

**DRAFT SCOPING REPORT FOR THE PROPOSED VRYHEID NETWORK  
STRENGTHENING WITHIN THE JURISDICTION OF SWELLENDAM LOCAL  
MUNICIPALITY IN THE WESTERN CAPE PROVINCE**

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Nsovo Environmental Consulting Cell: 071 602 2369 Fax: 0866028821 Email: <a href="mailto:admin@nsovo.co.za">admin@nsovo.co.za</a> Date of Submission: 02 February 2016	 <p>“From the world we live to the world we seek”</p>

## EXECUTIVE SUMMARY

Nsovo Environmental Consulting (hereafter referred to as Nsovo) was appointed by Eskom Holdings SOC Ltd (hereafter referred to as Eskom) to undertake Environmental Impact Assessment for the proposed Vryheid Network Strengthening which will entail the following:

- The Agulhas 400/132kV 2 x 500 MVA Main Transmission Substation (MTS) which will be approximately 600m x 600m; and
- The loop in and loop out lines to connect the proposed Agulhas MTS to the existing 400kV line Bacchus – Proteus 1.

The proposed development will be located within Ward 3 of the Swellendam Local Municipality, which falls within the jurisdiction of Overberg District Municipality in the Western Cape Province.

In terms of the National Environmental Management Act, 1998 (Act 107 of 1998) (as amended) (herein referred to as NEMA), the proposed development triggers activities which require authorisation from the National Department of Environmental Affairs (DEA).

The proposed project includes activities that trigger Environmental Impact Assessment process to be undertaken as prescribed in Chapter 4 of GNR 982 of the Environmental Impact Assessment Regulations (EIA) of December 2014. The associated listed activities including *Activity 9 (i.e. The development of facilities or infrastructure for the transmission and distribution of electricity with a capacity of 275 kilovolts or more, outside an urban area or industrial complex)* are listed in **Table 1**.

The Scoping Report contains the following:

- The details and expertise of the Environmental Assessment Practitioner;
- The location of the activity;
- A locality map;
- Description of the scope of the proposed development;
- Description of Policy and Legislative content within which the development is located and an explanation of how the development complies with and responds to the legislation and policy context;

- A motivation for the need and desirability of the proposed development;
- A full description of the process followed; and
- A plan of study for undertaking the Environmental Impact Assessment to be undertaken.

Seven alternative sites for the proposed Agulhas substation and loop in and out lines have been identified and are being assessed.

The draft Scoping Report is submitted to the Interested and Affected Parties and Organs of State in order to afford them an opportunity to review and comment on the project. A thirty day comment period will be afforded to all stakeholders. All comments received on the draft Scoping Report will be included in the Comments and Response Report and these will be incorporated into the final Scoping Report which will be submitted to the DEA together with the Plan of Study for the EIA.

The DEA will assess the final Scoping Report and the Plan of Study for EIA and advice on the way forward as to whether the project should go into EIA phase.



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DOCUMENT CONTROL

DRAFT SCOPING REPORT FOR THE PROPOSED VRYHEID NETWORK STRENGTHENING WITHIN THE JURISDICTION OF SWELLENDAM LOCAL MUNICIPALITY IN THE WESTERN CAPE PROVINCE

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**Table of Contents**

**1. INTRODUCTION..... 12**

**2. DETAILS OF THE ENVIRONMENTAL ASSESSMENT PRACTITIONER..... 16**

**3. DESCRIPTION OF THE PROPOSED ACTIVITIES..... 18**

    3.1 BACKGROUND..... 18

    3.2 THE PROPOSED SCOPE OF WORK..... 18

    3.3 ACTIVITIES ASSOCIATED WITH THE PROJECT..... 18

        Corridor walk-down ..... 18

            3.3.1 Access roads ..... 19

            3.3.2 Vegetation clearance ..... 19

            3.3.3 Substation and pylon construction ..... 19

            3.3.4 Steelworks structures..... 19

            3.3.5 Stringing ..... 19

            3.3.6 Completion of construction work..... 20

**4. DESCRIPTION OF FEASIBLE AND REASONABLE ALTERNATIVES ..... 20**

    4.1 TECHNICAL ALTERNATIVES ..... 20

    4.2 STRUCTURAL ALTERNATIVES ..... 21

    4.3 SITES ALTERNATIVES ..... 23

        4.3.1 Substation Site Alternative A..... 23

        4.3.2 Substation Site Alternative B..... 24

        4.3.3 Substation Site Alternative C ..... 26

        4.3.4 Substation Site Alternative D ..... 27

        4.3.5 Substation Site Alternative E..... 28

        4.3.6 Substation Site Alternative F ..... 30

        4.3.7 Substation Site Alternative G ..... 31

        4.3.8 No-go alternatives..... 32

**5. DESCRIPTION OF LOCALITY AND THE PROPERTY ON WHICH THE ACTIVITY IS TO BE UNDERTAKEN AND LOCATION OF ACTIVITY ON THE PROPERTY ..... 32**

    5.1 PROJECT LOCALITY ..... 32

    5.2 SURROUNDING LAND USES ..... 35

5.2.1	Farming .....	35
5.2.2	Residential .....	35
5.2.3	Commercial and Industrial .....	35
5.2.4	Tourism .....	35
5.2.5	Sites of Archaeological and Cultural Significance .....	35
5.3	SURFACE INFRASTRUCTURE .....	36
5.3.1	Road Network .....	36
5.3.2	Power lines and associated Infrastructure .....	36
<b>6.</b>	<b>DESCRIPTION OF THE RECEIVING ENVIRONMENT .....</b>	<b>36</b>
6.1	SOCIO-ECONOMIC DESCRIPTION .....	37
6.1.1	Provincial and District Municipality Description .....	37
6.1.2	Swellendam Local Municipality .....	38
6.2	CLIMATE .....	39
6.3	GEOLOGY .....	40
6.4	TOPOGRAPHY .....	42
6.5	SURFACE WATER .....	42
6.6	AIR QUALITY AND POLLUTION .....	43
6.7	FLORA .....	44
6.7.1	Listed and Protected Species .....	46
6.7.2	Critical Biodiversity Area .....	47
6.8	FAUNA .....	48
6.8.1	Mammals .....	48
6.8.2	Reptiles .....	49
6.8.3	Amphibians .....	49
6.9	AVIFAUNA .....	50
6.10	LAND TYPES AND AGRICULTURAL POTENTIAL .....	53
6.10.1	Agricultural Potential .....	53
6.10.2	Visual Aspects .....	55
<b>7.</b>	<b>APPLICABLE LEGISLATION AND GUIDELINES .....</b>	<b>56</b>
<b>8.</b>	<b>DESCRIPTION OF THE ENVIRONMENTAL ISSUES AND POTENTIAL IMPACTS INCLUDING CUMULATIVE IMPACTS IDENTIFIED .....</b>	<b>61</b>
<b>9.</b>	<b>PUBLIC PARTICIPATION PROCESS .....</b>	<b>69</b>

9.1	PUBLIC PARTICIPATION PRINCIPLES.....	70
9.2	APPROACH AND METHODOLOGY .....	70
9.3	IDENTIFICATION OF INTERESTED AND AFFECTED PARTIES .....	70
9.4	PUBLIC PARTICIPATION DATABASE.....	71
9.5	SITE NOTICES .....	71
9.6	DISTRIBUTION OF NOTICES TO SURROUNDING LAND OWNERS/ OCCUPIERS .....	71
9.7	MUNICIPALITY IN WHICH THE SITE IS SITUATED AND OTHER GOVERNMENTAL AUTHORITIES .....	71
9.8	PLACEMENT OF ADVERTISEMENT IN THE LOCAL NEWSPAPER.....	72
9.9	PUBLIC MEETINGS.....	72
9.10	SYNTHESIS OF ISSUES AND RESPONSE .....	72
<b>10.</b>	<b>DESCRIPTION OF THE NEED AND DESIRABILITY OF THE PROPOSED ACTIVITY .....</b>	<b>72</b>
10.1	MOTIVATION FOR THE DEVELOPMENT .....	72
10.2	BENEFITS OF THE PROJECT .....	73
10.2.1	Supporting Strategies.....	74
<b>11.</b>	<b>PLAN OF STUDY FOR EIA.....</b>	<b>74</b>
<b>12.</b>	<b>CONCLUSION .....</b>	<b>74</b>
<b>13.</b>	<b>REFERENCES .....</b>	<b>76</b>

## TABLES

Table 1: Activities listed within Government Notice No. R983, R984 and R985 applicable to this project (as per numbering in the Government Notice) .....	13
Table 2: Details of the EAP.....	16
Table 3: Summary of Specialist Findings-Site Alternative A .....	23
Table 4: Summary of Specialist Findings-Site Alternative B .....	25
Table 5: Summary of Specialist Findings-Site Alternative C .....	26
Table 6: Summary of Specialist Findings-Site Alternative D .....	27
Table 7: Summary of Specialist Findings-Site Alternative E .....	29
Table 8: Summary of Specialist Findings-Site Alternative F.....	30
Table 9: Summary of Specialist Findings-Site Alternative G .....	31
Table 10: Details of the Affected Farms .....	33
Table 11: The GPS coordinates of the centre points for the substation alternative sites.....	34
Table 12: Main economic sectors .....	35
Table 13: Number of species within the different conservation status categories (SANBI SIBIS database) .....	47



Table 14: The outcomes of the sampling were as follows:.....54

Table 15: Legislation pertaining to the proposed project .....56

Table 16: Environmental Potential impact Identified .....62

**FIGURES**

**Figure 1: Cross rope tower**.....22

Figure 2: Self-supporting tower .....22

**Figure 3: Guyed V tower** .....22

**Figure 4: Proposed Alternative site A**.....23

**Figure 5: Proposed Alternative site B**.....25

Figure 6: Proposed Alternative site C.....26

Figure 7: Proposed Alternative site D.....27

Figure 8: Proposed Alternative site E.....29

Figure 9: Proposed Alternative site F .....30

Figure 10: Proposed Alternative site G.....31

Figure 11: Alternative substation sites and loop in loop out lines .....33

Figure 12: Overberg District Municipality (Source: www.odm.org.za) .....38

Figure 13: Average Temperature Graph for Swellendam (Source: http://weatherhq.co.za/swellendam).....39

