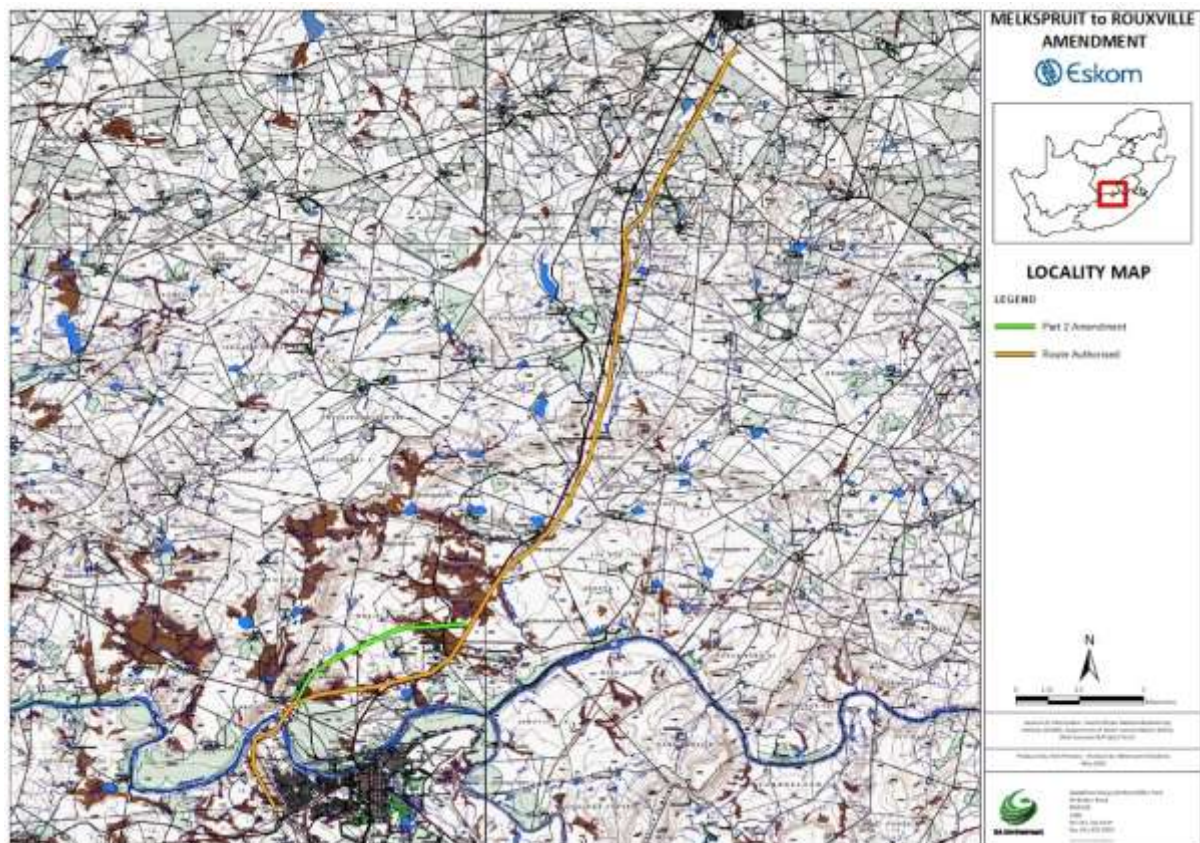


Figure 1: Locality Map

## 1.2 Project Background and Location

The Eskom Distribution Free State Operating Unit (FSOU) identified the need for a replacement of the existing 66kV line currently extending between the Melkspruit and Rouxville substations. Eskom proposed this development to compensate for future electricity needs because of population growth, which the existing 66kV powerline will eventually not be able to cater for. NSTV (2018) indicated that Eskom also identified the need to replace the current line with a line that will be able to withstand all weather conditions and that can be accessed easily using the existing farms roads. Currently, Eskom is experiencing the following difficulties with the existing 66kV during maintenance:

- Powerline has wooden poles, which are now old and deteriorated. Some poles are cracked, rotten or broken and therefore susceptible to burning as the area is prone to veldfires.
- Some poles are in wetlands thus have accessibility issues during repairs.
- Most are located on rugged terrain, i.e. ridges/koppies, as a result it is difficult for technical operators access it during power outages.
- The population of the service area is growing rapidly and so is settlement in the area where electricity is the main source of energy. If proactive measures are not taken the demand for electricity will out-trip the supply using the current 66KV.



The proposed powerline is between Aliwal North within Walter Sisulu Local Municipality in the Eastern Cape Province and Rouxville within Mohokare Local Municipality in the Free State Province. The Melkspruit Substation is located at 30°42'07.89" S 26°40'31.81" E, the Rouxville Substation is located at 30°25'49.91" S, 26°50'18.40" E. The length of the route is approximately 38km.

The start point of the deviation is 30°39'50.59", 26°40'51.21"E and the end point is 30°38'4.96"S, 26°44'36.99"E.

The Basic Assessment Report (NSVT Consultants, 2018) indicated that a 1km corridor was assessed for the proposed route alternatives, although only a 31m servitude is required for the proposed powerline. Two Route alternatives were assessed in the Basic Assessment Report and the preferred route received Environmental Authorisation.

### 1.3 Existing Environmental Authorisation (EA)

NSTV Consultants was appointed in 2017 by Eskom SOC Ltd to undertake the Basic Assessment process required in terms of the National Environmental Management Act (Act 107 of 1998), as amended (NEMA) and the EIA Regulations, GNR 982 of 2014. The following listed activities were applied for.

*Table 3: Listed Activities applied for*

Listed activities	Activity/Project description
<p><b>GN R.983 Item 11:</b> 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 more</p>	<p>The new substation and power lines will distribute electricity and have a capacity of 132 kilovolts.</p>
<p><b>GN R.983 Item 12:</b> The development of (ii) infrastructure or structures with physical footprint of 100 square metres or more; where such development occurs – (a) within a watercourse; (c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse.</p>	<p>The combined physical footprint of the powerline towers within a watercourse (or within) is 100 square metres or more</p>
<p><b>GN R.983 Item 19:</b> The infilling or depositing of any material of more than 10 cubic metres into, or the dredging, excavation, removal or moving of</p>	<p>The proposed development entails the infilling, excavation, removal of soil or/and sand amounting to more than 10m<sup>3</sup> within watercourses. However, it is not envisaged that any towers will be placed in watercourses.</p>

soil, sand or rocks of more than 10 cubic metres from a watercourse.	
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#### 1.4 Department of Environmental Affairs Screening Tool

On 5 July 2019, The Department of Environment, Forestry and Fisheries gave Notice of the requirement to submit a report generated by the National Web-based Environmental Screening Tool in terms of section 24(5)(h) of the NEMA, 1998 (Act No 107 of 1998) and regulation 16(1)(b)(v) of the EIA regulations, 2014, as amended. The submission of this report is compulsory when submitting an application for environmental authorisation in terms of the Environmental Impact Assessment Regulations, 2014 effective from 4 October 2019. The Screening report is provided in **Appendix I1** of this report. The main findings to be discussed from the screening report are listed below.

##### 1.4.1 Proposed Development Area Sensitivity

The following summary of the development's environmental sensitivities were identified in the Environmental Screening Report. The environmental sensitivities for the proposed development footprint (**Table 4**).

Table 4: Environmental Sensitivity of Project Area (DEFF Screening Tool)

Theme	Very sensitivity	High	High sensitivity	Medium sensitivity	Low sensitivity
Agriculture Theme	X				
Animal Species			X		
Aquatic Biodiversity Theme	X				
Archaeological and Cultural Heritage Theme			X		
Civil Aviation Theme			X		
Defence Theme					X
Palaeontology Theme			X		
Plant Species Theme					X
Terrestrial Biodiversity Theme	X				

### 1.4.2 Specialist Assessment Identified

Based on the environmental sensitivities of the proposed project area summarised in **Table 4**, the following list of specialist assessments were identified by the Environmental Screening Report. **Table 5** provides the Specialist studies identified in the Screening report. A motivation by the EAP has been provided where a study has not been undertaken.

*Table 5: Specialist Assessments Identified*

No	Specialist Assessment	EAP Motivation
1	Agricultural Impact Assessment	The proposed overhead line is adjacent to the existing line. The tower bases will be the only impact on the landscape and the loss of agricultural land will be insignificant. The EAP suggests that an Agricultural Impact Assessment is not required.
2	Landscape/Visual Impact Assessment	The 2018 Basic Assessment identified potential visual impacts that may influence observers travelling along the N6 National road and arterial roads within the region, and a number of observers residing at homesteads along the alignment. The proposed deviation will not be in close proximity to the N6, arterial roads or homestead. The proposed overhead line is adjacent to the existing line. The EAP concluded that a Landscape/Visual Impact Assessment is not required.
3	Archaeological and Cultural Heritage Impact Assessment	An Archaeological and Cultural Heritage Impact Assessment has been conducted. See <b>Appendix F5</b>
4	Palaeontology Impact Assessment	A Palaeontology Impact Assessment has been conducted. See <b>Appendix F4</b>
5	Terrestrial Biodiversity Impact Assessment	A Floral Assessment has been conducted. See <b>Appendix F1</b>
6	Aquatic Biodiversity Impact Assessment	A Wetland/Riparian Delineation and Functional Assessment has been conducted. See <b>Appendix F2</b>
7	Avian Impact Assessment	An Avifaunal Assessment has been conducted. See <b>Appendix F3</b>
8	Civil Aviation Assessment	The new overhead power line will be placed adjacent to the existing line and no Civil Aviation impacts are expected

9	RFI Assesement	The new overhead power line will be placed adjacent to the existing line and no Electromagnetic Compatibility (EMC) impacts are expected.
10	Geotechnical Assessment	The proposed amendment will be for an overhead power line, adjacent to existing Eskom powerlines. Eskom will provide engineering designs which take into consideration geotechnical issues. The EAP recommended that a Geotechnical Assessment is not required
11	Plant Species Assessment	A Floral Assessment and species of special concern assessment have been undertaken. The reports are provided in <b>Appendix F1.</b>
12	Animal Species Assessment	An Avifaunal has been undertaken. The report is provided in <b>Appendix F3.</b>

## 2. ENVIRONMENTAL SETTING

The description of key biophysical attributes and surrounds is based on information presented in the Final Basic Assessment Report compiled by NSVT Consultants (2018) and associated specialist studies. The information considered during the granting of the existing Environmental Authorisation was also used during the compilation of this report. Where relevant, this information is supplemented by more recent information and/or information contained in specialist reports/statements commissioned in support of this Amendment Report. The information provided in the Impact Assessment (Chapter 6) informed by specialist studies was also considered during the compilation of this section. A site visit to ground truth the study area was undertaken in June 2020 by GA Environment.

### 2.1 Topography and Geology

The general surface area surrounding the study area is described as slightly irregular undulating plains and hills to the north and lowlands with hills to the south. There is a distinct escarpment separating the northern and southern sections of the 38 kilometer route, with Aliwal North and the Melkspruit Substation located within the lowlands section at approximately 1400m above sea level. The Rouxville Substation is located at 1547m, an almost 150m difference in elevation.

NSVT (2018) describes that proposed area is geologically situated on Alluvium, which is underlain by the Tarkastad Subgroup, of the Beaufort Group of the Karoo Sequence. The Tarkastad Subgroup consists of the Burgersdorp and Katberg formations. The alluvium usually consists of an unconsolidated layer of fine sand, silt, clay and coarse gravel and is found in all streambeds in the area. Along the Orange River and the tributaries, alluvium can be found up to 60m above the current stream level.

### 2.2 Climate

Mucina & Rutherford (2006), described that the study area is located in an seasonal climatic region, with summer rainfall peaking in early autumn, and with an overall relatively low Mean Annual Precipitation (MAP) of slightly above 410mm, with some area reaching mean yearly rainfall values as high as 580mm. The Mean Annual Temperature (MAT) for the region is around 15°C, but winter frost is very common averaging around 50 days per year.

### **2.3 Drainage and Surface Water**

The study area is located within the D14A and D12F quaternary catchments. Various drainage lines traverse the study area with those in the western section (Quaternary Catchment D14A) draining towards the Orange River, and the drainage lines in the eastern section of the study area (Quaternary Catchment D12F) draining toward the Nuwejaarspruit, a tributary of the Orange River (Field and Form, 2020). The western section of the study area is located within a Class 1 Freshwater Ecosystem Priority Area (FEPA) sub-quaternary catchment, while the eastern section is located within a Class 4 Upstream FEPA sub-quaternary catchment associated with the Nuwejaarspruit, while the western.

### **2.4 Vegetation**

The Ecological Specialist Report, conducted by Field and Form (2020), describes that the study area is located within the Grassland Biome of South Africa (Rutherford & Westfall 1994; Rutherford 1997), and specifically within the Dry Highveld Grassland Bioregion (Mucina & Rutherford). The vegetation associated with the study area was previously defined by Acocks (1953) as False Upper Karoo and Dry *Cymbopogon-Themeda* Veld, while more recent vegetation classification by Low & Rebelo (1996) indicates the study area to be located within Eastern Mixed Nama Karoo and Dry Sandy Highveld Grassland. This vegetation type forms part of the Azonal Vegetation Biome and Alluvial Vegetation Bioregion (Mucina & Rutherford, 2006),



Figure 2: Vegetation units identified within the study area.

In terms of the most recent vegetation classification of South Africa (Mucina & Rutherford, 2006), the study area traverses the following vegetation types (Figure 2).

- Xhariep Karroid Grassland;
- Aliwal North Dry Grassland;
- Besemkaree Koppies Shrubland; and
- Upper Gariep Alluvial Vegetation.

The majority of the study area is located within the Xhariep Karroid Grassland vegetation type. The conservation status of the abovementioned vegetation types is Least Threatened, with the exception of the Upper Gariep Alluvial Vegetation type, which is indicated as Vulnerable (VU) (Mucina & Rutherford, 2006). These vegetation types correspond to those indicated in terms of the NBA (2018).

### 3. LEGAL REQUIREMENTS

#### 3.1 Amendment of the Environmental Authorisation

The National Environmental Management Act (No. 107 of 1998) [NEMA] EIA Regulations of 2014 provide for PART 1 (“non-substantive”) and PART 2 (“substantive”) amendment processes. Part 1 amendment process is required when the changes will not change the scope of a valid Environmental Authorisation (EA) and is not likely to adversely affect the environment or the rights or interests of other parties. The latter is applicable to project amendments resulting in a change in scope of a valid EA where such change will also result in an increased level or change in the nature of impacts. Based on the Scope of Work provided by Eskom, a Part 2 amendment process will be required.

Section 31 of the 2014 EIA Regulations (as amended) states the following:

*“An environmental authorisation may be amended by following the process prescribed in this Part if the amendment will result in a change to the scope of a valid environmental authorisation where such change will result in an increased level or nature of impact where such level or nature of impact was not (a) assessed and included in the initial application for environmental authorisation; or (b) taken into consideration in the initial environmental authorisation; and the change does not, on its own, constitute a listed or specified activity.”*

#### 3.2 Part 2 Amendment Process

The Part 2 Amendment process is outlined in Section 32 of the EIA Regulations. **Figure 3** illustrates the Part 2 Amendment process and a summary of the process to be undertaken is provided below:

- Submission of the application form for the amendment of the IEA and Draft Amendment report to the Competent Authority (CA);
- Notify all Interested and Affected Parties and stakeholders on the availability of the draft report for a 60-day review period;
- Incorporate all comments received during the 30-review period in the Final amendment report;
- Submission of the final amendment report to the Competent Authority

#### 3.3 Timeframes

The following time frames are stipulations in Regulation 32 of the EIA Regulations:

- The applicant must within 90 days of receipt by the Competent Authority of the application for the Part 2 Amendment submit a Final amendment report;
- Public Participation must be conducted for a 60 day review period before final amendment report can be submitted;



- The Competent Authority must provide a decision within 107 days of receipt of the final amendment report.

### 3.4 Content of the Amendment Report

According to Section 32 of the EIA Regulations, the amendment report must include the following:

- An assessment of all impacts related to the proposed change;
- Advantages and disadvantages associated with the proposed change; and
- Measures to ensure avoidance, management and mitigation of impacts with such proposed change; and
- Any changes to the EMPr.