Figure 14: Average Rainfall Graph for Swellendam (Source: http://weatherhq.co.za/swellendam).....40

Figure 15: Geological Map.....41

Figure 16: Wetlands and riparian areas within 500m of the proposed within the proposed study area .....43

Figure 17: Representation of the vegetation types that the proposed project is situated in. ....45

Figure 18: Vegetation Sensitivity Map.....46

Figure 19: Map indicating Critical Biodiversity Areas within the study area .....48

Figure 20: Pans identified in the area (Avifauna Specialist Report, 2015) .....51

Figure 21: Sampling points to determine agricultural potential .....54

## **APPENDICES**

Appendix A:	Locality Map
Appendix B:	Photographs
Appendix C:	Specialist Reports
Appendix C1:	Draft Flora & Fauna Report
Appendix C2:	Draft Agriculture Potential Report
Appendix C3:	Draft Avifaunal Specialist Report
Appendix C4:	Draft Heritage Assessment Report
Appendix D:	Public Participation process
Appendix D1:	Site Notices
Appendix D2:	Newspaper Advert
Appendix D3:	Notification Letters and Proof of Registered Mail
Appendix D4:	Issues and Response Report
Appendix D5:	I&AP Database and Registered Interested & Affected Parties
Appendix E:	Details of EAP and Expertise
Appendix F:	Declaration of Specialists
Appendix G:	Plan of Study for EIA

## ACRONYMS

ARC	Agricultural Research Council
CBA	Critical Biodiversity Area
CLN	Customer Load Network
DEA	Department of Environmental Affairs
DEADP	(Western Cape) Department Environmental Affairs and Development Planning
EA	Environmental Authorisation
EIA	Environmental Impact Assessment
EMPr	Environmental Management Programme
HV	High Voltage
I&APs	Interested and Affected Parties
km	Kilometers
kV	Kilovolts
MTS	Main Transmission Substation
mm	Millimetre
NEMA	National Environmental Management Act
SAHRA	South African Heritage Resources Agency
SANBI	South African National Biodiversity Institute
Tx	Transmission
WULA	Water Use Licence Application

## 1. INTRODUCTION

Eskom Transmission Grid Planning and Eskom Distribution Western Cape Operating Unit initiated a study to investigate possible solutions to address the constraints on the sub-transmission network to the east of Bacchus 2x500 MVA 400/132 kV substation. Bacchus substation forms part of the Outeniqua Customer Load Network (CLN) in the Western Cape Grid and it supplies Vryheid and Ashton sub transmission substations in the east. Ashton substation is supplied via Boskloof 132kV switching station, whilst Vryheid substation is supplied directly from Bacchus substation. Vryheid and Ashton substations are both equipped with 2x40MVA 132/66kV transformers and are radially supplied.

The following sub-transmission network constraints are anticipated by 2018:

- Low voltages will be experienced at Ashton and Vryheid 132kV substations; and
- Boskloof-Ashton 132kV line will reach its thermal capacity.

Consequently, in order to resolve the above-mentioned network constraints the proposed Vryheid strengthening project is proposed and this entails development of the new Agulhas 400/132kV 2x500 MVA Transmission Substation and associated loop in and out lines.

The required area for the substation is approximately 600m x 600m i.e. 3600m<sup>2</sup> to account for current and future needs. The proposed turn-in lines will be approximately 2 x 5km 400kV loop in and out lines, however the final distance will be determined by the substation location. The substation site will be located closer to the existing Vryheid substation for distribution to connect easily and also reasonably close to the 400kV line for transmission to connect.

The project proponent or applicant for this development is Eskom Holdings SOC Limited (Eskom), and the Competent Authority is the National Department of Environmental Affairs (DEA), while the independent Environmental Assessment Practitioner (EAP) is Nsovo Environmental Consulting (hereafter referred to as Nsovo). The proposed project will be undertaken in terms of the National Environmental Management Act, 1998 (Act 107 of 1998) (NEMA) and the EIA Regulations as amended in December 2014 (hereafter referred as the Regulations), further, other applicable Acts and Regulations will be equally considered.

The proposed development is in Western Cape Province therefore the provincial authority is Western Cape Department Environmental Affairs and Development Planning (DEADP). However, the proponent is a

parastatal, Department of Environmental Affairs is the decision making Authority. The following listed activities are relevant to this project. Refer to Table 1 below:

**Table 1: Activities listed within Government Notice No. R983, R984 and R985 applicable to this project (as per numbering in the Government Notice)**

Indicate the number and date of the relevant notice:	Activity No (s) (in terms of the relevant notice):	Describe each listed activity as per project description:
GNR 984 December 2014	9	<p>The development of facilities or infrastructure for the transmission and distribution of electricity with a capacity of 275kV or more, outside an urban or industrial complex.</p> <p><b>The proposed project entails construction of a 400/132kV 2x500 MVA, 2x400kV loop-in transmission lines and associated works.</b></p>
GNR 983 December 2014	14	<p>The development of facilities or infrastructure, for the storage, or for the storage and handling, of a dangerous good, where such storage occurs in containers with a combined capacity of 80 cubic metres or more but not exceeding 500 cubic metres.</p> <p><b>The construction phase of the project may require the provision for the storage and handling of fuels, oils and other dangerous goods.</b></p>
GNR 983 December 2014	27	<p>The clearance of an area of 1 hectares or more, but less than 20 hectares of indigenous vegetation, except where such clearance is required for – (i) The undertaking of linear activity.</p> <ul style="list-style-type: none"> <li>• <b>The construction of the 400/132kV, 2x500 MVA transmission substation will require the clearing of</b></li> </ul>

		<p><b>vegetation for the final preferred route.</b></p> <ul style="list-style-type: none"> <li>• <b>Temporary transformation of land would be required by the construction team for placement of their construction camps in strategic positions close to the proposed developments.</b></li> </ul>
GNR 983 December 2014	28	<p>Residential, mixed, retail, commercial, industrial or institutional developments where such land was used for agriculture or afforestation on or after 01 April 1998 and where such development: -</p> <p>(ii) will occur outside an urban area, where the total land to be developed is bigger than 1 hectare;</p> <p>Excluding where such land has already been developed for residential, mixed, retail, commercial, industrial or institutional purposes.</p> <p><b>The site alternatives for the proposed development are zoned agriculture. Therefore, it may be important to change zoning to accommodate the proposed activity.</b></p>
GNR 985 December 2014	3 (f)(i)	<p>The development of masts or towers of any material or type used for telecommunication broadcasting or radio transmission purposes where the mast or tower –</p> <p>(a) is to be placed on a site not previously used for this purpose; and</p> <p>(b) will exceed 15 metres in height – but excluding attachments to existing buildings and masts on rooftops.</p> <p>(f) In Western Cape:</p> <p>(i) All areas outside urban areas.</p>

		<p>The proposed development would also involve the installation of telecommunication mast that would be used for communication purposes at the substation.</p> <p>Should the telecommunication mast be needed at the substations, the final layout designs would include it.</p>
GNR 983 December 2014	24 (ii)	<p>The development of –</p> <p>(ii) a road with a reserve wider than 13,5 metres, or where no reserves exists where the road is wider than 8 metres; but excluding –</p> <p>(b) roads where the entire road falls within an urban area. <b>The proposed development would require the construction of access roads that would be used in both construction and operations of the proposed power lines and the substation.</b></p>
GNR 985 December 2014	4(f)(aa)	<p>The development of a road wider than 4 metres with a reserve less than 13, 5 metres. – (f) In Western cape:</p> <p>(i) Areas outside the urban areas;</p> <p>(aa) Areas containing indigenous vegetation.</p> <p><b>The proposed development would require the construction of access roads that would be used in both construction and operations of the proposed power lines and the substation.</b></p>
983 December 2014	11	<p>The development of:</p> <p>(xii) infrastructure or structures covering 50m<sup>2</sup> or more</p> <p>Where such construction occurs within a watercourse or within 32m of a watercourse, measured from the edge of a watercourse, excluding where such construction will occur behind the development setback line.</p>

		<p>This listing is applicable only in certain special areas, namely within a distance from a watercourse. The study area contains number of wetlands, rivers and other watercourses that may be affected depending on the route Alternative selected for the transmission lines. Should DEA authorise the route Alternative which triggers a Water Use Licence Application (WULA), the process will be undertaken appropriately prior to commencement of construction activities.</p>
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## 2. DETAILS OF THE ENVIRONMENTAL ASSESSMENT PRACTITIONER

Nsovo is conversant with the definition and general requirements of an Environmental Assessment Practitioner (EAP) as defined in Section 12 of the National Environmental Management Act, 1998 (No 107 of 1998) (NEMA) and Regulation 13 of the Regulations. Nsovo is:

- Independent and Objective;
- Has expertise in conducting EIA's;
- Takes into account all relevant factors relating to the application; and
- Provides full disclosure to the applicant and the relevant environmental authority.

Table 2 below provide Details of the EAP and relevant experience. A detailed CV and Qualifications is attached as Appendix E.