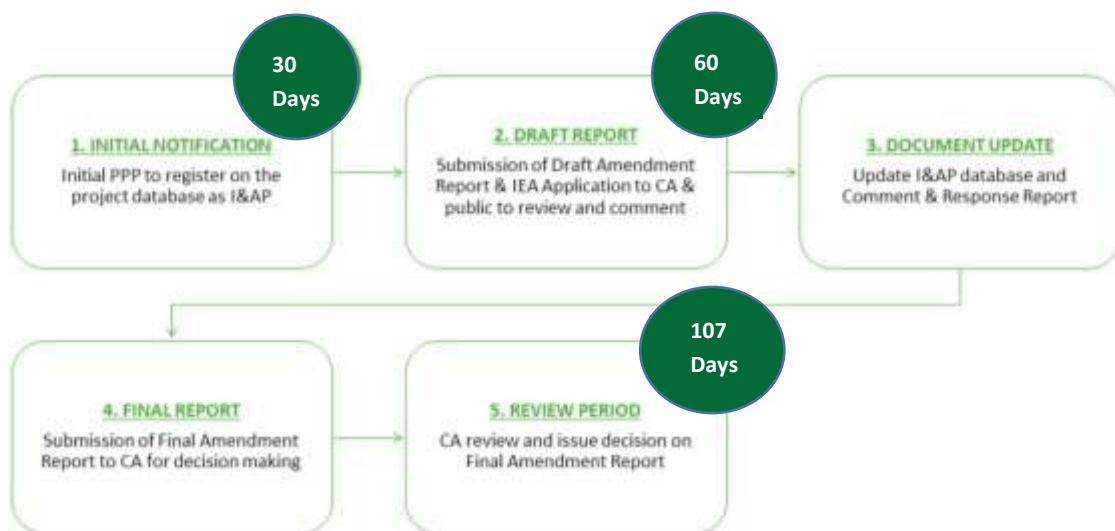


Figure 3: Part 2 Amendment Process

## 4. MOTIVATION FOR THE PROPOSED AMENDMENT

As previously indicated in this report, the amendment is required as the authorised power line route is deviating from its initial alignment around a property for about 6 kilometres as land rights cannot be obtained for a portion of land in the approved development corridor. The impacts associated with the 6 kilometre deviation were assessed by the following specialists, and their assessment are discussed below:

- Floral Assessment (Field and Form);
- Wetland/Riparian Delineation and Functional Assessment (Limosella);
- Avifauna Assessment (Albert Froneman Consulting);
- Palaeontological Assessment (Banzai Environmental); and
- Phase1 Heritage Assessment (PGS Heritage)

### 4.1 Floral Specialist Assessment

#### 4.1.1 Methodology Employed

The Floral Assessment undertaken by Field and Form used the following methodology:

##### *a) Desktop Assessment*

- An overview of the regional vegetation was obtained from relevant literature such as Mucina & Rutherford (2006) and NBA (2018), which include the most recent vegetation classification of South Africa, as well as information contained in general field guides for the region; • Other national and regional databases such as protected areas (SAPAD, 2019), conservation areas (SACAD, 2019), land cover classes (DEA, 2014), drainage lines and wetlands (NFEPA, 2011; NBA National Wetland Map 5, 2018) and relief were also used to identify areas where potential sensitive habitat occur, and also to identify areas where natural/ near-natural and untransformed vegetation is likely to be present that may provide suitable habitat for floral SCC;
- SANBI's National Herbarium Pretoria (PRE) Computerised Information System (PRECIS) Information Database, SANBI's Plants of southern Africa (POSA, 2013), the Botanical Database of southern Africa (BODATSA, 2016) and the Global Biodiversity Information Facility (GBIF) were used to determine floral SCC and other floral species that have the potential to occur within the study area;
- Maps, recent aerial photographs and information on the extent of potential remnant vegetation (NBA, 2018) were consulted prior to the field assessment in order to determine broad habitats, vegetation types and potentially ecological sensitive areas; and
- The SANBI Red List2 was used to update the conservation status of floral SCC to confirm any recent taxonomic changes.

### b) *Field Assessment*

A field assessment was undertaken over a period of one day on 8 June 2020 in order to determine the ecological condition of the study area and its surrounds, and comprised of the following:

- The vegetation of the study area was grouped into relatively homogenous vegetation units based on aerial photography, different land uses, defined vegetation types and other available information as set out in Section 4.1.1 above;
- During the field assessment, a walkaround was undertaken for orientation purposes during which time visual observations pertaining to the various ecological attributes of the study area and associated habitat were made;
- The walkaround was followed by an on-foot survey whereby vegetation and plant species present within each of the vegetation units were identified and the boundaries of each vegetation unit refined using a handheld Garmin eTrex 20 GPS device. Vegetation units applicable to the approved Melkspruit-Rouxville power line alignment as defined by EnviRoss (2017) were also considered;
- Note was made of the ecological condition and sensitivity of the vegetation present within each vegetation unit and existing impacts and disturbances were identified. Any special features considered to be of ecological importance were noted. Specific emphasis was placed on the potential occurrence of floral SCC and areas providing suitable habitat for such species; and
- Species encountered were compared with regional species lists available for the expected vegetation types (Mucina & Rutherford, 2006).

### c) *Sensitivity Mapping*

The floral habitat sensitivity of each broad vegetation unit was determined by calculating the mean of five different parameters which influence floral communities and provide an indication of the overall floristic ecological integrity, importance and sensitivity of the vegetation unit. Each of the following parameters are rated on a scale of 1 to 5 (where a score of '1' is lowest and '5' is highest):

- *Floral SCC*: The confirmed presence or potential for floral SCC or any other significant species, such as protected species and endemics, to occur within the vegetation unit;
- *Unique Landscapes*: The presence of unique landscapes (such as wetlands and other freshwater features, ridges or rocky outcrops) or the presence of an ecologically intact vegetation unit in a transformed region;
- *Conservation Status*: The conservation status of the ecosystem or vegetation type in which the vegetation unit is situated based on local, regional and national databases;
- *Floral Diversity*: The recorded floral diversity compared to a suitable reference condition such as surrounding natural areas or available floristic databases; and
- *Habitat Integrity*: The degree to which the vegetation unit is transformed based on observed disturbances which may affect habitat integrity.

Each of these values contribute equally to the mean score, which determines the floral habitat sensitivity class in which each vegetation unit falls. A conservation and land-use objective is also

assigned to each sensitivity class which aims to guide the responsible and sustainable utilisation or development of the applicable vegetation unit in question. The different classes and land-use/conservation objectives are presented in the table below.



Figure 4: Representative photographs of certain protected floral species recorded during the field assessment. A) *Aloe broomii* var. *broomii*; B) *Euphorbia clavarioides*; C) *Pelargonium sidoides*; and D) *Brunsvigia radulosa* (Field and Form, 2020)

#### 4.1.2 Vegetation Biodiversity

The desktop assessment of the study area by Field and Form (2020) determined that the study area is mostly located within an ESA1 site according to the Free State Province Biodiversity Plan (2015), which is designated as such due to minimal degradation of the area and the area being required for the persistence species (Collins et al., 2016). The study area is further indicated to be located almost entirely with remnant vegetation according to the NBA (2018). The study area extends across four vegetation type which are all indicated by Mucina & Rutherford (2006) to be Least Threatened, with the Upper Gariep Alluvial vegetation type in the west indicated as Vulnerable.

### 4.1.3 Vegetation Units.

During the Field and Form (2020) field assessment, five broad vegetation units were identified within the study area, namely:

- Besemkaree Dolerite Koppies
- Karroid Grassland;
- Rocky Karroid Grassland;
- Watercourses and erosion gulleys; and
- Historical agricultural fields.

The location and extent of these vegetation units in relation to the study area are illustrated in **Figure 5** below.

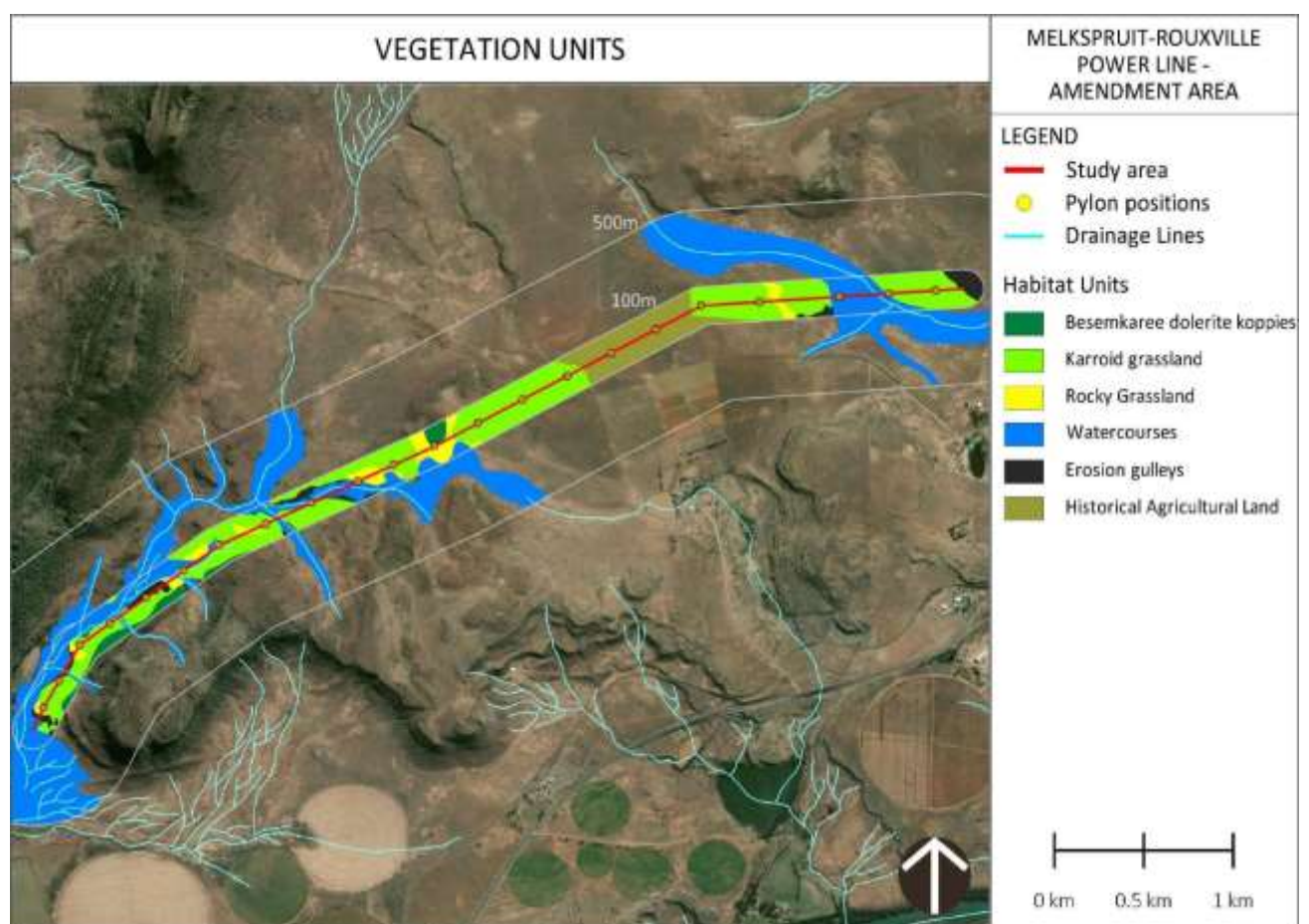


Figure 5: Vegetation Units

### 4.1.4 Ecological drivers and Processes.

The Floral Assessment (Field and Form, 2020) discusses that the majority of the study area is located within the Xhariep Karroid Grassland vegetation type, that occupies a central position along a rainfall gradient between dry grassland vegetation to the north and dwarf karroid shrub-dominated karoo

vegetation to the south. The Xhariep Karroid Grassland vegetation type was defined by Acocks (1953) as the False Upper Karoo veld type - a karoo-type vegetation that had originally been grassland. Acocks (1953) describes the development of this veld type as one of the most spectacular of all the changes in the vegetation of South Africa, likening the conversion of grassland into eroded karoo as a national disaster. Factors that played a role in this conversion include fencing and selective overgrazing i.e. domestic livestock replacing migrating wild animals, which resulted in the loss and erosion of shallow topsoil in the area and the subsequent encroachment of less nutritious karroid shrubs.

In addition, loss of grass cover due to grazing has also contributed, together within various dams in the applicable catchments, to the deterioration of river flow, changes in runoff patterns and intensity, and the subsequent establishment of a vast network of deep channels and gulleys in valley beds. This process is still ongoing and has been further exacerbated by cultivation and surrounding land use changes. Other key ecological drivers in the region, in addition to grazing, is rainfall, whereby the karroid grassland vegetation type of the region fluctuates towards karoo conditions during droughts. The amount of vegetation cover is also dependent on rainfall and the degree of grazing.

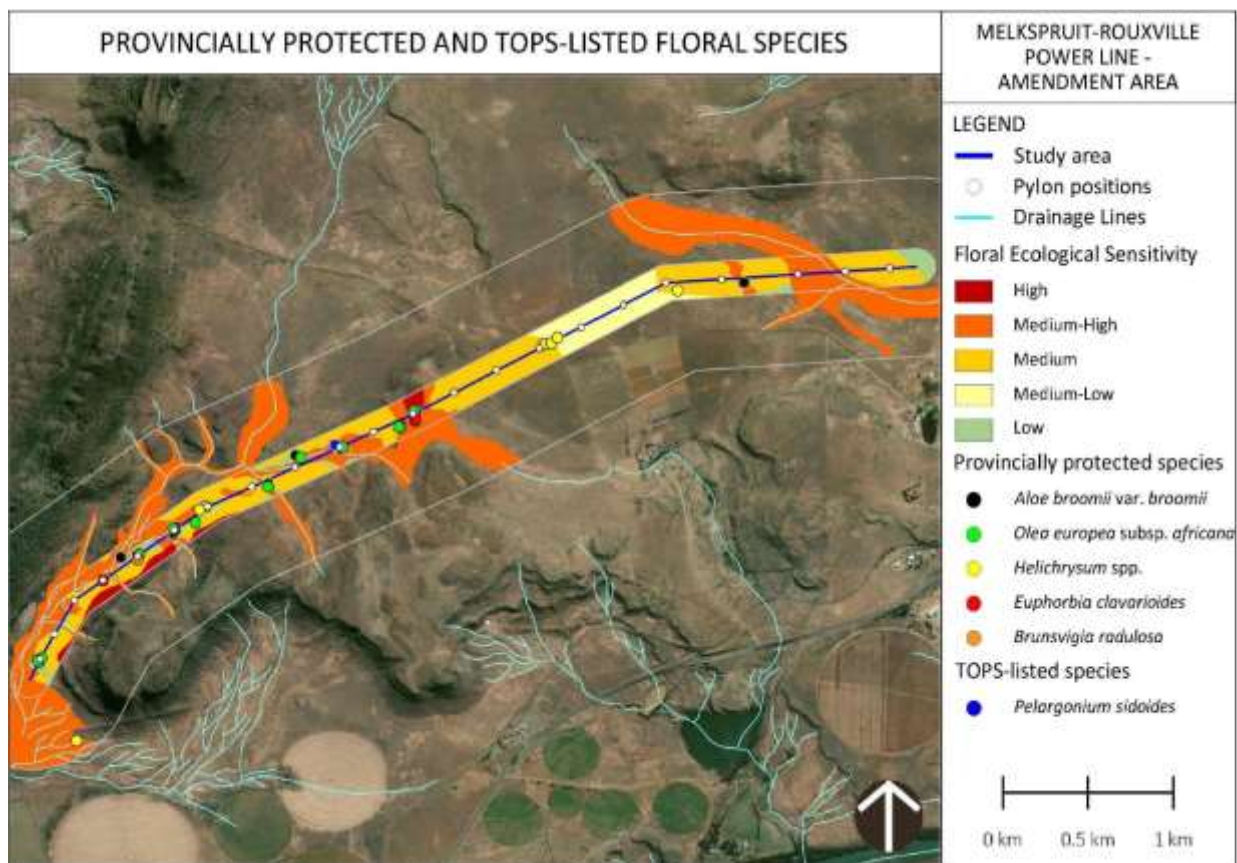


Figure 6: Provincially Protected Floral Species (Field and Form 2020)

#### 4.1.5 Floral Sensitivity

Field and Form (2020) described the floral habitat sensitivity ( See **Figure 6** ) of each broad vegetation unit was determined by calculating the mean of five different parameters which influence floral communities and provide an indication of the overall floristic ecological integrity, importance and sensitivity of the vegetation unit. Each of the following parameters are rated on a scale of 1 to 5 (where a score of '1' is lowest and '5' is highest):

- *Floral SCC*: The confirmed presence or potential for floral SCC or any other significant species, such as protected species and endemics, to occur within the vegetation unit;
- *Unique Landscapes*: The presence of unique landscapes (such as wetlands and other freshwater features, ridges or rocky outcrops) or the presence of an ecologically intact vegetation unit in a transformed region;
- *Conservation Status*: The conservation status of the ecosystem or vegetation type in which the vegetation unit is situated based on local, regional and national databases;
- *Floral Diversity*: The recorded floral diversity compared to a suitable reference condition such as surrounding natural areas or available floristic databases; and
- *Habitat Integrity*: The degree to which the vegetation unit is transformed based on observed disturbances which may affect habitat integrity.

#### 4.1.6 Impacts and Mitigation

Field and Form state the proposed amended power line alignment is unlikely to significantly impact on regional ecosystem drivers and processes and associated region vegetation structure as outlined above, although it may contribute toward further erosion of watercourses should this potential impact not be effectively mitigated.

Six Plant Species of Conservation Concern (SoCC) were recorded by Field and Form (2020) in the High and Very High sensitivity areas are listed in Table 6. These are all shrubs or succulents. The likelihood of other SoCC being present is deemed to be high, and includes seasonally evident bulb species such as *Daubenya zeyheri* (Endangered)

Table 6: Plant Species of Conservation Concern in High and Very High sensitivity areas

Species	Threat status	Habitat	Possibility of occurring within the study area
<i>Aloe broomii</i> var. <i>tarkaensis</i>	LC*	Low, stony ridges.	Low – although suitable habitat for this species is available within the study area, the study area falls outside of the known distribution range of this species.

<i>Gasteria baylissiana</i>	Rare	Sheer rock faces derived from quartzitic sandstone of the Witteberg Group, usually in light shade.	Low – no suitable habitat for this species is available within the study area and the study area falls outside of the known distribution range of this species, which is restricted to the Suurberg in the Eastern Cape.
<i>Lessertia tenuifolia</i>	DDT**	Terrestrial (limited information available). Known from the farm Ruigtefontein in the 3026DA QDS and another location 10km south of Aliwal North (Nkonki, 2013).	Possible
<i>Nananthus vittatus</i>	DDT	Terrestrial (limited information available).	Possible
<i>Nemesia acornis</i>	Rare	Upper rocky slopes in fynbos.	Low – this species is a Fynbos species, will not occur in the study area and has likely erroneously been included by the POSA database as occurring in the QDS.
<i>Stipagrostis proxima</i>	DDT	Sandy soils in disturbed places (Gibbs Russel et al., 1990) in the Nama Karoo Biome. Known from the area south of Aliwal North between the Kraai River and Witte Bergen (Fish et al., 2015).	Possible

\*Prior to the 2020 National Red List indicated as Rare, but not currently considered threatened. LC = Least Concern \*\* DDT = Data Deficient - Taxonomically Problematic

Field and Form discusses that from the table above, it is evident that no threatened floral species (VU, EN or CR) are likely to occur in the study area, and should floral SCC be present, such species will be limited to species listed as DDT. The distribution range and habitat of these species are not well defined, and the possibility of occurrence can therefore not be reasonably determined. These species were however not recorded in the study area during the field assessment and known locations (where available) do not coincide with the proposed development footprint area.



## 4.2 Wetland/Riparian Delineation and Functional Assessment

### 4.2.1 Methodology Employed

Limosella (2020) describes the delineation method documented by the DHWS in their document “Updated manual for identification and delineation of wetlands and riparian areas” (DWAF, 2008), and the Minimum Requirements for Biodiversity Assessments (GDACE, 2014) as well as the Classification System for Wetlands and other Aquatic Ecosystems in South Africa. User Manual: Inland Systems (Ollis et al, 2013) was followed throughout the field survey. These guidelines describe the use of indicators to determine the outer edge of the wetland and riparian areas such as soil and vegetation forms as well as the terrain unit indicator. A hand held Garmin Montana 650 and/or a Samsung S10 smartphone was used to capture GPS co-ordinates in the field. 1:50 000 cadastral maps and available GIS data were used as reference material for the mapping of the preliminary watercourse boundaries. These were converted to digital image backdrops and delineation lines and boundaries were imposed accordingly after the field survey. Applications used on the smartphone includes GPX Viewer Pro and Google Earth. Following a desktop assessment, highlighting wetland areas to be groundtruthed in the field, soil and vegetation sampling on site informed a fine scale delineation. Functional and integrity assessments were conducted to indicate the baseline status of the wetlands identified. In the current study the wetland area was assessed using, WET-Health (Macfarlane et al, 2007), EIS (DWAF, 1999) and WetEcoServices, (Kotze et al, 2006). The assessment of potential impacts follows the 2014 NEMA regulations (as amended). In order to ease the legibility of the report, details regarding the methods used in each phase of the wetland assessment are presented in **Appendix A**.

### 4.2.2 Watercourse Characteristics

Limosella (2020) describes that the majority of the proposed line is located on agricultural and farming areas. Only a small section is located near the town of Aliwal North. From a historical point of view, the area has generally undergone little change from as early as 1945 with the exception of the increase in urbanisation in larger towns located near the proposed line. The artificial dams located within 500 m of the amendment section had already been constructed in 1945 with little other changes occurring in this area.

The watercourses associated with the amendment section are described as two watercourse systems. The northern watercourse system is associated with the Nuwejaarspruit River and the southern section associated with the Orange River. The extent of watercourses along the remainder of the line is based on the Enviross study dated 2017 and was confirmed during the site visit.

### 4.2.3 Wetland Functional Assessment

The functionality of the watercourses in the study area is likely to have been impacted by agriculture and cattle farming to some degree. Although the erosion in the area is high, especially in the non-perennial streams, the erosion scars are visible on aerial imagery from as early as 1945. This has led to an increase in exotic plant species in the area, increased sediment deposition and a change in geomorphology of watercourses. The hydrology of watercourses has been impacted by the input of nutrients and chemicals from the farming areas and run-off from roads and cleared surfaces. The creation of several artificial dams and furrows has further changed natural water flow patterns. Furthermore, massive erosional gullies, some as deep as 5-10 m, was recorded in numerous sections of the watercourses. The geomorphology of the wetlands has been impacted by trenches, gullies and many roads and footpaths traversing the watercourses. Lastly, the vegetation composition has also been impacted as a result of the changes discussed above. Some of the impacts recorded are visually represented in the figures below (Limosella, 2020)

The watercourses relevant to the amendment section can be described as forming part of two watercourse systems. The northern watercourse system is associated with the Nuwejaarspruit River and the southern drainage section associated with the Orange River. The northern system is classified as a wetland system while the southern watercourse system is predominantly a riparian and drainage system with small areas with wetland characteristics. The northern section is thus assessed as a wetland system while the southern system is assessed as a riparian system. Figure 7 below shows the watercourses and wetlands along the amended section of the powerline route.

The northern unchannelled valley bottom wetland system scored a PES of C - Moderately modified. A moderate change in ecosystem processes and loss of natural habitats has taken place but the natural habitat remains predominantly intact. The wetland conditions recorded on the study site are likely to remain stable over the next 5 years.

### 4.2.4 Impacts and Mitigation

Limosella (2020) describes that the installation of an overhead powerline is generally considered a low risk operation and the impacts are considered to be low, although all development have potential impacts on the surrounding environment and particularly on a watercourse. A range of management measures are available to address threats posed to water resources. In the context of the proposed powerlines, the mitigation measures proposed below are intended to prevent further degradation to the watercourses resulting from the new powerline construction and operation. It is important to note

that this section aims to highlight areas of concern. The details of the mitigation measures that are finally put in place should ideally be based on these issues but must necessarily take into consideration the physical and economical feasibility of mitigation. It is important that any mitigation be implemented in the context of an Environmental Management Plan to in order to ensure accountability and ultimately the success of the mitigation.

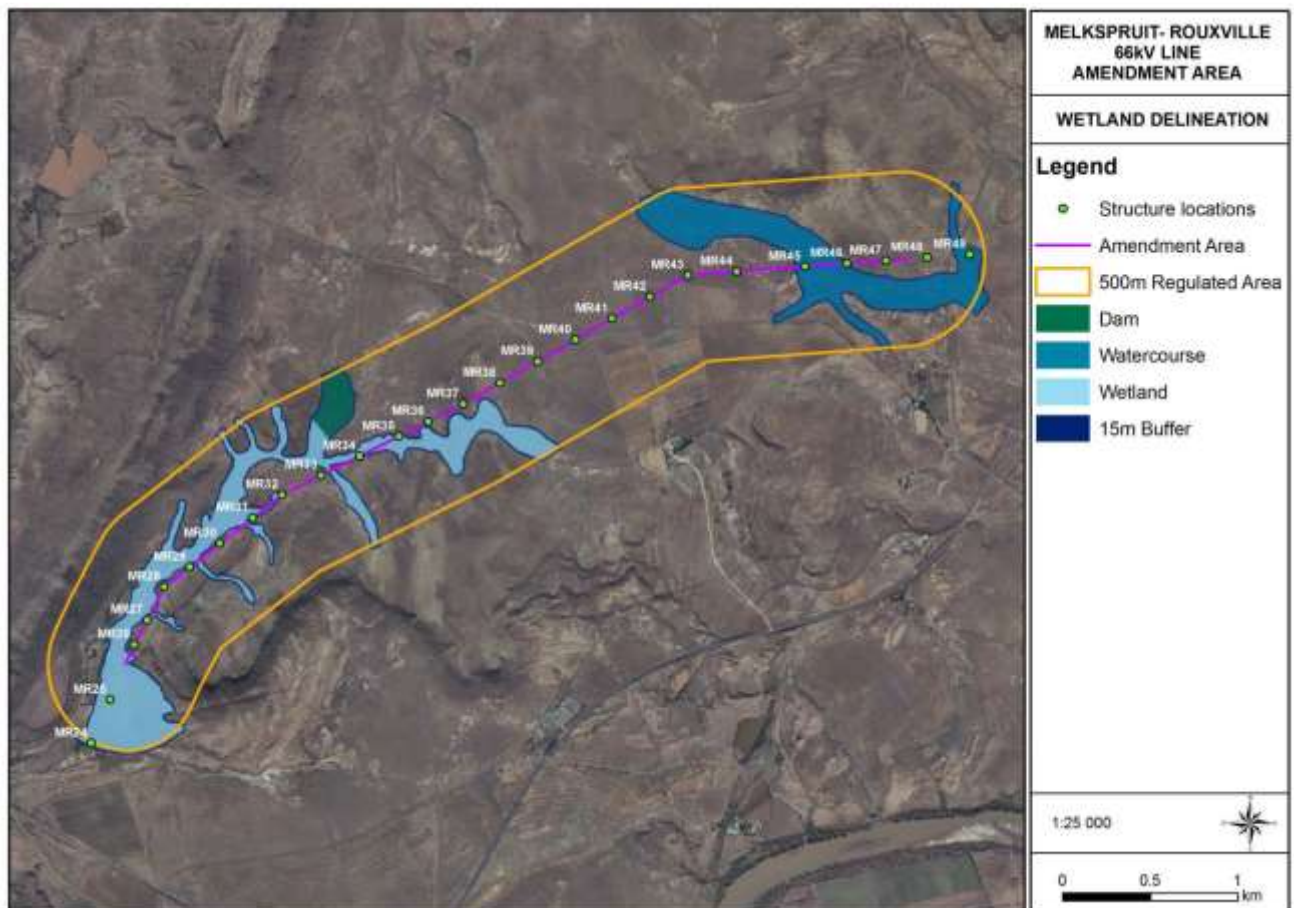


Figure 7: Location and extent of wetland areas. (Limosella 2020).

### 4.3 Avifaunal Assessment

#### 4.3.1 Methodology Employed

The proposed deviation is situated in the south near Melkspruit substation, approximately 5.5km from the start of the approved alignment. It runs for approximately 7.3km and is situated along the existing 66kV line for most of the way. It runs mostly through grassland, with a small section running through a wooded kloof. The habitat is representative of the rest of the alignment, and it is expected to impact on the same suite of species than the rest of the authorised alignment. It therefore does not affect the conclusions and recommendations of the original ecological assessment as far as avifauna is concerned.

Methodology employed by Albert Froneman Consulting (2020) included the following:

- The South African Bird Atlas 2 (ADU 2020) data was extracted for the survey area to get an updated snapshot of the avifauna which are likely to occur (see Appendix 4). From 2007 to June 2020, a total of 434 full protocol SABAP2 data cards and 112 ad hoc protocol cards had been completed for an area comprising 20 pentads, within which the survey area is located. This should provide an accurate snapshot of the avifauna. Full protocol surveys are surveys of 2 hours or longer, while ad hoc surveys are surveys of less than two hours but still yielding useful results.
- The ecological assessment performed by EnviRoss CC (2017) was reviewed to assess if the conclusions and recommendations pertaining to avifauna are still valid.
- The final alignment and proposed deviation were inspected during a walk-through exercise which was performed on 8 June 2020.
- A table with final tower positions and numbers was compiled and the proposed mitigation measures are indicated on a per tower basis (see Appendix 1 of Specialist report).

The Albert Froneman Consulting (AFC) Avifaunal Assessment describes that the proposed deviation is situated in the south near Melkspruit substation, approximately 5.5km from the start of the approved alignment. It runs for approximately 7.3km and is situated along the existing 66kV line for most of the way. It runs mostly through grassland, with a small section running through a wooded kloof. The habitat is representative of the rest of the alignment, and it is expected to impact on the same suite of species than the rest of the authorised alignment. An ecological assessment for the power line project was compiled by EnviRoss CC in September 2017, which included a section on the avifauna. The Avifauna Specialist amendment report (AFC, 2020) should be read in conjunction with the 2017 ecological assessment and does not affect (dispute) the conclusions and recommendations of the original ecological assessment as far as avifauna is concerned.

#### **4.3.2 Impacts and Mitigation**

AFC (2020) states that the 2017 ecological assessment found that the most significant impact on avifauna will be fatalities due to collision with overhead lines. It states further that avifaunal migratory routes and zones have been identified along the alignment, and that the fitment of bird flappers must be undertaken within these areas to mitigate against fatalities due to collisions with the overhead line. It also mentions that some taller trees within the riparian zones of the Orange River will have to be removed to accommodate the construction and maintenance of the overhead line, which could impact avifaunal communities that depend on it. It suggests that the significance of this impact can be reduced through the reduction of the overall impacting footprint area that is required for service provision (storage yards, service roads, construction camps, etc that fall outside of the final footprint area). It further states that the actual overhead powerline and associated towers are thought to not

have a significant long term impact as most of the habitat impacted during the construction phase will be either reinstated as part of a rehabilitation plan, or the vegetation will naturally re-establish.

The impact on avifauna, particularly due to collisions with the earthwire of the proposed 132kV line, was rated as High, but mitigation measures could reduce it to Moderate. Mitigation measures include:

- The sections of line and towers that need to be mitigated are indicated in Appendix 1 of Albert Froneman Consulting Report
- The ESKOM Distribution Bird Collision Prevention Technical Bulletin is attached as Appendix 2.

#### **4.4 Palaeontological Assessment**

##### **4.4.1 Methodology Employed**

The aim of the Banzai Environmental Palaeontological Assessment (2020) was to evaluate the risk to palaeontological heritage in the proposed development. This include all trace fossils and fossils. All available information is consulted to compile a desktop study and includes: Palaeontological Impact Assessment reports in the same area; aerial photos and Google Earth images, topographical as well as geological maps. In compiling the Assessment report, the following sources were consulted:

- Geological map 1:100 000, Geology of the Republic of South Africa (Visser 1984);
- 1: 250 000 3026 Aliwal North Geological map (Council of Geoscience); and
- A Google Earth map with polygons of the proposed development was obtained from GA Environmental.

A one-day site specific field survey of the development footprint was conducted on foot and by motor vehicle on 6 September 2020.

##### **4.4.2 Impacts and Mitigation**

No fossiliferous outcrop was identified in the planned development footprint during the site visit on 6 September 2020. A loose re-buried fragment was identified near the beginning of the development footprint. Well-preserved fossils may thus be found during excavations and care must be taken to preserve them as per the Specialist protocol for finds.



*Figure 8: Rocky outcrop in study area. (Banzai Environmental 2020).*

The development footprint is underlain by the Tarkastad Subgroup (Beaufort Group, Karoo Supergroup) as well as Quaternary superficial deposits. According to the PalaeoMap of South African Heritage Resources Information System the Palaeontological Sensitivity of the Tarkastad Subgroup is Very High and that of the Quaternary deposits Low (Almond and Pether 2008, SAHRIS website). The expected duration of the impact is assessed as potentially permanent to long term. In the absence of mitigation procedures (should fossil material be present within the affected area) the damage or

destruction of any palaeontological materials will be permanent. Impacts on palaeontological heritage during the construction phase could potentially occur but are regarded as having a medium probability. The significance of the impact occurring will be medium.

If fossil remains are discovered during any phase of construction, either on the surface or exposed by excavations the Chance Find Protocol must be implemented by the ECO in charge of these developments. These discoveries ought to be protected (if possible, in situ) and the EC must report to SAHRA (Contact details: SAHRA, 111 Harrington Street, Cape Town. PO Box 4637, Cape Town 8000, South Africa. Tel: 021 462 4502. Fax: +27 (0)21 462 4509. Web: [www.sahra.org.za](http://www.sahra.org.za)) so that correct mitigation (recording and collection) can be carry out by a palaeontologist.

## 4.5 Phase 1 Heritage Impact Assessment

### 4.5.1 Methodology Employed

The methodology used by PGS Heritage followed guidelines as stipulated in the NHRA (no 25 of 1999), the NEMA (no 107 of 1998). The HIA process consisted of three steps:

- **Step I** – Literature Review and sensitivity analysis : The background information to the field survey relies greatly on previous studies completed for the project to determine known sensitivities, as well as the heritage background research completed for this report.
- **Step II** – Physical Survey: A physical survey was conducted by vehicle through the proposed project area by a qualified heritage specialist. The survey was conducted between 24 September 2020, aimed at locating and documenting sites falling within and adjacent to the proposed development footprint.
- **Step III** – The final step involved the recording and documentation of relevant archaeological resources, the assessment of resources in terms of the HIA criteria and report writing, as well as mapping and constructive recommendations.

The findings of the historical desktop study, included the compilation of a Heritage Screening Report using the Department of Environmental Affairs National Web-based Environmental Screening Tool as required by Regulation 16(1)(v) of the Environmental Impact Assessment Regulations 2014, as amended. According to the Heritage screening report, the directly affected area has a Medium heritage sensitivity (See Figure 9). This screening enabled the identification of possible heritage sensitive areas that included:

- Dwellings;
- Clusters of dwellings (homesteads, huts and farmsteads);
- Archaeological Sensitive areas; and
- Structures/Buildings.