**Table 2: Details of the EAP**

Name of Company	Nsovo Environmental Consulting
Person Responsible	Beatrice Matekenya
Professional Registration	South African Council for Natural Scientific Professions (SACNASP)
Postal Address	P/Bag x29 Postnet Suite 697 Gallo Manor



	2052
Telephone Number	011 312 5153
Fax Number	086 602 8821
Email	<a href="mailto:beatrice@nsovo.co.za">beatrice@nsovo.co.za</a>
Qualifications & Experience	Masters of Science in Environment and Society <b>8 years of experience</b>
Project Related Expertise	<p>In terms of project related expertise the EAP has completed the following projects:</p> <ul style="list-style-type: none"> <li>• Basic Assessment for the proposed Decommissioning and Demolition of Verwoedberg Substation and 275kV power.</li> <li>• BAR for the proposed Abersethin Substation and loop in and out power lines in Bethlehem.</li> <li>• Basic Assessment for Bloemendal Substation and loop in and out lines.</li> <li>• BAR for the proposed Abersethin Substation and loop in and out power lines in Bethlehem.</li> <li>• EIA, EMP and WULA for Senakangwedi --- Senakangwedi B Integration in Limpopo.</li> <li>• Environmental Impact Assessment For The Proposed 100MW !Kheis Solar One Concentrated Solar Power (CSP) And Associated Infrastructure Within The Jurisdiction Of The !Kheis Local Municipality, Northern Cape Province.</li> <li>• EIA for the proposed Tubatse strengthening phase 1 – Senakangwedi B integration within the jurisdiction of Greater Tubatse Local Municipality in Limpopo Province.</li> </ul>

### 3. DESCRIPTION OF THE PROPOSED ACTIVITIES

#### 3.1 BACKGROUND

Eskom Transmission Grid Planning and Eskom Distribution Western Cape Operating Unit initiated a study to investigate possible solutions to address the constraints on the sub-transmission network to the east of Bacchus 2x500 MVA 400/132kV substation, which forms part of the Outeniqua CLN in the Western Cape Grid. The substation supplies Vryheid and Ashton sub transmission substations in the east. Ashton substation is supplied via Boskloof 132kV switching station, whilst Vryheid substation is supplied directly from Bacchus substation. Vryheid and Ashton substations are both equipped with 2x40MVA 132/66kV transformers and are radially supplied. As indicated above, in order to resolve the current constraints, Eskom has proposed the Vryheid Network Strengthening.

#### 3.2 THE PROPOSED SCOPE OF WORK

The proposed scope of work entails the development of the following:

- The Agulhas 400/132kV 2 x 500 MVA Main Transmission Substation (MTS) which will be approximately 600m x 600m;
- The loop in and loop out lines to connect the proposed Agulhas MTS to the existing 400kV line Bacchus – Proteus 1;
- Build a Double Circuit Kingbird line from Agulhas MTS Vryheid; and
- Extend Vryheid 132 kV Busbar and build 2x132kV feeder bays.

#### 3.3 ACTIVITIES ASSOCIATED WITH THE PROJECT

The construction phase of the proposed project will take approximately 3 years and the activities included are discussed hereunder:

##### **Corridor walk-down**

The primary objective of the corridor walk-down is to ensure that sensitive areas are avoided and where need be; buffers are created for conservation purposes. Furthermore, the walk-down aims to establish the exact coordinates for the establishment of the loop in loop out powerline pylons positions and the proposed Agulhas substation.

### **3.3.1 Access roads**

Primary access to the proposed sites will be through the R319 while secondary access will be public roads as well as private farm roads negotiated with land owners. However, where such roads do not provide access, access roads may need to be established. The construction of access roads will be compliant with a Type 6 gravel road; which comprises of 6 meter wide raised gravel extended to 14 meters with meadow drainage in flat terrain, increased to 16 meters with 'V' type drainage in rolling terrain. Where necessary, suitable erosion control measures such as the construction of gabions and culverts to control storm-water will be implemented.

### **3.3.2 Vegetation clearance**

A fifty five meter (55m) servitude is required for each of the proposed 2x400kV loop in and loop out power lines as a result a total of one hundred and ten meter (110m) servitude will be cleared. Only flora within the servitude will be cleared for construction purposes. Clearance will be according to the Environmental Management Programme (EMPr) as well as Eskom policies and guidelines.

### **3.3.3 Substation and pylon construction**

The civil works will include the construction of foundations for the Agulhas substation and pylons as well as associated infrastructure.

### **3.3.4 Steelworks structures**

Various types of pylons are under consideration and final selection will depend on the terrain. The pylons will be erected in segments.

### **3.3.5 Stringing**

Once the pylons have been erected, the conductors will be threaded between the pylons.

### 3.3.6 Completion of construction work

Once construction work is complete, the site will be rehabilitated as per the specifications of the site specific EMP.

Among other activities, the rehabilitation activities will include:

- Removal of excess building material and waste;
- Repairing any damage caused as part of the construction activities;
- Rehabilitating the area affected by temporary access roads;
- Reinstating existing roads; and
- Replacing topsoil and planting indigenous grass where necessary.

## 4. DESCRIPTION OF FEASIBLE AND REASONABLE ALTERNATIVES

The identification of alternatives is an important component of the EIA process. The various identified alternatives will be assessed in terms of both environmental acceptability as well as technical and economic feasibility during the EIA process wherein the preferred alternative will be highlighted and presented to the authorities.

Seven alternative substation sites and the no-go alternative are being considered for the Vryheid Network Strengthening. The loop in and loop out power lines will be constructed to connect the proposed Agulhas substation to the existing Bacchus – Proteas 400kV powerline. The powerline corridor will be determined by the location of the substation site. A 5km kilometre radius study area is under assessment. The project has considered various technical alternatives (4.1.1) of which were found to be y, economically and environmentally viable compared to the other options. The various alternatives will be presented as part of this scoping and will be scrutinised further during the EIA phase and some eliminated after the Scoping Phase.

### 4.1 TECHNICAL ALTERNATIVES

Instead of constructing the proposed loop in and loop out power lines above ground, underground construction is considered an alternative. The advantages of this alternative would include minimisation of the impact on land use, reduced impact on bird interaction and a distinct visual impact benefit.

From a technical perspective the undergrounding of cables would not be feasible owing to the undulating nature of the area. This could cause major technical problems and would have major cost implications. Unlike aboveground cables, underground cables need to be insulated against the surrounding soil. On low voltage reticulation networks

(11kV & 22kV) the heat generated by the cable is low enough for standard insulation to be used. But on larger lines the methods of electrical and heat insulation becomes more burdensome.

Control of electrical losses and heat control are critical for underground cables. As a result, cables are as much as 4 times the diameter and 10 times the weight of equivalent overhead lines. Heat control is also a factor in the laying of the cables. The three phases of low and medium voltage cables (up to 132kV) can be placed in the same trench, while the phases for high voltage cables must be spaced apart, typically in a flat formation.

Faulting on underground cable is rare. Bush fires, lightning strikes and bird related faults make up 80% of faults on overhead transmission lines in South Africa. These are not risks associated with underground cables. When such faults occur on overhead lines they are usually re-energised by automatically reclosing the circuit-breaker within a few seconds of the fault. More serious faults, such as a damaged line may be easily found and repaired within a few days at most. On underground cables the faults are almost exclusively a permanent fault, requiring inspection and correction on site. This usually requires excavating a section of the line. However, location of faults is not easy unless there is clear evidence of excavation damage. Therefore, the search and repair of underground cables can take several weeks. This may severely compromise the network design standard.

Economically, costs vary and are dependent on terrain, land use and size of line. However, underground cabling is in orders of magnitude greater than overhead cables. Underground 132kV is 3 to 10 times more expensive than overhead lines. The mark up for 'undergrounding' is therefore significant. There is not much expertise for high voltage underground cabling in the country therefore such expertise would have to be sourced from the international market.

In terms of maintenance, underground cables are reported to be much more reliable, but outages are more difficult to fix as it is harder to find the faults, and therefore the outages last much longer. The lifespan for underground cables is reported to be much shorter, about half that of overhead cables.

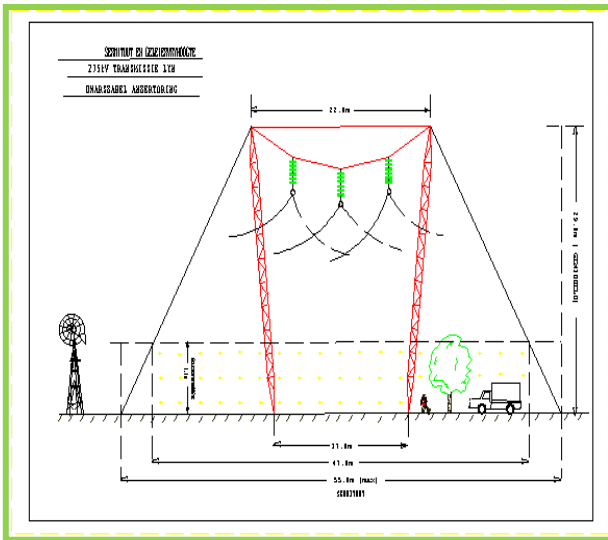
## **4.2 STRUCTURAL ALTERNATIVES**

Several design alternatives have been proposed: The design may include one or more of the following pylons:

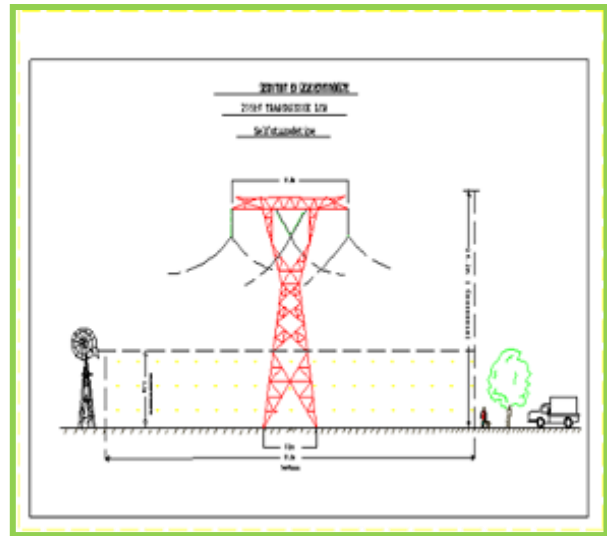
- Cross-Rope suspension type;
- Self-supporting type; and

- Gayed V towers.

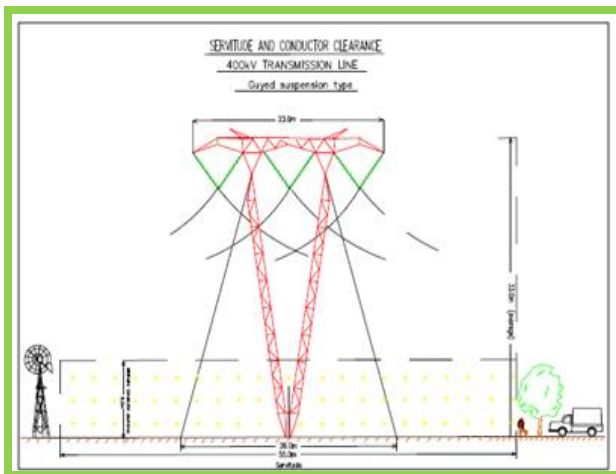
These are illustrated in **Figures 1, 2 and 3** below, respectively. It is important to note that the topography will largely dictate the types of towers to be used. From this perspective, it should be noted that where the line crosses undulating terrains and when it changes direction at an angle, there will be a need to use self-supporting towers.



**Figure 1: Cross rope tower**



**Figure 2: Self-supporting tower**



**Figure 3: Gayed V tower**

None of the above options have been dismissed and remain alternatives depending on the terrain and topography.

### 4.3 SITES ALTERNATIVES

#### 4.3.1 Substation Site Alternative A

Site alternative A is located north of the existing substation. The site is largely transformed and located approximately 50m from the existing 400kV overhead powerline and within close proximity to the N2 Road. About 90% of the site is natural grass and situated in an old pasture land used for grazing. Furthermore, the Loop-in loop-out line from the substation will be approximately 273m and this is the shortest line alternative. The Kluitjieskraal River is located about 500m east of the substation site A; further a small stream is also located north of the site (Refer to Figure 3 below). The terrain has a side slope of about 6 to 9%. Access to Site A will be from a gravel road (about 400m).

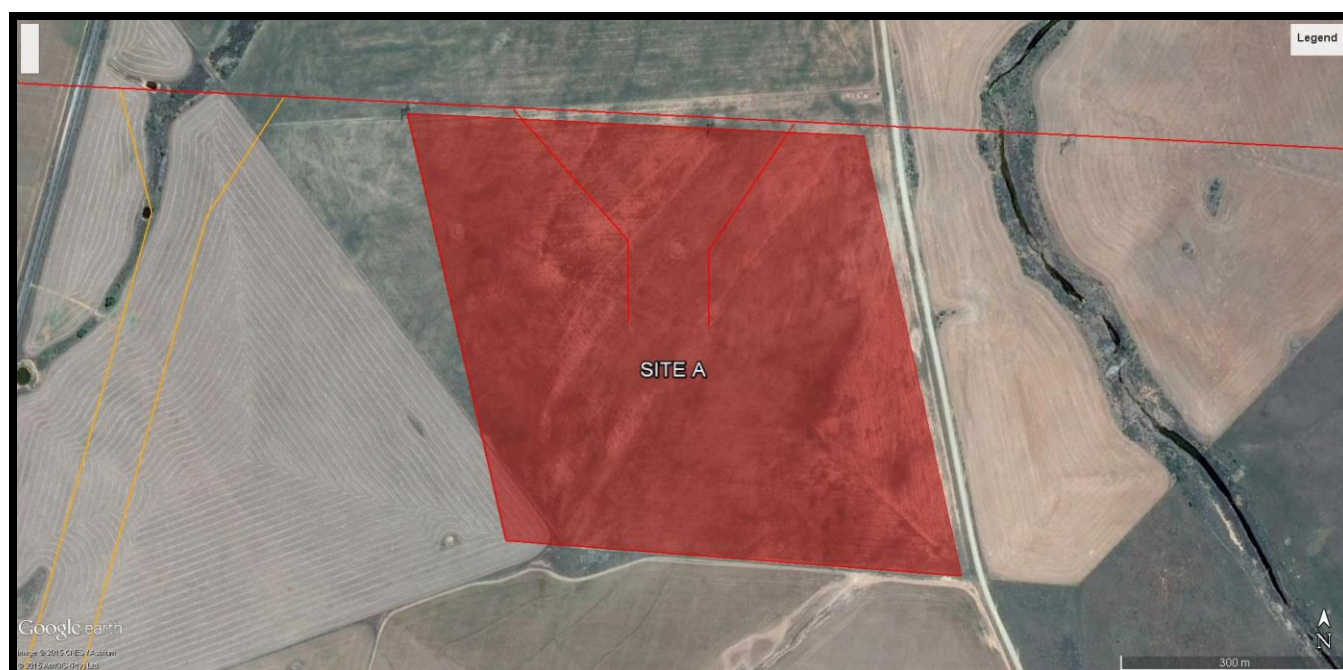


Figure 4: Proposed Alternative site A

Table 3: Summary of Specialist Findings-Site Alternative A

Specialist	Description
Agricultural Potential	Site A has the lowest agricultural potential as a result of shallow soils and high percentage of rocks within the profile. This site is used for livestock grazing and not for cultivation of crops.
Flora (Biodiversity)	Site A is within the transformed habitat considered to be low sensitivity and no potential impacts can result. There is no remnant vegetation within the proposed site.

Specialist	Description
Heritage	This site is largely transformed and located in close proximity to the N2 Road. It has a high percentage of rocks. Sections of this site paint a picture of an area which is suitable for Stone Age people. Thus, there is ample water (a perennial waterway cut across the proposed area) and grazing for wild life Stone Age people would have hunted. In addition, although no shelters or settlements were identified in the area, the ample stones on site could have been easily transformed into tools. As a result, it is very likely that Stone Age people did roam around this site.
Avifauna	This site is close to the existing power line and other human development and as a result it is highly transformed. Furthermore, this site would require the shortest loop-in loop- out line from the substation.

#### 4.3.2 Substation Site Alternative B

Alternative site B is located to the south of substation site A and is located within a Canola field. A drainage line and pan micro-habitats are located within close proximity of the proposed site. The site is situated approximately 2.5km south of Bacchus - Proteus 400kV powerline and 2km north of Vryheid Substation). Alternative Site B is on an agricultural land (flowers planted on this land) with a slope of about 5%. The terrain is good for the loop in and out lines. Site access will be directly from R319 road to Bredasdorp. Refer to Figure 5 below.



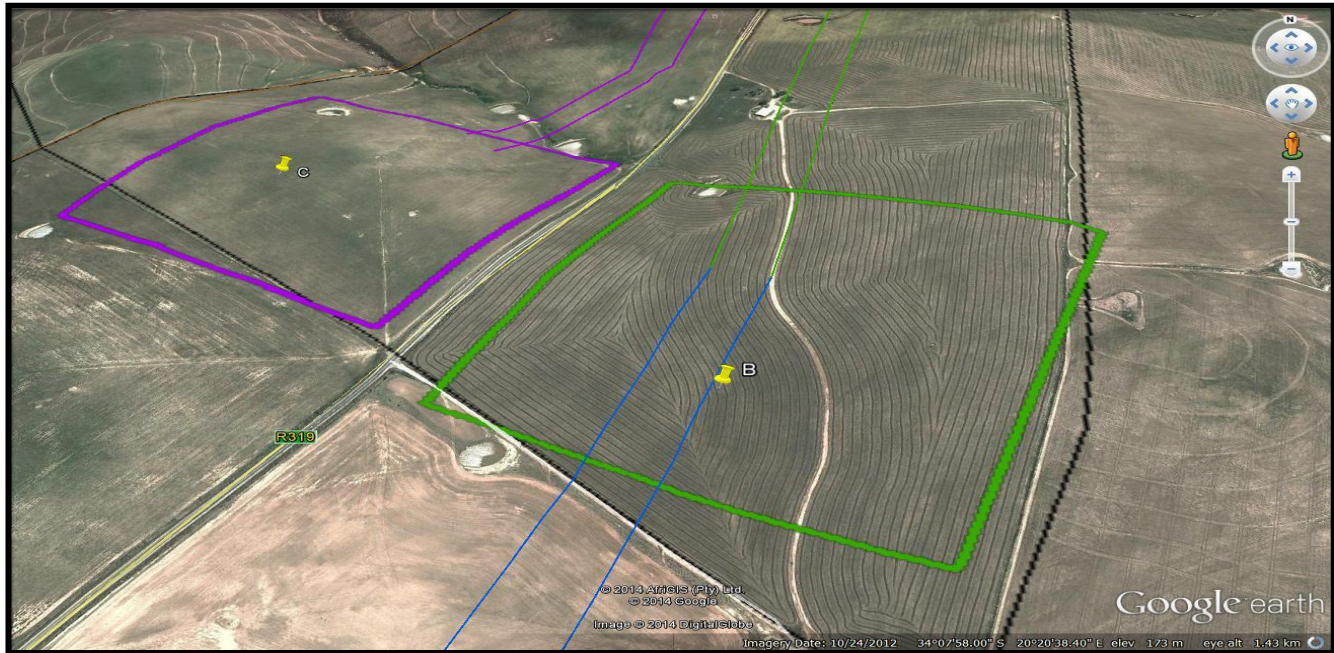


Figure 5: Proposed Alternative site B

Table 4: Summary of Specialist Findings-Site Alternative B

Specialist	Description
Agricultural Potential	This site is actively used for the cultivation of Canola crops.
Flora (Biodiversity)	<ul style="list-style-type: none"> <li>Site B is within the transformed habitat considered to be low sensitivity and no potential impacts can result.</li> <li>There is no remnant vegetation within the proposed site.</li> </ul>
Heritage	This site was found to be highly degraded by previous farming activities, such that no archaeological material could have survived or remained in situ on the affected property.
Avifauna	A drainage line and pan micro habitats are located within the proximity of the proposed site. Both Denham’s Bustard and Blue Cranes were recorded within the site. Furthermore, the loop-in loop-out line from the substation will be approximately 2.363km. Due to the presence of a variety of micro- habitats and the increased length of the associated loop-in loop-out line (increased mortality potential due to collision by Blue Cranes and Denham’s Bustard) this is considered to be a sensitive site in terms of avifauna.

### 4.3.3 Substation Site Alternative C

Alternative Site C is located to the west of alternative Site B and is situated in an old pasture land used for grazing with a smooth terrain and a side slope of about 2% to 7%. A pan micro-habitat is located within the vicinity of the site. The site is situated approximately 2km south of Bacchus - Proteus 400kV line and approximately 2.5km north of Vryheid Substation; furthermore, the loop-in loop-out line from the substation will be approximately 2.039km. There is a water course and 3 small dams north of the site. Alternative site C is located close to the R319 road to Bredasdorp, which will be the primary access. Refer to Figure 6 below.