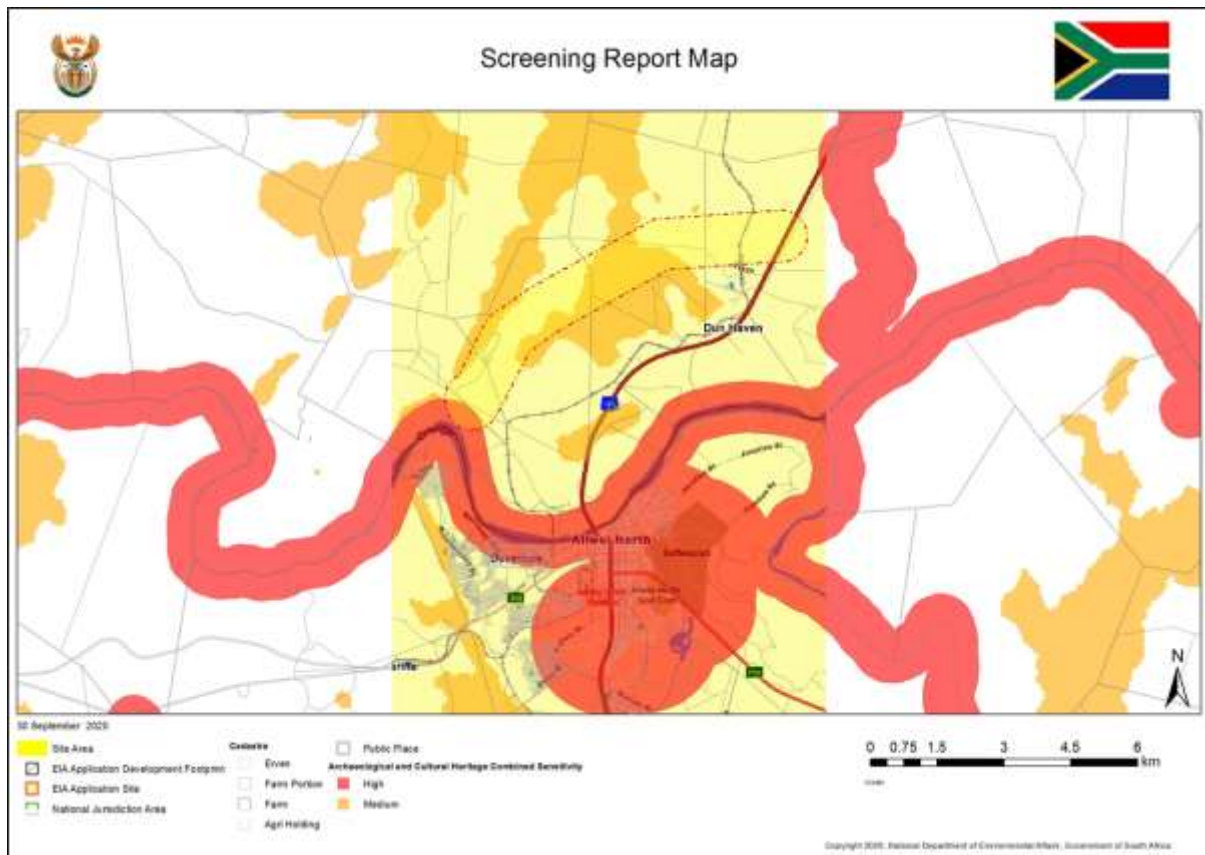


Figure 9: Heritage Screening map. Source: Department of Environmental Affairs

By superimposition and analysis, it was possible to rate these structure/areas according to age and thus their level of protection under the NHRA. Note that these structures refer to possible tangible heritage sites (PGS Heritage, 2020).

Additionally, evaluation by PGS Heritage of satellite imagery has indicated the following areas that may be sensitive from a heritage perspective. The analysis of the studies conducted in the area assisted in the development of the following landform type to heritage find matrix in **Table 7**.

Table 7: Landform type

LANDFORM TYPE	HERITAGE TYPE
Crest and foot hill	LSA and MSA scatters, LIA settlements
Crest of small hills	Small LSA sites – scatters of stone artefacts, ostrich eggshell, pottery and beads
Watering holes/pans/ponds	ESA, MSA and LSA sites, LIA settlements
Farmsteads	Historical archaeological material
Ridges and drainage lines	LSA sites, LIA settlements



Forested areas	LIA sites
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#### 4.5.2 Fieldwork

A controlled surface survey was conducted by PGS Heritage on foot and by a vehicle. The fieldwork (See Figure 10 and Table 8) was conducted 24 September 2020 and the following was noted:

- **Waypoint 505** marks the location of an historical feature. The feature is a rectangular packed stone wall with a crush-like structure built onto the north-western section, leading into what seems to be a small holding pen/camp for livestock. Metal car remains are also present next to the feature.

The proposed line then turns south-west and from this point follows an existing powerline into a valley (central section of the alignment) that runs all the way to the Orange River. This valley has a small stream running at the bottom. This natural drainage line has cause erosion all along the sides of the valley, exposing high amounts of stone-age artefacts. These artefacts are mostly situated within or close to erosion gullies and/or natural erosion of the stream banks. A moderate scatter of Stone-age materials are present along the entire extent of the valley.

- Waypoints 514, 515 and 517 marks a Historical homestead that is situated on the end where the valley opens up again into a large open field that is being used to grow crops and graze livestock. The homestead consists of multiple packed stone features/buildings (515) with some red brick elements present, as well as a large rectangular packed stone enclosure or kraal (514). The small homestead is built on the shoulder inline of the small hill which forms part of the valley through which the proposed line runs. Another small structure (517) is situated further up the hill. This structure is also a small packed stone feature, however this site is extremely overgrown, making it difficult to assess the extent of the feature. Waypoint 516 marks another area where the general scatter of stone-age material is situated close to the stream running towards the Orange River.

The western section of the proposed line runs mostly along the natural drainage line). This area again has high amounts of erosion taking place on the banks of the small stream. Waypoint 522 marks an area with a very high concentration of artefacts washing out of the sides of the erosion gullies.



Figure 10: Locality of the heritage resource

Table 8: Area identified during the heritage survey

Waypoint	Description	Heritage Significance	Heritage Rating
505	Rectangular packed stone feature with a crush-line extension leading into a small camp/holding pen.	Low	IIIC
506	Scatter of MSA stone-tools situated within an erosion gully. 1 x MSA Point 3 x MSA Blades 3 x Flakes	Low	NCW
507	Scatter of MSA and LSA stone tools situated on a stony outcrop. 20 x MSA Flakes 1 x LSA Core CCS 7 x LSA Flakes	Moderate	IIIB
508	Scatter of MSA and LSA stone tools situated near a small man made dam. 4 x MSA flakes 1 x Flake CCS	Low	NCW
509	Small house foundation built with red bricks and a cement floor. A Zinc shed-like feature is located next to the small foundation. The Zinc feature could possibly have stood on top of the small foundation.	Moderate	IIIB

510-513	General scatter of stone-tools across the extent of the valley. 511 shows a large concentration of MSA and LSA stone tools. 6 x MSA Flakes 1 Large CCS Core 1 LSA core CCS 11 x LSA Flakes	Moderate	IIIB
514-515	Small historical homestead. 2 small packed stone features. Possibly the remnants of small structures. 1 Rectangular packed stone enclosure. Possibly a small kraal. 1 small midden with broken glass, porcelain and metal artefacts.	Moderate	IIIB
516	Small scatter of stone tools situated close to the banks of the small stream.	Low	NCW
517	Small packed stone feature situated on the side of the hill. Probably related to the features at 514.	Low	IIIC
518-521	Continuation of the general stone tool scatter along the extent of the valley.	Low	IIIC
522	Scatter of stone tools situated within the banks of the stream that are being eroded into gullies. Further activity of burrowing animals also bring these artefacts to the surface. 17 x MSA Flakes 2 x Cores , 11 x MSA flakes ( 1 = CCS)	Moderate	IIIB

### 4.5.3 Impacts

PGS Heritage determined large sections of the alignment are characterised by a background scatter of Middle and Later Stone Age material. Two major concentrations of lithics at waypoints 507 and 511 has a moderate heritage significance with a heritage grading of IIIB.

The structures at 509, 514, 515 and 517 are the remains of historic structures and can most probably be associated with farmworker homesteads. These homesteads are generally known for the presence of stillborn burials as associated with indigenous burial practices. Due this fact these structures are given a moderate heritage significance and an IIIB heritage rating.

#### *a) Possible Burial Grounds and graves*

Due to the possibility of still born burials at the historical structures the impact significance before mitigation on the graves will be VERY HIGH negative before mitigation. Only isolated sites will be affected by the proposed development. The possibility of the impact could occur. The expected

duration of the impact is assessed as potentially permanent. Implementation of the recommended mitigation measures will modify this impact rating to an acceptable LOW negative.

*b) Archaeological sites*

The impact significance before mitigation on the identified archaeological sites will be MODERATE negative before mitigation. As the occurrence of the archaeological materials is over a large area the study area will be affected by the proposed development. The possibility of the impact occurring is very likely. The expected duration of the impact is assessed as potentially permanent. Implementation of the recommended mitigation measures will modify this impact rating to an acceptable LOW negative.

#### **4.5.4 Mitigation**

PGS Heritage requires that the following mitigations measures are included in the EMPr:

*a) General project area*

Implement a chance to find procedures in case where possible heritage finds are uncovered.

*b) Possible graves*

The sites at 505, 509, 514, 515 and 517 should be demarcated with a 30-meter buffer and the site should be avoided if any construction is to happen close to it.

*c) Identified archaeological sites*

In the event that any of the identified archaeological sites at 507 and 511 are to be impacted, a Phase 2 archaeological mitigation process must be implemented. This will include, surface collections, test excavations and analysis of recovered material. A permit issued under s35 of the NHRA will be required to conduct such work. It is further recommended that construction activities between point 507 and 516 is monitored by an archaeologist. PGS Heritage proposes the following management recommendations and guidelines:

*d) Construction phase*

The project will encompass a range of activities during the construction phase, including ground clearance, establishment of construction camp areas and small-scale infrastructure development associated with the project.

It is possible that cultural material will be exposed during construction and may be recoverable, keeping in mind delays can be costly during construction and as such must be minimised. Development surrounding infrastructure and construction of facilities results in significant disturbance, however

foundation holes do offer a window into the past and it thus may be possible to rescue some of the data and materials. It is also possible that substantial alterations will be implemented during this phase of the project and these must be catered for. Temporary infrastructure developments, such as construction camps and laydown areas, are often changed or added to the project as required. In general, these are low impact developments as they are superficial, resulting in little alteration of the land surface, but still need to be catered for. During the construction phase, it is important to recognize any significant material being unearthed, making the correct judgment on which actions should be taken. It is recommended that the following chance find procedure should be implemented.

**e) *Chance find procedure***

- A heritage practitioner / archaeologist should be appointed to develop a heritage induction program and conduct training for the ECO as well as team leaders in the identification of heritage resources and artefacts during implementation of the EMPr.
- An appropriately qualified heritage practitioner / archaeologist must be identified to be called upon in the event that any possible heritage resources or artefacts are identified.
- Should an archaeological site or cultural material be discovered during construction (or operation), the area should be demarcated, and construction activities halted.
- The qualified heritage practitioner / archaeologist will then need to come out to the site and evaluate the extent and importance of the heritage resources and make the necessary recommendations for mitigating the find and the impact on the heritage resource.
- The contractor therefore should have some sort of contingency plan so that operations could move elsewhere temporarily while the materials and data are recovered.
- Construction can commence as soon as the site has been cleared and signed off by the heritage practitioner / archaeologist.

**f) *Possible finds during construction***

The study area occurs within a greater historical and archaeological site as identified during the desktop and fieldwork phase. Soil clearance for infrastructure as well as the proposed reclamation activities, could uncover the following:

- High density concentrations of stone artefact; and
- unmarked graves

**g) *Timeframes***

It must be kept in mind that mitigation and monitoring of heritage resources discovered during construction activity will require permitting for collection or excavation of heritage resources and lead times must be worked into the construction time frames.

**Table 9** gives guidelines for lead times on permitting.

*Table 9: Proposed lead times for permitting and mobilization.*

<b>Action</b>	<b>Responsibility</b>	<b>Timeframe</b>
Preparation for field monitoring and finalisation of contracts	The contractor and service provider	1 month
Application for permits to do necessary mitigation work	Service provider – Archaeologist and SAHRA	3 months
Documentation, excavation and archaeological report on the relevant site	Service provider – Archaeologist	3 months
Handling of chance finds – Graves/Human Remains	Service provider – Archaeologist and SAHRA	2 weeks
Relocation of burial grounds or graves in the way of construction	Service provider – Archaeologist, SAHRA, local government and provincial government	6 months

It is the author's considered opinion that overall impact on heritage resources is Low. Provided that the recommended mitigation measures are implemented, the impact would be acceptably Low or could be totally mitigated to the degree that the project could be approved from a heritage perspective. The management and mitigation measures as described in Section 6 of this report have been developed to minimise the project impact on heritage resources.

## 5. PROPOSED AMENDMENT OF THE EA

Based on the final engineering designs and findings of the Specialist Assessments, Eskom is proposing the amendment of Conditions of the Environmental Authorisation that was issued on the 13th June 2018 as follows:

Item	Change from	Change to
Location activity:	<p>of</p> <p>Walter Sisulu Local Municipality, Joe Gqabi District Municipality Free State Province:</p> <p>Poortjie 38; Klein Poortjie 1082; Orangia A 1043; Waaipolaats No. 61; Annex Uitspanning 1044; Orangia 810; Nuwejaarspruit 1089; The Willow 636; Witpoort No. 39; Noordwegen No. 463; Beestekraal No. 64; Beestekraal No. 64; Esperance No. 1018; Steynsbergvlei No. 863; La Esperance 1024; Botha's Kop No. 528; Kippersol No. 882; Stoltzkraal No. 66; Avignon No. 961; Driekop No. 94; Gedachtenis No. 561; Dorpsgronden Van Rouxville No. 108.</p> <p>Mohokare Local Municipality, Xhariep District Municipality, Eastern Cape Province</p> <p>Melkspruit 12</p>	<p>Walter Sisulu Local Municipality, Joe Gqabi District Municipality Free State Province:</p> <p>Poortjie 38; Klein Poortjie 1082; Orangia A 1043; Waaipolaats No. 61; Annex Uitspanning 1044; Orangia 810; Nuwejaarspruit 1089; The Willow 636; Witpoort No. 39; Noordwegen No. 463; Beestekraal No. 64; Beestekraal No. 64; Esperance No. 1018; Steynsbergvlei No. 863; La Esperance 1024; Botha's Kop No. 528; Kippersol No. 882; Stoltzkraal No. 66; Avignon No. 961; Driekop No. 94; Gedachtenis No. 561; Dorpsgronden Van Rouxville No. 108</p> <p><b>Add</b></p> <p><b>Wanga Nella No. 994</b></p> <p>Mohokare Local Municipality, Xhariep District Municipality, Eastern Cape Province</p> <p>Melkspruit 12</p>

<b>Site (preferred)</b>		

<b>Component</b>	<b>Description/ Dimensions</b>	<b>Description/ Dimensions</b>
Location of the Site	Located between Melkspruit Substation in Aliwal North and Rouxville Substation. The Melkspruit Substation is located 3.5km south west of Aliwal North and the Rouxville Substation is located 1.4km south east of Rouxville	No changes required
<b>Length</b>	<b>37 km</b>	<b>38 km</b>
Farm and SG Codes	<p><b>Farm and SG Codes Eastern Cape Province</b> Melkspruit 12-0005000000000120000</p> <p><b>Farm and SG Codes Free State Province</b> Poortjie38-F029000000000380000 (Parent Farm) Poortje 38-F029000000000380001 (Subdivision) Klein Poortjie 1082-F0290000000010820000 Orangia A 1043-F0290000000010430001 (Subdivision) Orangia A 1043-F0290000000010430002 (Subdivision) Orangia A 1043-F0290000000010430003 (Subdivision) Waaipplaats No. 61-F0290000000006100000 Annex Uitspanning 1044-F02900000000104400000 (Subdivision of Orangia 810) Orangia 810-F029000000008100000 (Parent Farm) Orangia 810- F0290000000081000001 (Subdivision) Orangia 810- F0290000000081000003 (Subdivision) Nuwejaarspruit 1089-F02900000000108900000 The Willow 636- F02900000000063600000 Witpoort No. 39- F02900000000039000001 Noordwegen No. 463-F02900000000046300000 Beestekraal No. 64-F0290000000006400000 (Parent Farm) Beestekraal No. 64-F02900000000064000001 (Subdivision) Esperance No. 1018-F02900000000101800000</p>	<p><b>Farm and SG Codes Eastern Cape Province</b> Melkspruit 12-0005000000000120000</p> <p><b>Farm and SG Codes Free State Province</b> Poortjie38-F029000000000380000 (Parent Farm) Poortje 38-F029000000000380001 (Subdivision) Klein Poortjie 1082-F0290000000010820000 Orangia A 1043-F0290000000010430001 (Subdivision) Orangia A 1043-F0290000000010430002 (Subdivision) Orangia A 1043-F0290000000010430003 (Subdivision) Waaipplaats No. 61-F0290000000006100000 Annex Uitspanning 1044-F02900000000104400000 (Subdivision of Orangia 810) Orangia 810-F029000000008100000 (Parent Farm) Orangia 810- F0290000000081000001 (Subdivision) Orangia 810- F0290000000081000003 (Subdivision) Nuwejaarspruit 1089-F02900000000108900000 The Willow 636- F02900000000063600000 Witpoort No. 39- F02900000000039000001 Noordwegen No. 463-F02900000000046300000 Beestekraal No. 64-F0290000000006400000 (Parent Farm) Beestekraal No. 64-F02900000000064000001 (Subdivision) Esperance No. 1018-F02900000000101800000</p>



	Steynsbergvlei No. 863- F02900000000086300000 La Esperance 1024- F02900000000102400000 Botha's Kop No. 528- F02900000000052800000 Kippersol No. 882- F02900000000088200000 Stoltzkraal No. 66- F02900000000066000000 Avignon No. 961- F029000000000961000 Driekop No. 94- F02900000000094000 Gedachtenis No. 561- F029000000000561000 Dorpsgronden Van Rouxville No. 108- F029000000000108000	Steynsbergvlei No. 863- F02900000000086300000 La Esperance 1024- F02900000000102400000 Botha's Kop No. 528- F02900000000052800000 Kippersol No. 882- F02900000000088200000 Stoltzkraal No. 66- F02900000000066000000 Avignon No. 961- F029000000000961000 Driekop No. 94- 02900000000094000 Gedachtenis No. 561- F029000000000561000 Dorpsgronden Van Rouxville No. 108- F029000000000108000  <b>Add</b>  <b>Poortje 38-F029000000000380002</b> <b>(Subdivision)</b> <b>Waaiplaats No. 61-</b> <b>F0290000000006100001</b> <b>Wanga Nella No. 994-</b> <b>F02900000000099400000</b> <b>Wanga Nella No. 994-</b> <b>F02900000000099400001</b>
Preferred Site Access	Existing access routes from the R58 Road for the Melkspruit Substation and Louw Street for the Rouxville Substation will be used for access to the site.	No Changes Required
Export Capacity	132kV	No Changes Required
Proposed Technology	Steel monopoles	No Changes Required
Height of Poles	Between 18m up to 23m	No Changes Required
Width and length of required Servitude	31m and 37 km	<b>31m and 38 km</b>

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## 6. IMPACT ASSESSMENT

In terms of Regulation 32 (1) (a) (i), this section of the report provides an assessment of all impacts related to the proposed change. A Screening Report was generated using the Department's screening tool to identify required Specialist assessments. The EAP conducted an initial site verification to determine current use of the land, sensitivity and need for Specialists studies. Based on the nature of the proposed amendment, the following Specialist studies were commissioned:

- Floral Assessment (Field and Form);
- Wetland/Riparian Delineation and Functional Assessment (Limosella);
- Avifauna Assessment (Albert Froneman Consulting);
- Palaeontological Assessment (Banzai Environmental); and
- Phase1 Heritage Impact Assessment (PGS Heritage)

The specialist reports, including the specialist declaration are attached as **Appendix F** of this report. The main objective of this section is to provide independent and scientifically sound information on the impacts identified during the Amendment process. Based on the requirements of the impact assessment, impacts identified, and issues and concerns raised are assessed with regards to their significance. The impact assessment is aimed at determining the impacts associated with the proposed amendment and the prescription of mitigation measures. The significance of the potential impacts is described in terms of their nature, extent, duration, intensity and probability. In this report, impacts with a low significance are considered to have no influence on the decision to proceed with the proposed development. Impacts with a moderate significance will influence the decision, unless they can be effectively mitigated to a low significance, whereas impacts with a high significance - despite mitigation - would influence the decision to proceed with the proposed development.

### 6.1 Impact Assessment Methodology

In accordance with Government Notice R. 982, promulgated in terms of Section 24 of the National Environmental Management Act, 1998 (Act 107 of 1998), the EAP is required to assess the significance of potential impacts in terms of the following criteria:



Activities within the framework of the proposed development and their respective construction/decommission and rehabilitation phases, give rise to certain impacts. For the purpose of assessing these impacts, the project has been divided into three phases from which impacting activities can be identified, namely:

**Construction phase:**

This phase refers to all the construction related activities during the construction of the overhead power line, until the contractor leaves the site. This includes all activities associated with the proposed development, including any removal of infrastructure and rehabilitation that may need to occur.

**Operational phase:**

This includes all activities undertaken to ensure that the environmental integrity of the site is maintained and preserved after Rehabilitation has taken place and during the operation of the development (transmission of electricity).

The assessment of the impacts will be conducted according to a synthesis of criteria required by the integrated environmental management procedure. The methodology that will be used comprises of the following four steps:

- Step 1: Identification of positive and negative impacts of the project;
- Step 2: Identification of the significance rating of the impact before mitigation;
- Step 3: Identification of the mitigation measure and the mitigation efficiency; and
- Step 4: Identification of the significance rating of the impact after mitigation;

Activities that will be undertaken to give effect to the proposed development gives rise to certain impacts. For the purpose of assessing these impacts, the project has been divided into the following phases discussed in Table 10.

Table 10: Project phases in a development

PHASES OF A PROJECT IN WHICH IMPACTS WILL OCCUR
<b>Status Quo</b>
The study area as it currently exists.
<b>Preconstruction</b>
All activities undertaken before construction phase including specialist studies and assessments
<b>Construction phase</b>
All activities on site up to the start of construction, not including the transport of materials, but including the initial site preparations. This also includes the impacts that would be associated with planning.
<b>Rehabilitation phase</b>
All activities undertaken to ensure the site is restored to its original state as humanely possible.
<b>Operations phase</b>
All activities after construction, including the operation and maintenance of the proposed development.
The activities arising from each of the relevant phases have been included in the impact's assessment tables. The assessment endeavours to identify activities that would require environmental management actions to mitigate the impacts arising from them. The criteria against which the activities were assessed are given in the next section.

## 6.2 Assessment Criteria

The assessment of the impacts has been conducted according to a synthesis of criteria required by the guideline documents to the EIA regulations (2006) and integrated environmental management series published by the Department of Environmental Affairs and Tourism (DEAT) currently Department of Environment, Forestry and Fisheries (DEFF). In addition to this, it is a requirement of the National Environmental Management Act (NEMA) 2014 Regulations as amended, Appendices 1 and 2 that an Impact and Risk Assessment process be undertaken for the Basic Assessments and Environmental Impact Reporting. The Assessment Criteria is based on the following:

- Nature of impact;
- Extent;
- Duration;
- Intensity;
- Probability;
- Determination of significance; and
- Reversibility of impact.

Each of these are explained in Table 11.

Table 11: Assessment Criteria

ASSESSMENT CRITERIA	
<b>i). Nature of Impact</b>	
	This is an appraisal of the type of effect the proposed activity would have on the affected environmental component. The description should include what is being affected, and how.
<b>b) Extent</b>	
	The physical and spatial size of the impact. This is classified as: <ul style="list-style-type: none"> <li><b>i) Site</b> The impact could affect the whole, or a measurable portion of the site.</li> <li><b>ii) Local</b> The impacted area extends only as far as the activity, e.g. a footprint of the specific activity</li> <li><b>iii) Regional</b> The impact could affect areas such as neighbouring farms, transport corridors and the adjoining towns.</li> </ul>
<b>c) Duration</b>	
	The lifetime of the impact; this is measured in the context of the lifetime of the proposed project. <ul style="list-style-type: none"> <li><b>i) Short term</b> The impact will either disappear with mitigation or will be mitigated through natural process in a span shorter than any of the phases.</li> <li><b>ii) Medium term</b> The impact will last up to the end of the phases, thereafter it will be entirely negated.</li> <li><b>iii) Long term</b> The impact will continue or last for the entire operational life of the development but will be mitigated by direct human action or by natural processes thereafter.</li> <li><b>iv) Permanent</b> The only class of impact which will be non-transitory. Mitigation either by man or natural processes will not occur in such a way or in such a time span that the impact can be considered transient.</li> </ul>
<b>d) Intensity</b>	
	Is the impact destructive or benign? Does it destroy the impacted environment, alter its functioning, or slightly alter it? These are rated as: <ul style="list-style-type: none"> <li><b>i) Low</b> The impact alters the affected environment in such a way that the natural processes or functions are not affected.</li> <li><b>ii) Medium (Moderate)</b> The affected environment is altered, but function and process continue, albeit in a modified way.</li> <li><b>iii) High</b></li> </ul>

Function or process of the affected environment is disturbed to the extent where it temporarily or permanently ceases. This will be a relative evaluation within the context of all the activities and the other impacts within the framework of the project.
<b>e) Probability</b>
This describes the likelihood of the impacts actually occurring. The impact may occur for any length of time during the life cycle of the activity, and not at any given time. The classes are rated as follows:  <b>i) Improbable</b> The possibility of the impact occurring is very low, due either to the circumstances, design or experience.  <b>ii) Probable</b> There is a possibility that the impact will occur to the extent that provisions must be made.  <b>iii) Highly probable</b> It is most likely that the impacts will occur at some or other stage of the development. Plans must be drawn up before the undertaking of the activity.  <b>iv) Definite</b> The impact will take place regardless of any prevention plans, and mitigation actions or contingency plans are relied on to contain the effect.
<b>f) Reversibility of impact</b>
Natural or human aided intervention:  <b>(i) Irreversible</b> The impact will be permanent.  <b>(ii) Short term</b> The impact is reversible within two years after construction.  <b>(iii) Long term</b> The impact is reversible within 2 to 10 years after construction.
<b>g) The degree to which the impact can cause irreplaceable loss of resources</b>
<b>(i) Low</b> The impact results in the loss of resources but the natural, cultural and social processes/functions are not affected.  <b>(ii) Medium</b> The loss of resources occurs but natural cultural and social processes continue, albeit in a modified manner.  <b>(iii) High</b> The impact results in irreplaceable loss of resource.
<b>h) Significance of impact with or without mitigation</b>
Significance is determined through a synthesis of impact characteristics. Significance is an indication of the importance of the impact in terms of both physical extent and time scale, and therefore indicates the level of mitigation required. The classes are rated as follows:

**i) No significance**

The impact is not substantial and does not require any mitigation.

**ii) Low**

The impact is of little importance but may require limited mitigation.

**iii) Medium (Moderate)**

The impact is of importance and therefore considered to have a negative impact. Mitigation is required to reduce the negative impacts to acceptable levels.

**iv) High**

The impact is of great importance. Failure to mitigate, with the objective of reducing the impact to acceptable levels, could render the entire development option or entire project proposal unacceptable.

In order to maintain consistency, all potential impacts that have been identified during the Amendment process will be listed in impact assessment tables. The assessment criteria used in the tables will be applied to all of the impacts and a brief descriptive review of the impacts and their significance provided in the text of the report. The overall significance of impacts will be determined by considering consequence and probability.

### 6.3 Description and Assessment of Environmental Impacts

The key objective of this section is to provide independent and scientifically sound information on the impacts identified during the amendment process. It further provides a detailed assessment of the impacts (including cumulative impacts) associated with the proposed development and the manner in which they can be managed by prescription appropriate mitigation measures.

**For the purposes of this assessment, this impact assessment will only focus on the impacts that are likely to occur as part of the proposed amendment during the construction and operational phases of the proposed 132kV overhead power line.**

#### 6.3.1 IMPACT 1: Loss of Floral Habitat

##### a) Description of the impacts

Field and Form (2020) discusses that direct loss of floral species habitat may take place during the construction and operational phases of the project as a result of the project activities outlined below.

##### Construction Phase

- Clearing of vegetation, topsoil stripping and preparing surface areas for construction.

- Encroachment of construction activities beyond the extent of the proposed project development footprint, leading to loss of habitat within areas of increased ecological sensitivity.
- Compaction of soils due to movement of construction vehicles and construction personnel.
- Disturbance to soils leading to further erosion and formation of gulleys near watercourses.
- Dumping of litter and construction or waste material outside of designated areas.
- Alien invasive species proliferation leading to loss of floral habitat in the surrounding areas.
- Uncontrolled fires during construction.
- Dust generation during construction.

### **Operational Phase**

- Ongoing disturbances and compaction of soils due to general operational and maintenance activities.
- Ongoing disturbances and altered runoff patterns leading to further erosion and downstream sedimentation of watercourses.
- Ongoing proliferation of alien and invasive floral species that may outcompete indigenous floral species.
- Disturbance within the study area and surrounds due to increased human activity and operational vehicles.
- Altered community composition of areas immediately adjacent to the project are due to altered ecosystem processes.
- Failure to implement an invasive species management programme.
- Ineffective rehabilitation of exposed and impacted areas.

**Summary of permanent, direct loss of floral habitat impacts:** Duration will be long term (2 to >15yrs), and the probability of impact is considered High. Significance is deemed to be **Medium negative**, before mitigation, and **Low negative** after mitigation, and this impact is driven mostly by the potential disturbance of High sensitivity vegetation.

### **b) Impact Ratings**

**Table 12** presents an assessment of Impacts associated with botanical impacts due to construction and operational activities

*Table 12: Assessment and Ratings Associated with Impact 1*

Project phase	Nature of impact	Extent	Duration	Intensity	Probability	Reversibility	Irreplaceable loss of resources	Significance without mitigation	Significance with Mitigation
Construction	Negative	Regional	Long term	Medium	High	Medium term	Medium	Medium	Low
Operational	Negative	Regional	Medium term	Medium	High	Medium term	Medium	Medium	Low

**Cumulative Impacts:** All expected impacts to be limited to existing Eskom servitude and thus low-medium cumulative impacts



### c) Mitigation Measures

- The positioning of project infrastructure in relation to areas of increased ecological sensitivity should be considered during the pre-construction and planning phases of the project.
- The positioning of infrastructure and pylons within areas indicated to be of increased ecological sensitivity, such as the Besemkaree Dolerite Koppies and surrounding rocky habitat, and watercourse vegetation units must be avoided where possible. Access to these areas by construction and operational vehicles and personnel must be restricted.
- Placement of pylons and infrastructure within close proximity to erosion gulleys, a significant impacting feature in the area, should be avoided.
- Storm water must be diverted away from the construction works to prevent further erosion and siltation of watercourses.
- The development and disturbance footprint areas for pylon infrastructure must be kept as small and compact as possible, and the loss of indigenous vegetation must be limited as much as possible. No areas should be cleared of natural vegetation if not required for construction and operational purposes.
- The exposure of bare soils must be minimised through limiting areas of vegetation and topsoil removal to only what is required for construction.
- Pylons should be positioned as far apart as possible and as few as possible pylons implemented to limit clearance footprints.
- Vehicle access beyond the designated project footprint areas should be prohibited and disturbance of natural areas adjacent to the study area should be avoided.
- Maintenance roads and servitudes should follow existing roads and tracks and utilise existing access points as far as possible to prevent clearing of additional areas.
- The maintenance corridor/ power line servitude must not involve complete clearance or removal of vegetation, but rather be limited to cutting and trimming of vegetation only where necessary.
- Edge effects from construction and operational activities, such as further erosion and alien floral species proliferation and the spread of these within disturbed areas, should be managed throughout all the development phases through the implementation of erosion control measures where required and the implementation of an alien and invasive species management programme. The implementation of erosion management measures, such as berms, geotextiles and gabions must be implemented as required.
- Construction camps, contractors' laydown areas and other temporary infrastructure are to be placed within areas that have already been modified. **(Please note that it might not be possible to locate a modified area in close proximity to the works areas. Eskom has committed to ensure minimal impact to the environment and commit to re-habilitate sites where required.)**
- No littering or dumping of waste and construction material within natural areas beyond the project footprint areas may be allowed.
- Appropriate sanitation facilities must be provided for the duration of the proposed construction activities and any waste removed to an appropriate facility.
- No indiscriminate fires should be allowed within the construction areas.
- Dust suppression measures must be implemented.

- Any disturbed and compacted areas outside of the project footprint areas must be ripped, reprofiled and revegetated with indigenous plant species naturally growing within the area (refer to Section 5.3 and Appendices A & C of Specialist Study). Prior to revegetation, it must be ensured that sites are appropriately sloped and reinstated in such a manner to simulate the pre-construction landscape and to avoid contributing to erosion and gully formation.

### 6.3.2 IMPACT 2: Loss of Floral Species Diversity

#### a) Description of the impacts

Loss of floral species diversity may take place during the construction and operational phases of the project as a result of the project activities outlined below.

##### Construction Phase

- Clearing of vegetation, topsoil stripping and preparing surface areas for construction.
- Construction of infrastructure and potential access and maintenance roads through natural areas.
- Encroachment of construction activities, and movement of construction vehicles beyond the extent of the proposed project development footprint, leading to loss of species diversity within areas of increased ecological sensitivity, such as the Besemkaree Dolerite Koppies, Rocky Karroid Grassland and Watercourse vegetation units.
- Uncontrolled fires due to increased human activity that may impact on floral communities.
- Disturbance to soils leading to further erosion of watercourses.
- Compaction of soils and loss of topsoil reducing efficiency of floral re-establishment in areas the project footprint.
- Dumping of litter and construction or waste material outside of designated areas.
- Alien invasive species proliferation leading to loss of floral habitat in the surrounding areas.
- Dust generation.
- Illegal harvesting of floral species with a limited representation within the study area or region.

##### Operational Phase

- Ongoing disturbances and compaction of soils due to general operational and maintenance activities, leading to loss of habitat with increased floral diversity and species with limited representation in the region.
- Disturbance beyond the project footprint areas, leading to loss of habitat with increased floral diversity and species with limited representation in the region.
- Ongoing proliferation of alien and invasive floral species that may outcompete indigenous floral species and degrade faunal habitat.
- Accidental fires due to increased human activity.
- Dust generation from unpaved roads impacting on floral species diversity.
- Failure to implement an invasive species management programme.

**Summary of permanent, direct botanical impacts:** Duration will be long term (2 to >15yrs), and the probability of impact is considered High. Significance is deemed to be **Medium negative**, before

mitigation, and **Low negative** after mitigation, and this impact is driven mostly by the potential disturbance of High sensitivity vegetation.

## b) Impact Ratings

**Table 13** presents an assessment of impacts associated with Loss of Floral Species Diversity

*Table 13: Assessment and Ratings associated with Impact 2*

Project phase	Nature of impact	Extent	Duration	Intensity	Probability	Reversibility	Irreplaceable loss of resources	Significance without mitigation	Significance with Mitigation
Construction	Negative	Local	Medium to Long term	Medium	High	Medium term	Medium	Medium	Low
Operational	Negative	Local	Short term	Medium	Medium	Medium term	Medium	Medium	Low

**Cumulative Impacts:** Additional impacts from the proposed amendment would have very low negative cumulative impacts.

## c) Mitigation Measures

- Mitigation measures as presented Impact 1 (Loss of Floral Habitat) must be implemented.
- Harvesting or collection of floral species by construction or operational personnel should be strictly prohibited.