Figure 6: Proposed Alternative site C

Table 5: Summary of Specialist Findings-Site Alternative C

Specialist	Description
Agricultural Potential	Site C has the lowest agricultural potential as a result of shallow soils and high percentage of rocks within the profile. This site is used for livestock grazing and not for the cultivation of crops.
Flora (Biodiversity)	Site C is within the transformed habitat considered to be low sensitivity and no potential impacts of significance can result. There is no remnant vegetation within the proposed site.
Heritage	Similar to A, alternative C has high percentage of rocks and as a result it has

Specialist	Description
	low agricultural potential, hence it is used for livestock grazing. Experience has shown that archaeological sites and isolated tools tend to remain stable under areas where game or livestock farming are practiced. Alternative C bears potential for isolated archaeological tools.
Avifauna	The site is situated in an old pasture land used for grazing. A pan micro-habitat is located within the vicinity of the site. Furthermore, the loop-in loop-out line from the substation will be approximately 2km.

**4.3.4 Substation Site Alternative D**

Alternative site D is situated approximately 4km south of Bacchus - Proteus 400kV powerline and approximately 500m north of the existing Vryheid Substation. Site Alternative D is located immediately North East of the existing substation and is situated within an agricultural landscape used for the production of grain. The terrain on site is smooth with a side slope of about 5 to 8%. The primary access to site is the R319 road to Bredasdorp. Refer to Figure 7 below.

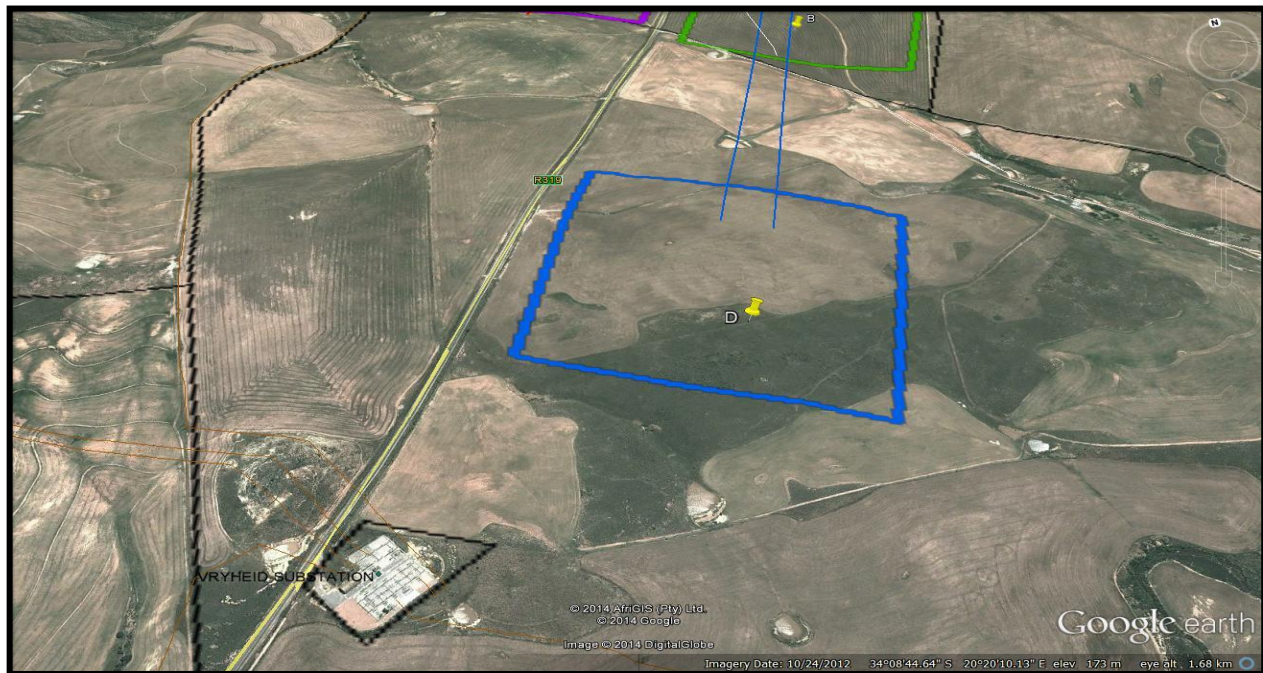


Figure 7: Proposed Alternative site D

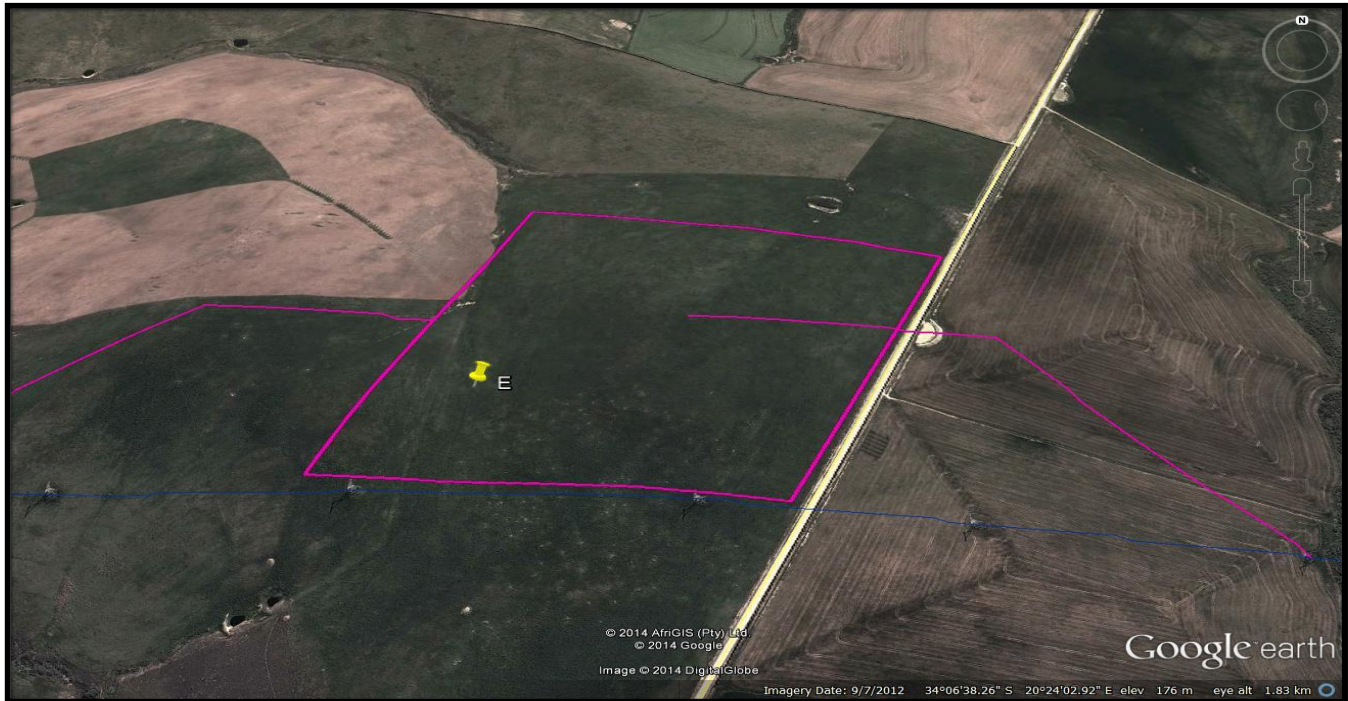
**Table 6: Summary of Specialist Findings-Site Alternative D**

Specialist	Description
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Agricultural Potential	Site D is used for the cultivation of a cereal/grain crop.
Flora (Biodiversity)	Site D contains intact remnants of Ruens Silcrete Renosterveld which is critically endangered and considered to be of high sensitivity. Further habitat loss within these ecosystems would be considered a fatal flaw and as such site D is considered not viable. In addition, site D is considered to be in a Critical Biodiversity area (CBA) from a biodiversity perspective.
Heritage	This site is used for the production of grain and is vehemently disturbed to yield any archaeological material. A small reservoir was noted in the foot print of the proposed site. However, this is a recent phenomenon and is not protected by Legislation.
Avifauna	All three avifaunal micro-habitats are found in close proximity to the proposed site alternative including a large riparian habitat to the east. The loop and out line from the substation will be approximately 3.7km and is the longest line alternative.

#### 4.3.5 Substation Site Alternative E

Alternative site E is situated approximately 50m from an existing 400kV powerline and 7km from the existing Vryheid Substation. This site alternative is located on the eastern edge of the study area and is located within a Canola field. There is a large drainage line micro-habitat located close to the site. Furthermore, this is the closest substation site alternative to the Bontobok National Park (which hosts a high diversity of avian species). The site slope is about 1 to 4 % i.e. fairly flat. The access to site is good as it is close to a gravel road. Refer to Figure 8 below:



**Figure 8: Proposed Alternative site E**

**Table 7: Summary of Specialist Findings-Site Alternative E**

Specialist	Description
Agricultural Potential	This site is actively used for the cultivation of Canola crops.
Flora (Biodiversity)	Site E is within a transformed habitat considered to be low sensitivity and no potential impacts of significance can result. There is no remnant vegetation within the proposed site.
Heritage	Similar to site B, this proposed site is transformed to agricultural and is used for the cultivation of canola crops. Likewise, the area was found to be highly degraded and no archaeological material could have survived or remained in situ on the affected property.
Avifauna	Eight Denham's Bustards and fifteen Blue Cranes were recorded roosting and foraging within the site area. This coupled with the long loop-in loop-out line from the substation approximately 0.9km may result in increased mortalities of these larger species due to collision.

### 4.3.6 Substation Site Alternative F

This site alternative is located on elevated landform to the east of site A. This is located within an agricultural area and the existing 400kV powerline and National road (N2) are located within close proximity of this site. A drainage line micro-habitat is located to the south west of the site. Refer to Figure 9 below.