### 6.3.3 IMPACT 3: Loss of Floral SCC, Protected Species and Tops-Listed Species

#### a) Description of the impacts

Loss of potential floral SCC and provincially protected floral species recorded within the study area during the field assessment may occur during both the construction and operational phases of the project as a result of the project activities outlined below.

#### Construction Phase

- Clearing of vegetation within areas of increased ecological sensitivity with an increased probability of providing habitat for potential floral SCC.
- Clearing of vegetation within areas known to provide habitat for provincially protected species.
- Illegal harvesting of floral SCC and floral species with a limited representation within the study area and surrounds.
- Loss of floral species providing ecosystem goods and services (including medicinal species) due to disturbance within and beyond the project footprint area.

#### Operational Phase

- Illegal harvesting of floral SCC, protected species and floral species with a limited representation within the study area.
- Movement of operational vehicles through areas of increased ecological sensitivity known to provide habitat for floral SCC and protected species beyond the project footprint area.

**Summary of permanent, direct botanical impacts:** Duration will be Permanent, and the probability of impact is considered High. Significance is deemed to be **High negative**, before mitigation, and **Medium negative** after mitigation, and this impact is driven mostly by the potential loss of species due to human actions.

## b) Impact Ratings

**Table 14** presents an assessment of impacts associated with Loss of Floral Species Diversity

*Table 14: Assessment and Ratings associated with Impact 3*

Project phase	Nature of impact	Extent	Duration	Intensity	Probability	Reversibility	Irreplaceable loss of resources	Significance without mitigation	Significance with Mitigation
Construction	Negative	Local	Permanent	High	Definite	Medium term	High	High	Medium
Operational	Negative	Local	Permanent	High	Low	Medium term	Medium	Medium	Low

**Cumulative Impacts:** Additional impacts from the proposed amendment would have very low negative cumulative impacts.

## c) Mitigation Measures

- All construction and operational personnel must be educated in environmental awareness and be made aware of the importance of floral SCC and protected species.
- The loss of floral SCC and protected species must be actively avoided, and such species and their habitat should ideally be conserved in situ. No floral SCC were recorded within the study area, but should such species be present, they are more likely to be present within rocky area, and as such development within the Besemkaree Dolerite Koppies and rocky karroid grassland areas should be avoided as far as possible.
- Provincially protected floral species are known to occur within the study area with their locations coinciding in some instance with the pylon footprint areas. Where avoidance of such species is not possible, a permit has to be obtained from the Free State Province DESTEA in order to destroy, remove or relocate such species. Where possible and depending on the habit and growth form of the species, relocation to adjacent habitat outside the development footprint is recommended (refer to Section 6.4).
- Provincially protected species with medicinal value, such as *Helichrysum* spp., that may not be feasible to relocate could be made available to the local communities and traditional medical practitioners for use.

- Should any floral SCC, protected or TOPS-listed species be encountered within the development footprint area during construction, the necessary permits or licences have to be obtained from the relevant authorities prior to proceeding with site clearance.
- No harvesting of firewood or collection of floral species from natural areas surrounding the project footprint should be allowed by construction workers and high ecological sensitivity vegetation unit should remain off limits for construction and operational vehicles and personnel.
- Terrestrial ecological monitoring should take place during the construction and operational phases of the proposed project in order to identify and address unforeseen negative impacts, and to ensure the efficacy of mitigation measures. These monitoring measures should be incorporated into the Environmental Management Programme (EMPr) for the project, together with the mitigation measures proposed in this report.
- An independent Environmental Control Officer (ECO) should be appointed to undertake the necessary monitoring and include the findings in monthly reports (as required) submitted to the relevant authorities.

The following monitoring activities should be undertaken once off prior to commencement of construction:

- The ECO will be responsible for ensuring that all the required permitting is in place to destroy, remove or relocate provincially protected floral species in terms of the FSNCO (No. 8 of 1969).
- It must be ensured that relocation of provincially protected floral species, where required, is undertaken prior to commencement of construction.

The following monitoring activities should be undertaken during the construction phase of the proposed project on a monthly basis for the duration of construction:

- All development and pylon footprint area must be monitored to ensure that the footprint areas do not exceed approved areas.
- Natural areas surrounding the study area must be inspected to ensure that these remain in a natural state and that no clearing, dumping or excavations take place beyond what is required for the project.
- It must be ensured that topsoil is suitably stockpiled for use in revegetation.
- Should any floral SCC not recorded during the current study be confirmed within the study area, authorities must be informed, and the necessary permits applied for in order to remove such species.
- The development and pylon footprint areas must be monitored for emergent alien invasive species as a result of disturbance and these must be manually removed before establishment and spread can take place.
- Erosion gulleys in the vicinity of pylons footprint areas must be monitored to ensure that the proposed project does not exacerbate existing gulleys. It must be ensured that the required erosion control measures are put in place and additional erosion is rectified as soon as it is noted.

The following monitoring activities should be undertaken during the operational phase of the proposed project according to the time frames indicated:

- It must be ensured that revegetation takes place through reseeded of disturbed areas with an indigenous grass species mixture if bare areas are noted in the vicinity of the project footprint area (as a result of the project) after one growing season.
- The project footprint area and immediate surrounds must be monitored for alien invasive floral species every six months once construction has been completed for a period of two years. Where encountered, such species should be eradicated, and control measures put in place if required.
- The study area and immediate surrounds must be monitored for additional erosion and undercutting in the vicinity of pylon footprints every six months once construction has been completed, for a period of two years, and where encountered, immediate rectification must take place.

### 6.3.4 IMPACT 4: Changes in sediment entering and exiting the system impact

#### a) Description of the impacts

Limosella (2020) described the potential impacts related to changes in sediment entering and exiting the system. This could occur during Construction and operational activities due to earthworks and soil disturbance as well as the removal of natural vegetation. This could result in the loss of topsoil, sedimentation of the wetland and increase the turbidity of the water, particularly where pylons are constructed in or in close proximity to watercourses. Possible sources of impacts include:

- Earthwork activities;
- Disturbance of soil surface including soil compaction;
- Disturbance of slopes through creation of roads and tracks adjacent to the watercourses; and
- Creation of additional access roads.

**Summary of permanent, direct Changes in sediment entering and exiting the system:** Duration will be Short-term, and the probability of impact is considered probable. Significance is deemed to be **Low negative**, before mitigation, and **Low negative** after mitigation.

#### b) Impact Ratings

**Table 15** presents an assessment of impacts associated with Changes in sediment entering and exiting the system impact

*Table 15: Assessment and Ratings associated with Impact 4*

Project phase	Nature of impact	Extent	Duration	Intensity	Probability	Reversibility	Irreplaceable loss of resources	Significance without mitigation	Significance with Mitigation
Construction	Negative	Regional	Short-term	Medium	Probable	Moderate	Low	Low	Low
Operational	Negative	Regional	Short-term	Medium	Possible	High	Low	Low	Low

**Cumulative Impacts:** Additional impacts from the proposed amendment would have low negative cumulative impacts. Impacts will be moderate unless effective mitigation measures are applied.

### c) Mitigation Measures

- All Pylons should be placed outside delineated watercourses and their associated buffer zones. **(Please note that subsequent to the Limosella (2020) specialist report and mitigation measures, the final tower positions have been moved as per the recommendations while considering engineering constraints).**
- Prevent access of heavy vehicles and machinery in the wetlands or riparian areas
- Rehabilitation plans must be submitted and approved for rehabilitation of damage during the construction phase and that plan must be implemented immediately upon completion of construction.
- Cordon off areas that are under rehabilitation as no-go areas using danger tape and steel droppers. If necessary, these areas should be fenced off to prevent vehicular, pedestrian and livestock access.
- Implementation of best management practices

## 6.3.5 IMPACT 5: Changes in Water Flow Rating

### a) Description of the impacts

Limosella (2020) describes the nature of the impact as Changes in water flow in wetlands directly affected as well as downstream watercourses. Any activities that change the characteristics of the catchment of a watercourse will affect the way in which water enters into the watercourse. This has an effect on water flow volumes as well as energy. Possible sources of the impacts include:

- Soil compaction through movement of heavy vehicles
- Disturbance of slopes through creation of roads and tracks adjacent to the watercourse
- Disturbance of vegetation cover through trampling
- Creation of additional access roads
- Any activities within the delineated watercourse

**Summary of permanent, direct changes in Water Flow rating:** Duration will be medium term, and the probability of impact is considered Probable. Significance is deemed to be **Medium negative**, before mitigation, and **Low negative** after mitigation, and this impact is driven mostly by the potential loss of species due to human actions.

### b) Impact Ratings

**Table 16** presents an assessment of impacts associated with Changes in Water Flow Rating

Table 16: Assessment and Ratings associated with Impact 5

Project phase	Nature of impact	Extent	Duration	Intensity	Probability	Reversibility	Irreplaceable loss of resources	Significance without mitigation	Significance with Mitigation
Construction	Negative	Regional	Medium term	High	Probable	Moderate	Low	Medium	Low
Operational	Negative	Local	Short Term	High	Possible	High	Low	Medium	Low

**Cumulative Impacts:** May be high unless effective mitigation measures are applied.

### c) Mitigation Measures

- All Prevent access of heavy vehicles and machinery in the delineated watercourses
- Rehabilitation plans must be submitted and approved for rehabilitation of damage during construction phase and that plan must be implemented immediately upon completion of construction.
- Cordon off areas that are under rehabilitation as no-go areas using danger tape and steel droppers. If necessary, these areas should be fenced off to prevent vehicular, pedestrian and livestock access.
- Implementation of best management practices

### 6.3.6 IMPACT 6: Introduction and spread of alien vegetation.

#### a) Description of the impacts

Limosella (2020) described the potential impact of Introduction and spread of alien vegetation. Any activities that damage the natural vegetation cover will result in opportunistic invasions after disturbance and the introduction of seed in construction materials and on vehicles. Invasions of alien plants can impact on hydrology, by outcompeting natural vegetation and decreasing the natural biodiversity.

#### Summary of permanent, direct impacts related to Introduction and spread of alien vegetation:

Duration will be Long-term, and the probability of impact is considered Probable. Significance is deemed to be **Medium negative**, before mitigation, and **Low negative** after mitigation, and this impact is driven mostly by the potential loss of species due to human actions.

#### b) Impact Ratings

**Table 17** presents an assessment of impacts associated with Introduction and spread of alien vegetation



Table 17: Assessment and Ratings associated with Impact 6

Project phase	Nature of impact	Extent	Duration	Intensity	Probability	Reversibility	Irreplaceable loss of resources	Significance without mitigation	Significance with Mitigation
Construction	Negative	Local	Long-Term	High	Probable	Low	Low	Medium	Low
Operational	Negative	Local	Permanent	High	Low	Medium term	Low	Medium	Low

**Cumulative Impacts:** Additional impacts from the proposed amendment would have very low negative cumulative impacts.

### c) Mitigation Measures

- All Implement an Alien Plant Control Plan
- Retain vegetation and soil in position for as long as possible, removing it immediately ahead of construction / earthworks in that area and returning it where possible afterwards.
- Monitor the establishment of alien invasive species within the areas affected by the construction and maintenance and take immediate corrective action where invasive species are observed to establish.
- Rehabilitate or revegetate disturbed areas

### 6.3.7 IMPACT 7: Changes in water quality due to foreign materials and increased nutrients.

#### a) Description of the impacts

Limosella (2020) identified the potential impact of changes in water quality due to foreign materials and increased nutrients. Construction and operational activities may result in the discharge of solvents and other industrial chemicals, leakage of fuel/oil from vehicles resulting in the loss of sensitive biota in the rivers and a reduction in watercourse

**Summary of permanent, direct impacts related to Changes in water quality due to foreign materials and increased nutrients:** Duration will be Long-term, and the probability of impact is considered Probable. Significance is deemed to be **Medium negative**, before mitigation, and **Low negative** after mitigation.

#### b) Impact Ratings

**Table 18** presents an assessment of impacts associated with Changes in water quality due to foreign materials and increased nutrients

Table 18: Assessment and Ratings associated with Impact 7

Project phase	Nature of impact	Extent	Duration	Intensity	Probability	Reversibility	Irreplaceable loss of resources	Significance without mitigation	Significance with Mitigation
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<b>Construction</b>	Negative	Regional	Medium-Term	High	Definite	Low	Low	Medium	Low
<b>Operational</b>	Negative	Regional	Medium-Term	High	Possible	Moderate	Low	Low	Low

**Cumulative Impacts:** Additional impacts from the proposed amendment would have very low negative cumulative impacts.

### c) Mitigation Measures

- Provision of adequate sanitation facilities located outside of the watercourse or its associated buffer zone during construction.
- Implementation of appropriate stormwater management around the excavation to prevent the ingress of run-off into the excavation and to prevent contaminated runoff into the watercourse.
- The development footprint must be fenced off from the watercourses and no related impacts may be allowed into the watercourse e.g. water runoff from cleaning of equipment, vehicle access etc.
- After construction, the land must be cleared of rubbish, surplus materials, and equipment, and all parts of the land shall be left in a condition as close as possible to that prior to use.
- Maintenance of construction vehicles / equipment should not take place within the watercourse or watercourse buffer.
- Treatment of pollution identified should be prioritized.

### 6.3.8 IMPACT 8: Avifauna collisions and electrocution

#### a) Description of the impacts

AFC (2020) described that the 2017 Basic Assessment Specialist Report described that avifaunal migratory routes and zones have been identified along the alignment, and that the fitment of bird flappers must be undertaken within these areas to mitigate against fatalities due to collisions with the overhead line. The 2020 deviation was assessed, and recommendation made regarding the fitment of bird flappers.

Given the occurrence of vultures in the survey area, it is imperative that a 100% vulture friendly structure is used. The proposed structure type is indicated as the 7649 monopole. The 7649 steel monopole structure is designed with suspended insulators and diagonal supporting cross arms, which make perching uncomfortable while ensuring that vultures are clear of the live phases. The use of this structure is strongly supported as it will ensure that the potential electrocution impact is **Low**.

**Summary of permanent, direct Avifauna collisions and electrocution impacts:** Duration will be Permanent, and the probability of impact is considered High. Significance is deemed to be **High**

negative, before mitigation, and Low -Medium negative after mitigation, and this impact is driven mostly by the potential loss of species due to human actions.

## b) Impact Ratings

Table 19 presents an assessment of impacts associated with Avifauna collisions and electrocution

Table 19: Assessment and Ratings associated with Impact 8

Project phase	Nature of impact	Extent	Duration	Intensity	Probability	Reversibility	Irreplaceable loss of resources	Significance without mitigation	Significance with Mitigation
Construction	Negative	Local	Permanent	High	Possible	Medium term	Medium	High	Medium
Operational	Negative	Local	Permanent	High	possible	Medium term	Medium	High	Medium

**Cumulative Impacts:** Additional impacts from the proposed amendment would have low negative cumulative impacts after mitigation measures such as fitment of bird flappers.

## c) Mitigation Measures

- The sections of line and towers that need to be mitigated are indicated in Appendix 1 of Avifauna Specialist Report
- The ESKOM Distribution Bird Collision Prevention Technical Bulletin must be complied with
- The 7649-steel monopole structure is designed with suspended insulators and diagonal supporting cross arms, which make perching uncomfortable while ensuring that vultures are clear of the live phases. The use of this structure is strongly supported as it will ensure that the potential electrocution impact is low.

### 6.3.9 IMPACT 9: Possible destruction of fossil heritage

#### a) Description of the impacts

The Banzai Environmental Assessment (2020) described that according to the PalaeoMap of South African Heritage Resources Information System the Palaeontological Sensitivity of the Tarkastad Subgroup is Very High and that of the Quaternary deposits Low (Almond and Pether 2008, SAHRIS website).

Although no fossiliferous outcrop was identified in the planned development footprint during the site visit, well-preserved fossils may be found during excavations and care must be taken to preserve them- see protocol for finds.

**Summary of permanent, direct possible destruction of fossil heritage:** Duration will be Permanent, and the probability of impact is considered High. Significance is deemed to be Medium negative, before mitigation, and Low negative after mitigation.

**b) Impact Ratings**

**Table 20** presents an assessment of impacts associated with possible destruction of fossil heritage

*Table 20: Assessment and Ratings associated with Impact 9*

Project phase	Nature of impact	Extent	Duration	Intensity	Probability	Reversibility	Irreplaceable loss of resources	Significance without mitigation	Significance with Mitigation
Construction	Negative	Site	Permanent	Medium	Probable	Irreversible	High	Medium	Medium
Operational	Negative	Site	Permanent	Medium	Low	Irreversible	High	Medium	Low

**Cumulative Impacts:** Additional impacts from the proposed amendment would have low negative cumulative impacts.

**c) Mitigation Measures**

- Chance Find Protocol to be followed if fossils are uncovered during excavation as discussed in Chapter 12 of Specialist Report (Banzai, 2020).

**6.3.10 IMPACT 10: Impact on burial ground and graves**

**a) Description of the impacts**

PGS Heritage (2020) described that the study area occurs within a greater historical and archaeological site as identified during the desktop and fieldwork phase. Soil clearance for infrastructure as well as the proposed reclamation activities, could uncover the following:

- High density concentrations of stone artefact; and
- unmarked graves

Due to the possibility of still born burials at the historical structures the impact significance before mitigation on the graves will be VERY HIGH negative before mitigation. Only isolated sites will be affected by the proposed development. The possibility of the impact could occur. The expected duration of the impact is assessed as potentially permanent. Implementation of the recommended mitigation measures will modify this impact rating to an acceptable LOW negative.