**Figure 9: Proposed Alternative site F**

**Table 8: Summary of Specialist Findings-Site Alternative F**

Specialist	Description
Agricultural Potential	The proposed site has high agricultural potential and is used for agricultural activities.
Flora (Biodiversity)	Site F is within the transformed habitat considered to be of low sensitivity and no potential impacts can result. There is no remnant vegetation within the proposed site.
Heritage	The proposed area is characterised by extensive agricultural farming, topographical map dating to the 1940s depict agricultural activities in the area. Any archaeological materials that could have existed in the past had probably been destroyed during the time when farming commenced.
Avifauna	This site is located within an agricultural area and the existing 400kV powerline

and N2 Road are located within close proximity of this site. A drainage line micro-habitat is located to the south west of the site.

#### 4.3.7 Substation Site Alternative G

Site Alternative G is located North West of the existing substation, along the N2 Road. Given the non-viability of some of the sites selected at the onset, this specific site was added to the alternatives to allow for a wider and varied selection. The site is located adjacent to the N2. Refer to Figure 10 below.



Figure 10: Proposed Alternative site G

Table 9: Summary of Specialist Findings-Site Alternative G

Specialist	Description
Agricultural Potential	The proposed site is an active high agricultural potential site that is already transformed.
Flora (Biodiversity)	Site G is within the transformed habitat considered to be low sensitivity and no potential impacts can result. There is no remnant vegetation within the proposed site.
Heritage	The area on which this alternative is proposed is transformed due to agricultural activities. As a result, there was no topographical feature providing likely occupational sites in the area. It is highly unlikely that there

	could be any archaeological materials that could have survived such disturbances.
Avifauna	Analysis of aerial imagery indicated that the site also falls within agricultural land (cereal cultivation). Blue Cranes were observed within close proximity to the site alternative. The longer powerline associated with this site alternative poses an increased risk of collision to Blue Crane and Denham's Bustard.

#### 4.3.8 No-go alternatives

In accordance with GN R982, consideration must be given to the option not act. This option is usually considered when the proposed development is envisaged to have significant negative environmental impacts that mitigation measures cannot ameliorate the identified impacts effectively.

The no-go alternative would be the option of not undertaking the construction of the proposed project. It would imply that the current electricity supply network is not strengthened and the integration of potential renewable energy in the area will not be possible. Should the no-go alternative be adopted, the Western Cape grid will be deprived of a much needed essential service, particularly given the already existing problem with energy supply countrywide.

## 5. DESCRIPTION OF LOCALITY AND THE PROPERTY ON WHICH THE ACTIVITY IS TO BE UNDERTAKEN AND LOCATION OF ACTIVITY ON THE PROPERTY

### 5.1 PROJECT LOCALITY

The proposed development will be located in Ward 3 of Swellendam Local Municipality which falls within the jurisdiction of Overberg District Municipality in the Western Cape Province. The alternative substation sites and loop in loop out lines are illustrated in **Figure 11** below and an A3 copy of the locality map is attached as **Appendix A**.

The proposed site earmarked for the substation will be approximately 600m x 600m whereas the loop in and loop out lines will be approximately 5km long, depending on the final location of the substation. The proposed sites are located approximately 10km from Swellendam town along the N2 and R319 roads as depicted in **Figure 11** below.



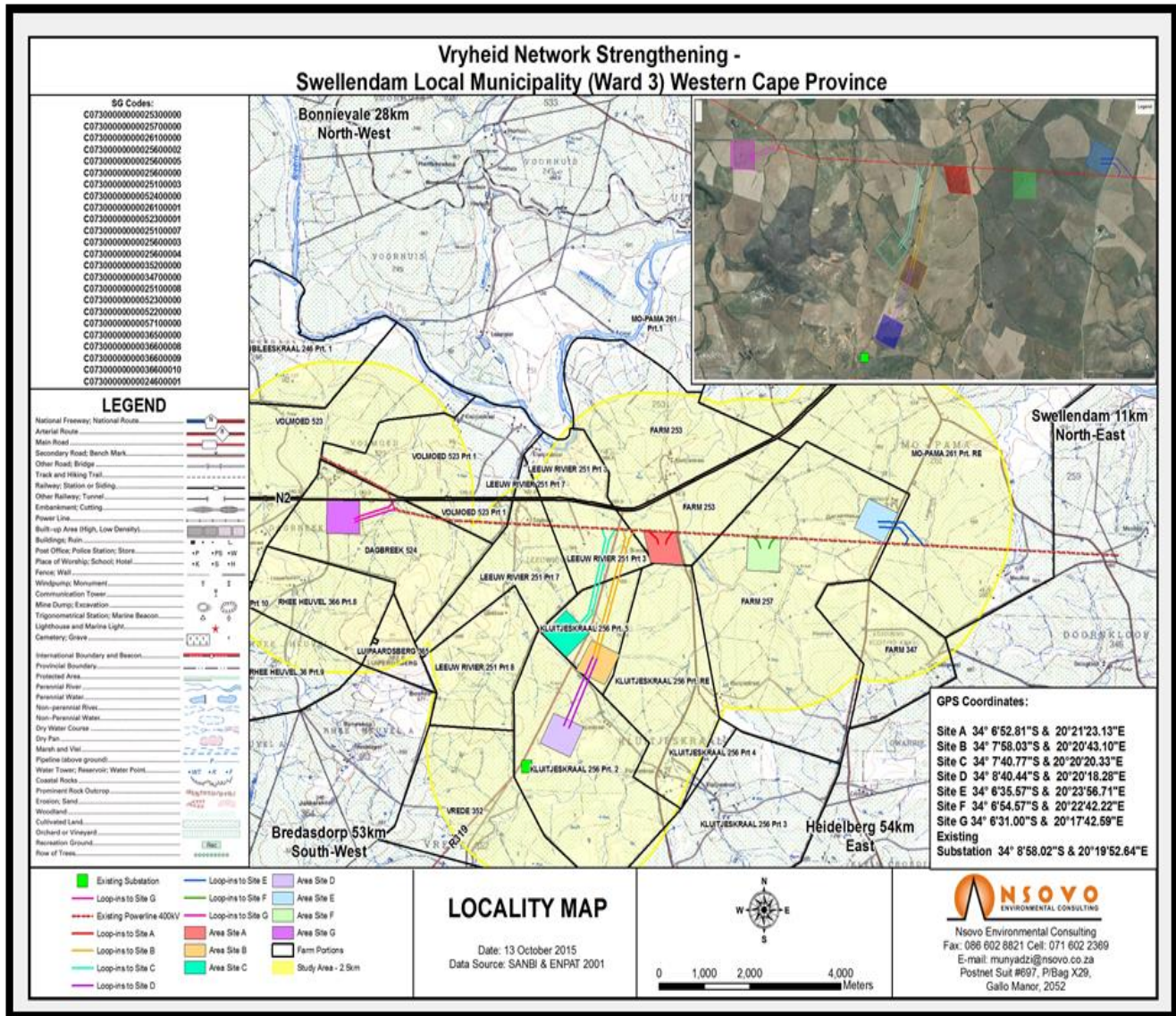


Figure 11: Alternative substation sites and loop in loop out lines

The farms affected by the proposed project as well as the GPS coordinates of the centre points for the alternative substation sites are indicated in **Tables 10** and **Table 11** below.

Table 10: Details of the Affected Farms

Farm Name	Portion Number	SG Code
Farm 253	No Portion Number Available	C0730000000025300000
Farm 257	No Portion Number Available	C0730000000025700000

Farm Name	Portion Number	SG Code
Mo-Pama 261	Portion RE	C07300000000026100000
Kluitjeskraal 256	Portion 2	C07300000000025600002
Kluitjeskraal 256	Portion 5	C07300000000025600005
Kluitjeskraal 256	Portion RE	C07300000000025600000
Leeuw Rivier 251	Portion 3	C07300000000025100003
Dagbreek 524	No Portion Number Available	C07300000000052400000
Mo-Pama 261	Portion 1	C07300000000026100001
Volmoed 523	Portion 1	C07300000000052300001
Leeuw Rivier 251	Portion 7	C07300000000025100007
Kluitjeskraal 256	Portion 3	C07300000000025600003
Kluitjeskraal 256	Portion 4	C07300000000025600004
Vrede 352	No Portion Number Available	C07300000000035200000
Farm 347	No Portion Number Available	C07300000000034700000
Leeuw Rivier 251	Portion 8	C07300000000025100008

**Table 11: The GPS coordinates of the center points for the substation alternative sites**

Substation Alternative Site	Latitude	Longitude
Alternative A	34°6'52.81"S	20°21'23.13"E
Alternative B	34°7'58.03"S	20°20'43.10"E
Alternative C	34°7'40.77"S	20°20'20.33"E
Alternative D	34°8'40.44"S	20°20'18.28"E
Alternative E	34°6'35.57"S	20°23'56.71"E
Alternative F	34°6'54.57"S	20°22'42.22"E
Alternative G	34°6'31.00"S	20°17'42.59"E
Existing Vryheid Substation	34°8'58.02"S	20°19'52.64"E

## 5.2 SURROUNDING LAND USES

### 5.2.1 Farming

The vast majority of the site has been transformed by intensive agriculture with all seven site alternatives falling within agricultural land. The Swellendam Local Municipality is involved in agriculture and agro-processing of products, which include fruits, wheat, barley, youngberry, livestock, and grapes for exporting and making wine.

### 5.2.2 Residential

The residential properties located in proximity to the proposed site are plots and farm houses. The nearest populated residential areas are located about 10km away i.e. Swellendam town.

### 5.2.3 Commercial and Industrial

The main economic sectors within the Municipality are indicated in Table 9 below.

**Table 12: Main economic sectors**

Economic Sectors	Percentage Contribution
Wholesale and retail trade, catering and accommodation	25.4%
Manufacturing	17.1%
Transport, storage and communication	14.4%
Agriculture, forestry and fishing	11.3%
Finance, insurance, real estate and business services	11%
General government	8.1%
Construction (5.3%), community, social and personal services	4.6%

### 5.2.4 Tourism

Some of the most significant conservation areas within the Municipality are Bontebok National Park, Marloth Nature Reserve in the Langeberg, and Sanbona Wildlife Reserve. There is emphasis on ecotourism and cultural heritage tourist activities within the Municipality.