**Summary of permanent, direct possible Impact on burial ground and graves:** Duration will be Permanent, and the probability of impact is considered High. Significance is deemed to be High negative (PGS Heritage -Very High), before mitigation, and Low negative after mitigation.

**b) Impact Ratings**

**Table 21** presents an assessment of impacts associated with possible Impact on burial ground and graves.

Table 21: Assessment and Ratings associated with Impact 10

Project phase	Nature of impact	Extent	Duration	Intensity	Probability	Reversibility	Irreplaceable loss of resources	Significance without mitigation	Significance with Mitigation
Construction	Negative	Site	Permanent	Medium	Improbable	Irreversible	High	High	Low
Operational	Negative	Site	Permanent	Medium	Improbable	Irreversible	High	Low	Low

**Cumulative Impacts:** Additional impacts from the proposed amendment would have **low** negative cumulative impacts if mitigation measures are implemented.

### c) Mitigation Measures

PGS Heritage requires that the following mitigations measures are included in the EMPr:

#### *i). General project area*

Implement a chance to find procedures in case where possible heritage finds are uncovered.

#### *ii). Possible graves*

The sites at 505, 509, 514, 515 and 517 should be demarcated with a 30-meter buffer and the site should be avoided if any construction is to happen close to it a consultation with local communities must be done to ascertain. If any infant burials are present.

#### *iii). Structures*

For site 505 (impacted by pylon MR45) and site 517 (impacted by pylon MR26) a Phase 2 mitigation process must be implemented for this site that will include:

1. An application for a mitigation permit from SAHRA;
2. Documentation of the site through excavations to expose the extent of the structures and then through formal plan drawings.
3. A destruction permit from SAHRA will be then applied for by the client with the backing of the mitigation report

PGS Heritage also proposes management recommendations and guidelines as discussed in Section 4.5.4 of this report.

### 6.3.11 IMPACT 11: Impact on archaeological sites

#### d) Description of the impacts

PGS Heritage (2020) described that the study area occurs within a greater historical and archaeological site as identified during the desktop and fieldwork phase. Soil clearance for infrastructure as well as the proposed reclamation activities, could uncover the following:

- High density concentrations of stone artefact; and
- unmarked graves

The impact significance before mitigation on the identified archaeological sites will be MODERATE (Medium) negative before mitigation. As the occurrence of the archaeological materials is over a large area the study area will be affected by the proposed development. The possibility of the impact occurring is very likely. The expected duration of the impact is assessed as potentially permanent. Implementation of the recommended mitigation measures will modify this impact rating to an acceptable LOW negative.

**Summary of permanent, direct possible impact on archaeological sites:** Duration will be Permanent, and the probability of impact is considered High. Significance is deemed to be **Medium negative** before mitigation, and **Low negative** after mitigation.

## e) Impact Ratings

**Table 21** presents an assessment of impacts associated with Impacts on archaeological sites

*Table 22: Assessment and Ratings associated with Impact 11*

Project phase	Nature of impact	Extent	Duration	Intensity	Probability	Reversibility	Irreplaceable loss of resources	Significance without mitigation	Significance with Mitigation
Construction	Negative	Site	Permanent	Medium	Probable	Irreversible	High	Medium	Low
Operational	Negative	Site	Permanent	Medium	Probable	Irreversible	High	Low	Low

**Cumulative Impacts:** Additional impacts from the proposed amendment would have low negative cumulative impacts if mitigation measures are implemented.

## f) Mitigation Measures

PGS Heritage requires that the following mitigations measures are included in the EMPr:

### a) General project area

Implement a chance to find procedures in case where possible heritage finds are uncovered.

### b) Structures

For site 505 (impacted by pylon MR45) and site 517 (impacted by pylon MR26) a Phase 2 mitigation process must be implemented for this site that will include:

- An application. For a mitigation permit from SAHRA;
- Documentation of the site through excavations to expose the extent of the structures and then through formal plan drawings.
- A destruction permit from SAHRA will be then applied for by the client with the backing of the mitigation report

*c) Identified archaeological sites*

All archaeological site must be demarcated with a 30-meter buffer when construction is to take place in close vicinity to the identified areas.

Access roads and construction. Camps must be placed in such Manner as not to traverse any of these archaeological sites. In the event that sites 507 and 512 (Impacted directly by pylon MR29) cannot be avoided a Phase 2 archaeological mitigation process must be implemented. This will include:

- An application for a permit to mitigate from SAHRA under s35 of the NHRA will be required to conduct such work.
- Surface collections, test excavations and analysis of recovered material.
- A destruction permit from SAHRA will be then applied for by the client with the backing of the mitigation report.

*d) Archaeological sensitive areas*

It is further recommended that construction activities between point 507 and 516 is monitored by an archaeologist

PGS Heritage also proposes management recommendations and guidelines as discussed in Section 4.5.4 of this report.

### 6.3 Summary of Impact Assessment Ratings

Table 23: Summary

Impact description	Type of impact	Project phase	Significance without mitigation	Significance with mitigation
<b>IMPACT 1: Loss of Floral Habitat</b>	Negative	Construction	Medium	Low
	Negative	Operation	Medium	Low
<b>IMPACT 2: Loss of Floral Species Diversity -</b>	Negative	Construction	Medium	Low
	Negative	Operation	Medium	Low
<b>IMPACT 3: Loss of Floral SCC, Protected and TOPS-listed species</b>	Negative	Construction	High	Medium
	Negative	Operation	Medium	Low
<b>IMPACT 4: Changes in sediment entering and exiting the system</b>	Negative	Construction	Low	Low
	Negative	Operation	Low	Low
<b>IMPACT 5: Changes in water flow</b>	Negative	Construction	Medium	Low
	Negative	Operation	Medium	Low
<b>IMPACT 6: Introduction and spread of alien vegetation</b>	Negative	Construction	Medium	Low
	Negative	Operation	Medium	Low
<b>IMPACT 7: Changes in water quality due to foreign materials and increased nutrients</b>	Negative	Construction	Medium	Low
	Negative	Operation	Low	Low
<b>IMPACT 8: Avifauna collisions and electrocution</b>	Negative	Construction	High	Medium
	Negative	Operation	High	Medium
<b>IMPACT 9: Possible destruction of fossil heritage</b>	Negative	Construction	Medium	Medium
	Negative	Operation	Medium	Low
<b>IMPACT 10: Impact on burial ground and graves</b>	Negative	Construction	High PGS Heritage (Very High)	Low
	Negative	Operation	Medium	Low
<b>IMPACT 11: Impact on archaeological sites</b>	Negative	Construction	Medium	Low
	Negative	Operation	Medium	Low



### **6.3.12 Other Environmental impacts**

Other key environmental impacts that may arise as result of the proposed activities include generation of dust, traffic, noise etc. Each of the impacts can however be mitigated through the measures indicated in Environmental Management Plan that has already been approved by DEA (DEFF).

### **6.4 Acceptability of proposal and Specialist Opinion**

#### **a) Floral Specialist Assessment (Field and Form, 2020)**

The results of the impact assessment indicate that impacts on floral species habitat, diversity and SCC/protected species can be mitigated to lower significance impacts should the recommended mitigation measures be implemented. No threatened floral species or other floral SCC were recorded from the study area, and such species have an overall low probability of occurrence. Several provincially protected species, in terms of Schedule 6 of the FSNCO, and one TOPS-listed floral species are however present within the vicinity of the proposed pylon positions. These species are all common and widespread and the provincially protected species are not in immediate danger of extinction. Permits for their destruction, removal or relocation must however be obtained from DEFF or the Free State Province DESTEA, as the case may be, prior to commencement of site clearance and construction.

Based on the findings of the desktop and field assessment, no fatal flaws have been identified and it is recommended that the proposed power line route amendment be approved from a floral ecological perspective.

#### **b) Wetland/Riparian Delineation and Functional Assessment (Limosella, 2020).**

The functionality of the watercourses in the study area is likely to have been impacted by agriculture and cattle farming to some degree. Although the erosion in the area is high, especially in the non-perennial streams, the erosion scars are visible on aerial imagery from as early as 1945. This has led to an increase in exotic plant species in the area, increased sediment deposition and a change in geomorphology of watercourses. The hydrology of watercourses has been impacted by the input of nutrients and chemicals from the farming areas and run-off from roads and cleared surfaces. The creation of several artificial dams and furrows has further changed natural water flow patterns. Furthermore, massive erosional gullies, some as deep as 5-10 m, was recorded in numerous sections of the watercourses. The geomorphology of the wetlands has been impacted by trenches, gullies and many roads and footpaths traversing the watercourses. Lastly, the vegetation composition has also been impacted as a result of the changes discussed above.

Installation of an overhead powerline is generally considered a low risk operation and the impacts are considered to be low, although all developments have potential impacts on the surrounding environment and particularly on a watercourse. The mitigation measures in the specialist assessment are intended to prevent further degradation to the watercourses resulting from the new powerline construction and operation.

The amendment section includes a total of 21 pylons and the pylons are numbered from MR26 to MR47. Pylons number 34, 35, 45 and 46 should ideally be moved outside of the watercourse buffer zone

**c) Avifaunal Assessment (Albert Froneman Consulting, 2020)**

The specialists (Albert Froneman and Chris van Rooyen) are of the opinion that the 2017 ecological assessment (EnviRoss CC, 2017) adequately lists and discusses the most important potential impacts that are expected to occur from an avifaunal perspective, and appropriate mitigation measures are discussed in the report. AFC (2020) states that due to the occurrence of vultures in the survey area, it is imperative that a 100% vulture friendly structure is used. In the kmz file with the authorised tower positions, the proposed structure type is indicated as the 7649 monopole. The 7649 steel monopole structure is designed with suspended insulators and diagonal supporting cross arms, which make perching uncomfortable while ensuring that vultures are clear of the live phases. The use of this structure is strongly supported as it will ensure that the potential electrocution impact is Low.

**d) Palaeontological Assessment (Banzai Environmental, 2020)**

According to the PalaeoMap of South African Heritage Resources Information System the Palaeontological Sensitivity of the Tarkastad Subgroup is Very High and that of the Quaternary deposits Low (Almond and Pether 2008, SAHRIS website). The presence of a fragmented fossil approximately 23 m above the development footprint indicates that there is a chance of finding fossils just below the surface of the development footprint. As impacts on fossil heritage typically only occur during the excavation phase no further impacts on fossil heritage are probable during the operation and decommissioning phases. A Chance Find Protocol is to be followed if fossils are uncovered during excavation.

Banzai Environmental recommends that no further palaeontological heritage studies, ground truthing and/or specialist mitigation are required pending the discovery of newly discovered fossils.

**e) Archaeological and Cultural Heritage Assessment (PGS Heritage, 2020)**

It is the author's considered opinion that overall impact on heritage resources is Low. Provided that the recommended mitigation measures are implemented, the impact would be acceptably Low or could be totally mitigated to the degree that the project could be approved from a heritage perspective. The management and mitigation measures as described in Section 6 of this report have been developed to minimise the project impact on heritage resources.

**6.5 National Water Act**

The National Water Act, 1998 (Act No. 36 of 1998) aims to provide for management of the national water resources in order to achieve sustainable use of water for the benefit of all water users. This act requires that the quality of water resources is protected as well as the integrated management of water resources with the delegation of powers to institutions at the regional or catchment level. The purpose of the Act is to ensure that the nation's water resources are protected, used, developed, conserved and managed in ways which take into account:

- Meeting basic human needs of present and future generations;
- Promoting equitable access to water;
- Redressing the results of past racial discrimination;
- Promoting the efficient, sustainable and beneficial use of water in the public interest; facilitation social and economic development;
- Providing for the growing demand for water use;
- Protecting aquatic and associated ecosystems and their biological diversity;
- Reducing and preventing pollution and degradation of water resources;
- Meeting international obligations;
- Promoting dam safety; and
- Managing floods and drought.

In pursuit of these objectives, Chapter 4 of the act regulates water use, while Section 21 lists eleven water use types that are regulated [Section 21 (a) – (k)]. Watercourses and wetlands are protected in terms of this section, as both are regarded as water resources. Due to the location of the overhead powerline being within a 500m radius from a wetland which is one of the DWS' regulated areas, a Water Use Authorisation is required. The list of the regulated areas inclusive of the 500m distance, but specific to the delineated boundary are as follows:

- The outer edge of the 1:100 year flood line and /or delineated riparian habitat whichever is the greatest measured from the middle of a river, spring, natural channel, lake or dam;

- In the absence of a determined 1:100 year flood line or riparian area, the area within 100m from the edge of a watercourse where the edge of the watercourse is the first identifiable annual bank fill flood bench (subject to compliance to section 144 of the Act);
- 500m radius from the delineated boundary of any wetland or pan.

According to the Wetland/Riparian Delineation and Functional Assessment undertaken by Limosella Consulting (2020), the scores fall in the Low risk category and authorisation may proceed through a General Authorisation. A Water Use Authorisation will be undertaken for the proposed project.

Table 24: Risk Matrix

Eskom 132 KV Overhead Powerline between Melkspruit Substation & Rouxville Substation with special emphasis on the amended section between pylons MR24 and MR49. June 2020

Table 24: The severity score derived from the DWS (2016) risk assessment matrix for the proposed line upgrade.

**RISK MATRIX** (Based on DWS 2016 publication: Section 21 c and I water use Risk Assessment Protocol)

NAME and REGISTRATION No of SACNASP Professional member: **A Bootsma SACNASP # 400222/09** *AB*

Phases	Activity	Aspect	Impact	Severity										Likelihood	Significance	Risk Rating	Confidence level	Control Measures	Borderline LOW MODERATE Rating Classes	PES AND EIS OF WATERCOURSE		
				Flow Regime	Physical & Chemical (Water Quality)	Habitat (Geomorph-Veg relation)	Biodi	Severity	Spatial scale	Duration	Consequence	Frequency of activity	Frequency of Impact								Legal Issues	Detection
C	Rebuild of the overhead powerline in the wetland	Installation/upgrade of foundation for pylon infrastructure	Loss of vegetation cover, compaction of soils, sedimentation, pollution and alien invasive plant establishment	3	2	2	1	2	1	2	5	1	2	5	2	10	50	L	80%	<ul style="list-style-type: none"> <li>• Designs should take into account soil properties, slopes and runoff energy with the aim of having a neutral effect on the regional hydrograph.</li> <li>• Construction activities should not be conducted in wet conditions.</li> <li>• Minimise the footprint of activities in the wetland and buffer zone by preventing unnecessary access of vehicles and personnel</li> <li>• Implement Eskom best practice policies</li> <li>• Implement effective rehabilitation to reverse construction related impacts</li> </ul>	N	PES: C EIS: C REC: C QH: C VEGRAI: C/D
		Construction of new pylon structures		3	2	2	1	2	1	2	5	1	2	5	2	10	50	L	80%		N	
		Movement of equipment and personnel during stringing		2	2	1	1	2	1	2	4.5	1	2	5	2	10	45	L	80%		N	
		Upgrade of access roads		1	2	1	1	1	1	2	4.3	1	2	5	2	10	42.5	L	80%		N	
O	Operation of the new powerline	Long term presence of upgraded infrastructure in the wetland	Permanent changes to runoff characteristics in the watercourse including the cumulative impact to downstream watercourses	1	2	1	1	1	1	2	4.2	2	2	5	2	11	46.2	L	80%	<ul style="list-style-type: none"> <li>• Control of alien invasive plants should form part of the maintenance plan</li> <li>• Maintenance activities should follow best practice</li> <li>• Monitoring for downstream degradation and effective rehabilitation where necessary</li> </ul>	N	PES: C EIS: C REC: C QH: C VEGRAI: C/D
		Ad hoc repair and maintenance to structures		1	1	1	1	1	1	1	3	1	2	5	2	10	30	L	80%		N	

## 7. ADVANTAGES AND DISADVANTAGES OF THE PROPOSED AMENDMENT

In terms of Regulation 32 (1) (a) (ii) of the EIA Regulations 2014 (as amended) the advantages and disadvantages associated with the proposed change shall be reflected in the motivation report.

### 7.1 Disadvantages of the Amendment

Based on the Specialist Assessments, the disadvantages associated with the proposed amendment is likely to have an overall impact of **Medium** to **High** negative before mitigation, and **Medium-to low** negative after mitigation

With the implementation of mitigation measures prescribed in the Impact Assessment, and with the implementation of management and monitoring measures prescribed in the Environmental Management Programme (EMPr) that was approved as part of the initial Environmental Authorisation Application as well as the proposed amendments detailed in **Section 8**, all impacts expected during the proposed construction and operational phase could be of medium to low significance.

### 7.2 Advantages of the Amendment

If the amendment is authorised, the Melkspruit substation to Rouxville substation overhead power line can be completed and Eskom will be able to compensate for future electricity needs which the existing 66kV powerline will eventually not be able to cater for.

The replacement of the current wooden pole distribution line, with a steel monopole line that will be able to withstand all weather conditions and that can be accessed easily using the existing farms roads will ensure a more reliable source of electricity.

The following difficulties experienced with the existing 66kV during maintenance will also be resolved:

- Wooden poles, which are now old and deteriorated. Some poles are cracked, rotten or broken and therefore susceptible to burning as the area is prone to veldfires;
- Some poles are in wetlands thus have accessibility issues during repairs;
- Most are located on rugged terrain, i.e. ridges/koppies as a result it is difficult for technical operators access it during power outages; and
- The population of the service area is growing rapidly and so is settlement in the area where electricity is the main source of energy. If proactive measures are not taken the demand for electricity will out-trip the supply using the current 66kV.