### 5.2.5 Sites of Archaeological and Cultural Significance

The towns of Swellendam and Suurbraak have a rich historical and cultural heritage. In Swellendam many old buildings dating back to the 18th century can be found. Suurbraak is an old mission station near the foot of the

Tradouw Pass and its origin dates back to 1812. Obvious sites of neither heritage significance nor archaeological artefacts were not noted on or in close proximity to the proposed sites.

### **5.3 SURFACE INFRASTRUCTURE**

#### **5.3.1 Road Network**

The proposed study area is located in proximity to the N2, along the R319. Site alternatives A, B, C and D are situated along the R319 road while site alternative E is approximately 5km east of Site A. Site alternative F is located on elevated landform to the east of site A. Site G is located west and it's the closest to the N2. All site alternatives are accessible through secondary roads within the farms.

The N2 is a national route in South Africa that runs from Cape Town through Port Elizabeth, East London and Durban to Ermelo. It is the main highway along the Indian Ocean coast of the country with a total distance of 2,255 kilometres (km). From Cape Town, the N2 climbs Sir Lowry's Pass to enter the Overberg region. It passes near the town of Grabouw on the Hottentots-Holland plateau before descending the Houwhoek Pass to Botrivier. After Botrivier it passes across the agricultural plains through the towns of Caledon, Rivieronsderend, Swellendam and Riversdale to re-approach the coast at Mossel Bay, which marks the beginning of the Garden Route, which is one of South Arica's well sought tourist attraction.

The R319 is a Regional Route in South Africa that connects Agulhas and Struisbaai in the south with the N2 near Swellendam via Bredasdorp.

#### **5.3.2 Power lines and associated Infrastructure**

There are several other existing power lines located in the study area. The proposed loop in and out line will be looping into the existing Bachhus Proteus 400kV powerline. Further the existing Vryheid substation is within the proposed study area; on Farm Kluitjieskraal 256, owned by Jan en Sanet Schoonwinkel

## **6. DESCRIPTION OF THE RECEIVING ENVIRONMENT**

This section outlines those parts of the socio-economic and biophysical environment that could be affected by the proposed development. Using the project description in Section 4, and knowledge of the existing environment, potential interactions between the project and the environment are identified in the next section. The potential

effects of the project on the human environment, socio-economic conditions, physical and cultural resources are included.

Below is the description of the receiving environment.

## 6.1 SOCIO-ECONOMIC DESCRIPTION

### 6.1.1 Provincial and District Municipality Description

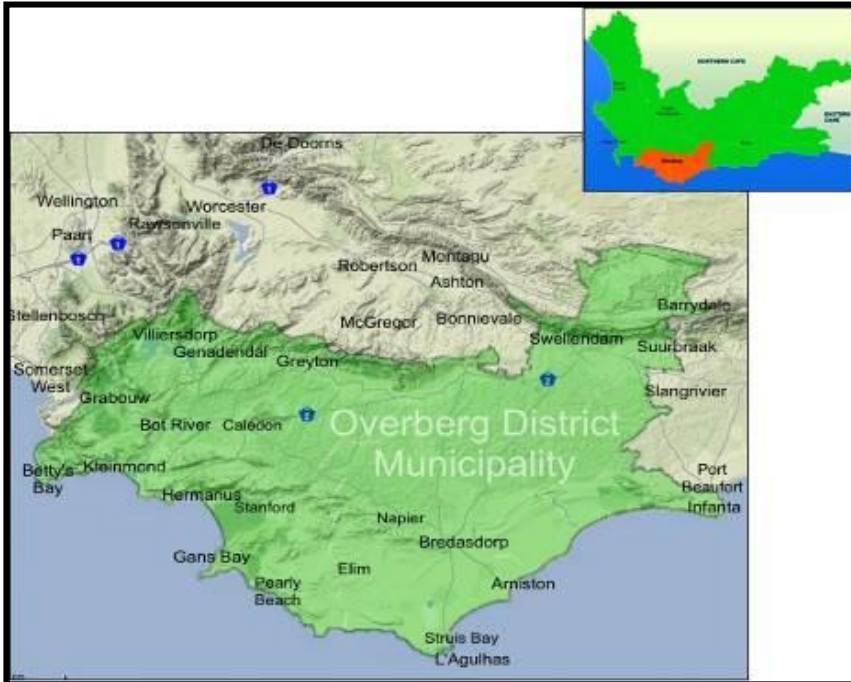
The Overberg District Municipality governs the Overberg region in the Western Cape Province. The District Municipality is divided into four local municipalities and includes the major towns of Grabouw, Caledon, Hermanus, Bredasdorp and Swellendam. The District municipal area covers 12,241 square km and had, in 2007, an estimated population of 212,787 people in 60,056 households.

The District Municipality is divided into four Local Municipalities:

- The waterskloof Local Municipality,
- Overstrand Local Municipality,
- Cape Agulhas Local Municipality, and
- Swellendam Local Municipality.

The Overberg District is located in the southernmost tip of Africa and is world-renown for its fierce winter storms and thus hundreds of shipwrecks scatter the coastline. Quaint little towns and hamlets such as Elim, Suurbraak, Genadendal, Greyton and Tesselaarsdal and larger towns like Swellendam, Barrydale and Caledon with their variety of architectural assets sets the scene for any tourist interested in the history, people and lifestyle of the district.

Furthermore the Overberg is richly endowed with fynbos, the smallest but yet the most unique floral kingdoms and environmental habitats in the world. The N2 Road opens doors for wide spectrum of development. Other transport corridors such as the coastal road from Gordon's Bay via Kleinmond, Hermanus, Gansbaai and Elim to Bredasdorp and numerous cross-district routes from e.g. Caledon to Villiersdorp and onward to Worcester, from Bredasdorp to Swellendam, Riviersonderend and Caledon also create numerous opportunities for development. Refer to **Figure 12** below indicating the Overberg District Municipality.



**Figure 12: Overberg District Municipality (Source: [www.odm.org.za](http://www.odm.org.za))**

The District Municipality has a population of 258 176 wherein 24.1% is under the age of 15 and 67.6% between the ages of 15 and 64, while the remaining percentage is over 65 years. The District Municipality has experienced a population growth rate of 2.37%. In terms of the labour market, the official unemployment rate is 17% while youth unemployment rate is 22.9%.

### 6.1.2 Swellendam Local Municipality

According to the 2011 census the Municipality has a population of 35,916 people in 10,139 households. Of this population, 68.8% are "Coloured", 17.4% as "White", and 12.4% as "Black African". The first language of 85.1% of the population is Afrikaans, while 6.9% speak Xhosa and 4.7% speak English.

Swellendam is linked with other urban and rural areas mainly through the N2 Road. The area is also served with the main railway line which links Cape Town with the Garden Route. The population of the municipal area is relatively young with 68% of the population being younger than 39 years of age while the gender division for the area is 50% male and 50% female.

Swellendam Local Municipality is currently the third biggest contributor to the economic growth and GDP of the Overberg District. Swellendam registered an average annual growth rate of 3.2% in GDP from 1995 to

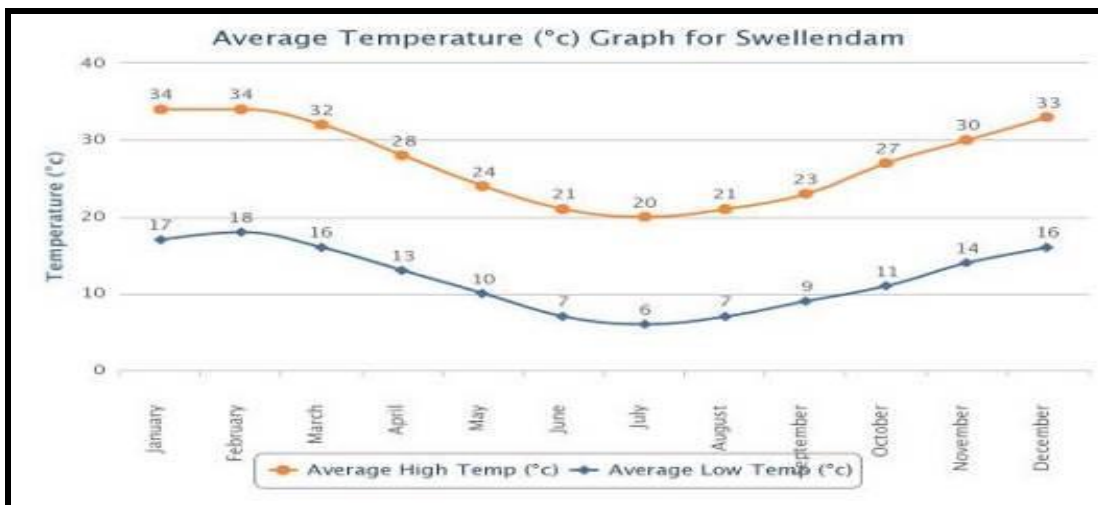
2004, the second highest rate in the Overberg District. When considering the most recent data and shorter periods, economic growth was higher than the long-term average, averaging 3.5% between 2000 and 2004, 4% between 2003 and 2004 and 5.5% in 2006.

The main economic sectors are primary agriculture and agro-processing of products which includes deciduous fruits, wheat, barley, young berry, livestock and grapes for exporting and the making of wine. Tourism is the other major sector in the area with a big emphasis on eco-tourism and cultural heritage tourism activities. The other sectors are retail and manufacturing, mining and quarrying. A potential sector for higher economic growth in the area is wholesale and packaging.