## 8. ADDITIONS TO THE EMPr

In terms of Regulation 32 (1) (a) (iv) of the EIA Regulations 2014 (as amended) and changes to the EMPr shall be reflected in the motivation report. The purpose of this EMPr is to provide management measures that must be implemented by developers, engineers and contractors alike to ensure that the potential impacts of the proposed activities are identified, and measures put in place to ensure that they are minimised if negative and enhanced if positive.

Based on the Specialist assessments undertaken as part of this Part 2 EA amendment, the following mitigation measures in Table 25 below are to be added to the EMPr. The approved EMPr compiled by NSVT Consultants (2016) as part of the Basic Assessment Report of the project is attached to **Appendix G** of this report.

*Table 25: Mitigation Measures during the Construction and Operation Phase to be included in EMPr*

Specialist Study	Mitigation Measure
<b>Construction and Operational Phase</b>	
Floral Specialist Assessment	<p>The following mitigation measures are proposed in order to limit or reduce the impact of the proposed project on the floral ecology within the study area:</p> <ul style="list-style-type: none"> <li>• The positioning of project infrastructure in relation to areas of increased ecological sensitivity should be considered during the pre-construction and planning phases of the project.</li> <li>• The positioning of infrastructure and pylons within areas indicated to be of increased ecological sensitivity, such as the Besemkaree Dolerite Koppies and surrounding rocky habitat, and watercourse vegetation units must be avoided where possible. Access to these areas by construction and operational vehicles and personnel must be restricted.</li> <li>• Placement of pylons and infrastructure within close proximity to erosion gulleys, a significant impacting feature in the area, should be avoided.</li> <li>• Storm water must be diverted away from the construction works to prevent further erosion and siltation of watercourses.</li> <li>• The development and disturbance footprint areas for pylon infrastructure must be kept as small and compact as possible, and the loss of indigenous vegetation must be limited as much as possible. No areas should be cleared of natural vegetation if not required for construction and operational purposes.</li> <li>• The exposure of bare soils must be minimised through limiting areas of vegetation and topsoil removal to only what is required for construction.</li> <li>• Pylons should be positioned as far apart as possible and as few as possible pylons implemented to limit clearance footprints.</li> <li>• Vehicle access beyond the designated project footprint areas should be prohibited and disturbance of natural areas adjacent to the study area should be avoided.</li> <li>• Maintenance roads and servitudes should follow existing roads and tracks and utilise existing access points as far as possible to prevent clearing of additional areas.</li> <li>• The maintenance corridor/ power line servitude must not involve complete clearance or removal of vegetation, but rather be limited to cutting and trimming of vegetation only where necessary.</li> </ul>

	<ul style="list-style-type: none"> <li>• Edge effects from construction and operational activities, such as further erosion and alien floral species proliferation and the spread of these within disturbed areas, should be managed throughout all the development phases through the implementation of erosion control measures where required and the implementation of an alien and invasive species management programme. The implementation of erosion management measures, such as berms, geotextiles and gabions must be implemented as required.</li> <li>• Construction camps, contractors' laydown areas and other temporary infrastructure are to be placed within areas that have already been modified. <b>(Please note that it might not be possible to locate a modified area in close proximity to the works areas. Eskom has committed to ensure minimal impact to the environment and commit to re-habilitate sites where required).</b></li> <li>• No littering or dumping of waste and construction material within natural areas beyond the project footprint areas may be allowed.</li> <li>• Appropriate sanitation facilities must be provided for the duration of the proposed construction activities and any waste removed to an appropriate facility.</li> <li>• No indiscriminate fires should be allowed within the construction areas.</li> <li>• Dust suppression measures must be implemented.</li> <li>• Any disturbed and compacted areas outside of the project footprint areas must be ripped, reprofiled and revegetated with indigenous plant species naturally growing within the area (refer to Section 5.3 and Appendices A &amp; C). Prior to revegetation, it must be ensured that sites are appropriate sloped and reinstated in such a manner to simulate the pre-construction landscape and to avoid contributing to erosion and gulley formation</li> <li>• Harvesting or collection of floral species by construction or operational personnel should be strictly prohibited.</li> <li>• All construction and operational personnel must be educated in environmental awareness and be made aware of the importance of floral SCC and protected species.</li> <li>• The loss of floral SCC and protected species must be actively avoided and such species and their habitat should ideally be conserved in situ. No floral SCC were recorded within the study area, but should such species be present, they are more likely to be present within rocky area, and as such development within the Besemkaree Dolerite Koppies and rocky karroid grassland areas should be avoided as far as possible.</li> <li>• Provincially protected floral species are known to occur within the study area with their locations coinciding in some instance with the pylon footprint areas. Where avoidance of such species is not possible, a permit has to be obtained from the Free State Province DESTEA in order to destroy, remove or relocate such species. Where possible and depending on the habit and growth form of the species, relocation to adjacent habitat outside the development footprint is recommended (refer to Section 6.4).</li> <li>• Provincially protected species with medicinal value, such as <i>Helichrysum</i> spp., that may not be feasible to relocate could be made available to the local communities and traditional medical practitioners for use.</li> <li>• Should any floral SCC, protected or TOPS-listed species be encountered within the development footprint area during construction, the necessary permits or licences have to be obtained from the relevant authorities prior to proceeding with site clearance.</li> <li>• No harvesting of firewood or collection of floral species from natural areas surrounding the project footprint should be allowed by construction workers and high ecological sensitivity vegetation unit should remain off limits for construction and operational vehicles and personnel.</li> </ul>
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	<p><b><u>Floral Monitoring</u></b></p> <p>Terrestrial ecological monitoring (See Chapter 8 of Specialist Study) should take place during the construction and operational phases of the proposed project in order to identify and address unforeseen negative impacts, and to ensure the efficacy of mitigation measures. These monitoring measures should be incorporated into the Environmental Management Programme (EMPr) for the project, together with the mitigation measures proposed in this report. An independent Environmental Control Officer (ECO) should be appointed to undertake the necessary monitoring and include the findings in monthly reports (as required) submitted to the relevant authorities.</p>
Wetland/Riparian Delineation and Functional Assessment	<p><b><u>Changes in sediment entering and exiting the system.</u></b></p> <ul style="list-style-type: none"> <li>• Pylons should be placed outside delineated watercourses and their associated buffer zones. <b>(Please note that subsequent to the Limosella (2020) specialist report and mitigation measures, the final tower positions have been moved as per the recommendations while considering engineering constraints).</b></li> <li>• Prevent access of heavy vehicles and machinery in the wetlands or riparian areas</li> <li>• Rehabilitation plans must be submitted and approved for rehabilitation of damage during the construction phase and that plan must be implemented immediately upon completion of construction.</li> <li>• Cordon off areas that are under rehabilitation as no-go areas using danger tape and steel droppers. If necessary, these areas should be fenced off to prevent vehicular, pedestrian and livestock access.</li> <li>• Implementation of best management practices</li> </ul> <p><b><u>Changes in water flow in wetlands directly affected as well as downstream watercourses.</u></b></p> <ul style="list-style-type: none"> <li>• Prevent access of heavy vehicles and machinery in the delineated watercourses.</li> <li>• Rehabilitation plans must be submitted and approved for rehabilitation of damage during construction phase and that plan must be implemented immediately upon completion of construction.</li> <li>• Cordon off areas that are under rehabilitation as no-go areas using danger tape and steel droppers. If necessary, these areas should be fenced off to prevent vehicular, pedestrian and livestock access.</li> <li>• Implementation of best management practices</li> </ul> <p><b><u>Introduction and spread of alien vegetation</u></b></p> <ul style="list-style-type: none"> <li>• Implement an Alien Plant Control Plan.</li> <li>• Retain vegetation and soil in position for as long as possible, removing it immediately ahead of construction / earthworks in that area and returning it where possible afterwards.</li> <li>• Monitor the establishment of alien invasive species within the areas affected by the construction and maintenance and take immediate corrective action where invasive species are observed to establish.</li> <li>• Rehabilitate or revegetate disturbed areas</li> </ul> <p><b><u>Changes in water quality due to foreign materials and increased nutrients.</u></b></p> <ul style="list-style-type: none"> <li>• Provision of adequate sanitation facilities located outside of the watercourse or its associated buffer zone during construction.</li> <li>• Implementation of appropriate stormwater management around the excavation to prevent the ingress of run-off into the excavation and to prevent contaminated runoff into the watercourse.</li> <li>• The development footprint must be fenced off from the watercourses and no related impacts may be allowed into the watercourse e.g. water runoff from cleaning of equipment, vehicle access etc.</li> </ul>

	<ul style="list-style-type: none"> <li>• After construction, the land must be cleared of rubbish, surplus materials, and equipment, and all parts of the land shall be left in a condition as close as possible to that prior to use.</li> <li>• Maintenance of construction vehicles / equipment should not take place within the watercourse or watercourse buffer.</li> <li>• Treatment of pollution identified should be prioritized.</li> </ul>
Avifauna Assessment	<p>The impact on avifauna, particularly due to collisions with the earthwire of the proposed 132kV line, was rated as High, but mitigation measures could reduce it to Moderate. Mitigation measures include:</p> <ul style="list-style-type: none"> <li>• The sections of line and towers that need to be mitigated are indicated in Appendix 1 of Albert Froneman Consulting Report</li> <li>• The ESKOM Distribution Bird Collision Prevention Technical Bulletin is attached as Appendix 2.</li> </ul>
Palaeontological Assessment	<p>If fossil remains are discovered during any phase of construction, either on the surface or exposed by excavations the Chance Find Protocol must be implemented by the EC in charge of these developments. These discoveries ought to be protected (if possible, in situ) and the EC must report to SAHRA (Contact details: SAHRA, 111 Harrington Street, Cape Town. PO Box 4637, Cape Town 8000, South Africa. Tel: 021 462 4502. Fax: +27 (0)21 462 4509. Web: www.sahra.org.za) so that correct mitigation (recording and collection) can be carry out by a paleontologist.</p>
Heritage Assessment	<p><b>General project area</b> Implement a chance to find procedures in case where possible heritage finds are uncovered.</p> <p><b>Possible graves</b> The sites at 505, 509, 514, 515 and 517 should be demarcated with a 30-meter buffer and the site should be avoided if any construction is to happen close to it a consultation with local communities must be done to ascertain. If any infant burials are present.</p> <p><b>Structures</b> For site 505 (impacted by pylon MR45) and site 517 (impacted by pylon MR26) a Phase 2 mitigation process must be implemented for this site that will include:</p> <ol style="list-style-type: none"> <li>1. An application. For a mitigation permit from SAHRA;</li> <li>2. Documentation of the site through excavations to expose the extent of the structures and then through formal plan drawings.</li> <li>3. A destruction permit from SAHRA will be then applied for by the client with the backing of the mitigation report</li> </ol> <p><b>Identified archaeological sites</b> All archaeological site must be demarcated with a 30-meter buffer when construction is to take place in close vicinity to the identified areas. Access roads and construction. Camps must be placed in. such. Manner as not to traverse any of these archaeological sites.</p> <p>In the event that sites 507 and 512 (Impacted directly by pylon MR29) cannot be avoided a Phase 2 archaeological mitigation process must be implemented. This will include:</p> <ol style="list-style-type: none"> <li>1. An application for a permit to mitigate from SAHRA under s35 of the NHRA will be required to conduct such work.</li> <li>2. Surface collections, test excavations and analysis of recovered material.</li> <li>3. A destruction permit from SAHRA will be then applied for by the client with the backing of the mitigation report</li> </ol>

	<p><b>Archaeological sensitive areas</b></p> <p>It is further recommended that construction activities between point 507 and 516 is monitored by an archaeologist</p> <p>PGS Heritage also proposes management recommendations and guidelines as discussed in Section 4.5.4 of this report.</p>
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## 9. PUBLIC PARTICIPATION

The NEMA (1998) EIA Regulations, 2014, as amended, prescribe that the Amendment process must include the undertaking of public participation in accordance with the Chapter 6 of the Regulations. The purpose of the Public Participation Process is to provide all potential and / or registered Interested and Affected Parties (I&APs hereafter), including the competent authority and any other stakeholder or organ of state, an opportunity to become involved in the Amendment process and provide comments during the various phases of the project. Involvement by I&APs is critical, as it contributes to a better understanding of the proposed project among I&APs, raises important issues that need to be assessed and provides local insight that will enhance the Amendment process.

This chapter of the report provides details on the Public Participation Process followed during the Part 2 application for the amendment of the Environmental Authorisation for the Melkspruit to Rouxville overhead powerline. The initial public participation phase commenced on the 08<sup>th</sup> June 2020.

### 9.1 Placement of Site Notices

In accordance with Regulation 41(4)(a) of the NEMA (1998) EIA Regulations, 2014, as amended, notice boards of 60cm X 42cm (i.e. A2 Sizes) were prepared and placed on various locations on and around the site in conspicuous places. A total of four notices were placed on the 08<sup>th</sup> June 2020. Refer to **Appendix E3** for a copy of the site notice and other pertaining to the locations on which they were placed.

### 9.2 Notification Letters

Regulation 41(2)(b) of the NEMA (1998) EIA Regulations, 2014, as amended requires that written notification be given to various parties who include the following:

- (i) the occupiers of the site and, if the proponent or applicant is not the owner or person in control of the site on which the activity is to be undertaken, the owner or person in control of the site where the activity is or is to be undertaken and to any alternative site where the activity is to be undertaken;*
- (ii) owners, persons in control of, and occupiers of land adjacent to the site where the activity is or is to be undertaken and to any alternative site where the activity is to be undertaken;*
- (iii) the municipal councillor of the ward in which the site and alternative site is situated and any organisation of ratepayers that represent the community in the area;*
- (iv) the municipality which has jurisdiction in the area;*
- (v) any organ of state having jurisdiction in respect of any aspect of the activity; and*
- (vi) any other party as required by the competent authority;*

A Notification Letter will be distributed to all affected landowners and Interested and Affected Parties that were Registered for the 2017/2018 Basic Assessment Process. The document provides a

background on the proposed amendments as well as information on how one can register as an I&AP on the project in order to be able to be kept abreast of all developments related to the project. A copy of the Notification Letter is attached as **Appendix E2**.

### **9.3 Placement of Newspaper Advertisement**

Regulation 41(2)(c) and (d) of the NEMA (1998) EIA Regulations, 2014, as amended requires that PPP includes the placement of a Newspaper Advertisement to notify all potential I&AP's about the proposed project and to invite them to register as I&APs and provide comments on the project. Advertisements were placed in the Free State Weekly (02 October 2020) and the Aliwal Weekly (01 October 2020). The proof of the placement of the Newspaper Advertisement is attached as **Appendix E1**.

### **9.4 Availability of the Draft Amendment Report for Review**

Based on Regulation 40(1) of the NEMA EIA Regulations, 2014, as amended, the report will be made available for comment for the legislated period of at least 60 days as specified by the Public Participation Plan and Water Use License Applications and Appeals Regulations (GNR 267, published in Government Gazette 40713 of 24 March 2017). The placing of the Amendment report will allow all I&APs adequate time to review the details of the project and provide, comments and concerns relating to the proposed project. All registered I&APs will be informed of the availability of the report through various means such as e-mails, sms and phone calls.

### **9.5 I&AP Register/database and Comments and response report**

During the Amendment process undertaken for the proposed project, a database of persons, organizations and organs of state identified as I&APs or registered as I&APs was opened. The same database was used during the Basic Assessment process; however, verification of the contact details and key stakeholder were updated on ongoing basis. The database is constantly maintained. The I&AP database as well as the Comments and Responses Report will be attached to the final report as **Appendix E5**.

### **9.6 Public Open day & Focus Group Meetings**

The need for a virtual focus group meeting will be determined based on the nature of the comments that will be received during the 60-day public review period of the Draft Amendment report.

## 10. CONCLUSION

As presented in this report, the impact assessment undertaken in terms of the Part 2 amendment revealed that all impacts related to the approximately 6-kilometre deviation of the overhead power line, had a significance of Medium to High, and with mitigation, Medium to Low. The proposed amended will not result in any significant changes to the impacts that have already been assessed in the Basic Assessment undertaken by NSTV Consultants in 2018. The mitigation measures as provided in the EMPr undertaken by NSTV Consultants as well as the additional mitigation measures provided under Section 8 shall be adequate to manage any of the potential impacts identified.

The completion of the project will ensure that Eskom will be to provide reliable electricity distribution for current and future electricity needs.

Minor engineering realignments within the assessed corridor were made to the approved 2017 Route 1 Alternative Alignment Layout plan drawn by K.B Gobolawamang (Titled Melkspruit-Rouxville Preferred 132kV Powerline dated October 2017). An updated route alignment has been attached to this report as Appendix A3 (Melkspruit Locality Map 2020). It indicates the minor realignments and the deviation assessed in this Amendment Report.

The Environmental Assessment Practitioner is of the opinion that the EA could be amended.

## 11. REFERENCES

- DEA. 2011. Threatened Terrestrial Ecosystems in South Africa. *Government Gazette* Vol. 1002: No. 34809. National Printer, Pretoria.
- EWT. 2004. Little Red Data Book of the Mammals of South Africa: A Conservation Assessment. Endangered Wildlife Trust, Johannesburg.
- Mucina, L. and M. Rutherford. *Eds.* 2006 (and 2012 updates). Vegetation map of South Africa, Lesotho, and Swaziland. *Strelitzia* 19. South African National Biodiversity Institute, Pretoria.