## 6.2 CLIMATE

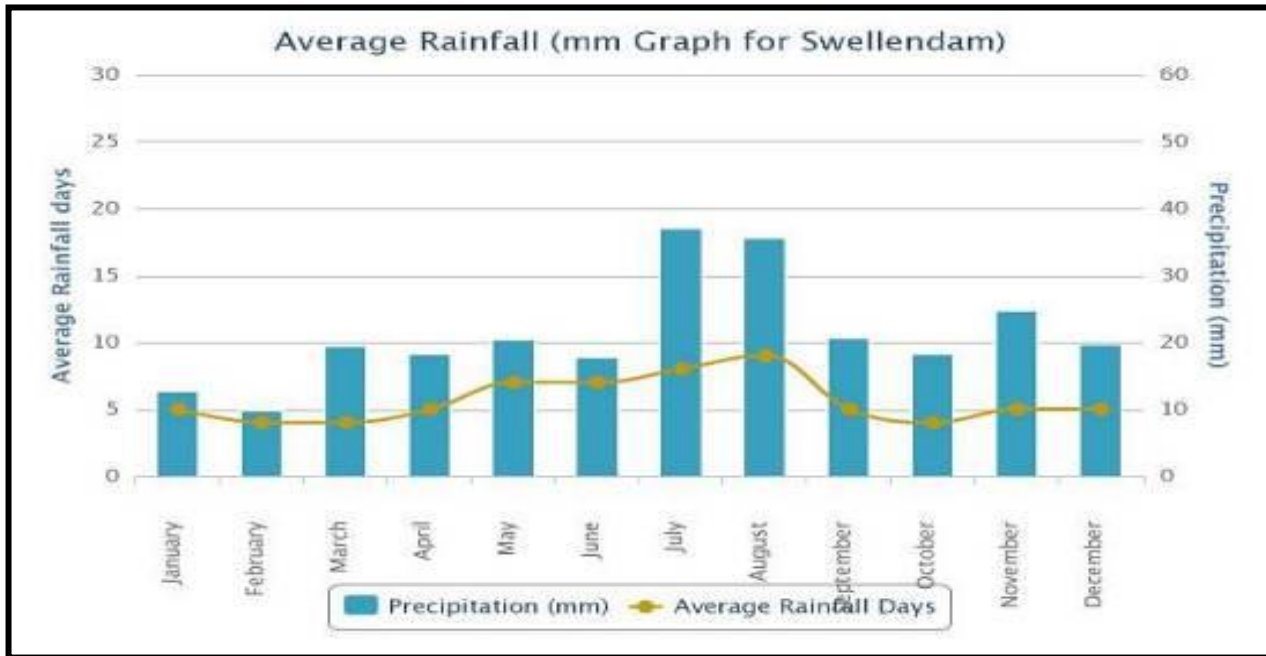
The region has a predominantly Mediterranean climate with long summer days in January and February. During February and March, summer draws to a close, with prevailing south easterly winds. April and May are Autumnal months with milder days and occasional showers. June and July bring the Cape winters, with mild weather, rain and possible snow on the mountain tops. August and September are the start of spring.

**Figure 13** below shows the monthly distribution of average daily maximum and minimum temperatures. The figure shows that the average midday temperatures for Swellendam range from 20°C in July to 34°C in January. The region is the coldest during July when the mercury drops to 6°C on average during the night.



**Figure 13: Average Temperature Graph for Swellendam (Source: <http://weatherhq.co.za/swellendam>)**

**Figure 14** below indicates the average temperature values for Swellendam per month. Swellendam receives the lowest rainfall (10mm) in February and the highest (37mm) in July. The climate for the Swellendam area is warm during the summers with summer rains and very wet winters. Rainfall is spread over the year and ranges between 55% in winter and 45% in summer. Swellendam normally receives about 462mm of rain per year, with rainfall occurring throughout the year.



**Figure 14: Average Rainfall Graph for Swellendam (Source: <http://weatherhq.co.za/swellendam>)**

### 6.3 GEOLOGY

The geology of the proposed study area is situated on shale, siltstone and subordinate sandstone of the Bokkeveld group and partly on the Witteberg Group as depicted in **Figure 15** below.



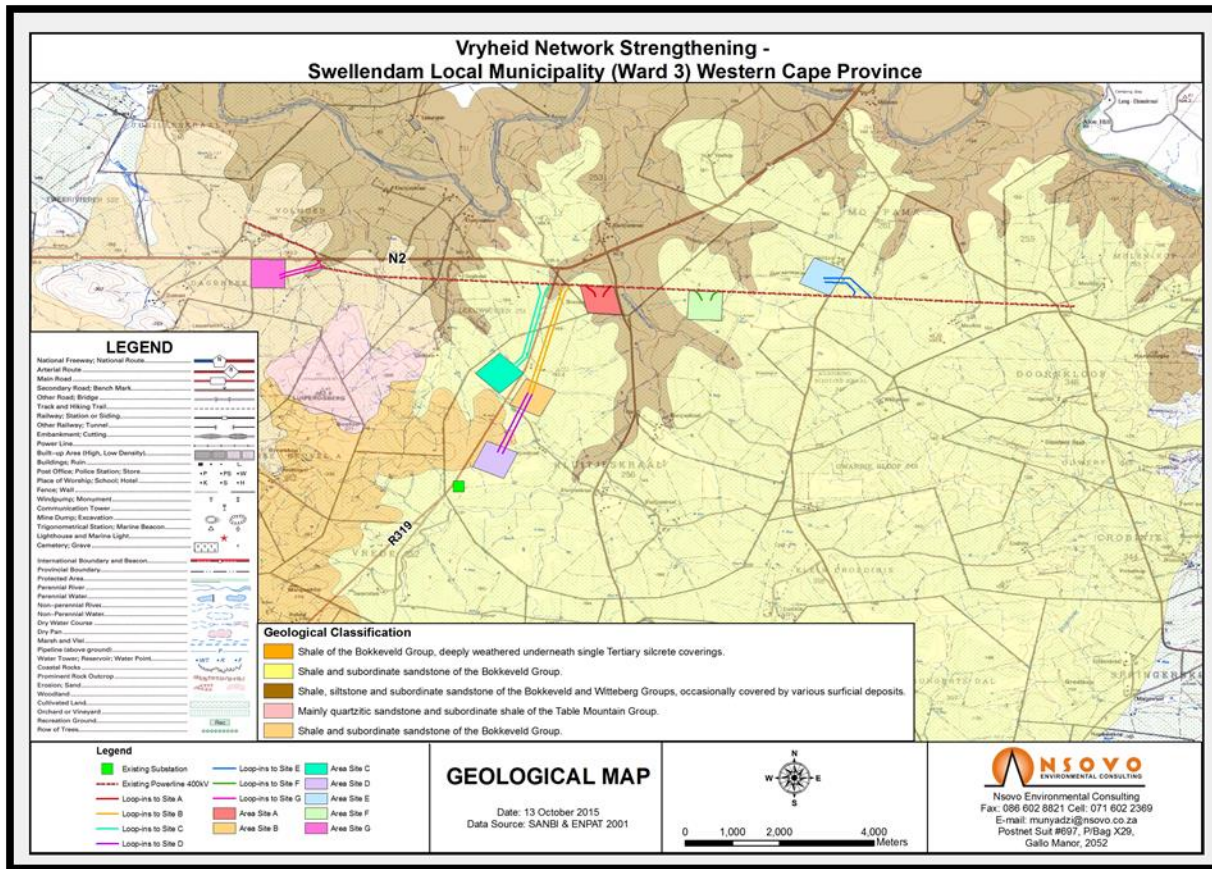


Figure 15: Geological Map

The geology of the Cederberg comprises of the Cape Supergroup (Table Mountain Group, **Bokkeveld Group** and **Witteberg Group**) and the Karoo Supergroup (Dwyka Group, Ecca Group and Beaufort Group). The Cape Supergroup was formed about 700 – 600 million years ago by a succession of sedimentation of sandstone (silt, mud and sand). The distinct reddish colour of rock is a result of minerals like iron and manganese that formed part of the sediments. The Supergroup constitutes the largely erinaceous Table Mountain Group which unconformably overlies the Malmesbury and Cape Granite rocks, and underlies the Bokkeveld Group (composed predominantly of argillaceous beds) and the uppermost Witteberg Group (consisting of alternating shales and sandstones).

The proposed study is primarily within the Bokkeveld Group and is composed of two Subgroups namely:

- The basal Ceres Subgroup, consisting of alternating dark grey mudrock, lithozones and dark, very fine-grained muddy sandstone; and
- The uppermost Traka Subgroup, consisting primarily of mudrock and rhythmitite and very subordinate sandstone.

The Bokkeveld Group Shales is dominated by clay and loamy soils which are both shallow and well drained including the Mispah and Glenrosa soil forms (Mucina and Rutherford, 2006; Agis agric).

#### **6.4 TOPOGRAPHY**

The region's landscape is dominated by gently to moderately undulating hills enclosed by mountains and the ocean. The flat and level coastal plain rises from sea level to 100m, the hillier inland coastal plateau are generally the highest points in the landscape and rises approximately 300m above mean sea level.

According to (Patridge, Botha & Haadon, 2006), within the Bokkeveld shale matrix are outcrops of silcrete over deeply weathered pallid soil. The main topographical unit within the proposed study area consists of moderately undulating hills and plains which are characteristic of the area. The gradient of the proposed study area ranges from 0-8% category.

#### **6.5 SURFACE WATER**

According to the Hydrological map two perennial rivers, namely the Breede and the Kluitjekraal River are within the proposed study area. The large Breede river buffer zone is located approximately 1.2km north of the proposed study area, while the Kluitjekraal River is within a 300m distance east of Substation Alternative site A. A number of non-perennial riparian areas were recorded within the study area. The study site falls within Quaternary Catchment H70A and H70B. The existing Vryheid substation and associated proposed power line infrastructure is located in quaternary catchment H70A. These riparian areas are linked to numerous smaller tributaries. The majority of the tributaries are temporary (ephemeral or episodic) streams with only a few being perennial.

The eastern section of the study area contains seasonal pans which are defined as a near-level shallow depression or basin, usually containing an intermittent supply of water. Further numerous artificial dams were also recorded throughout the study area.

Wetland conditions are associated with numerous of the perennial rivers and temporary streams recorded in the region of the study area. None of the proposed loop in and loop out powerline routes, however, crosses perennial rivers. Wetlands were noted in proximity to Site A, B and D.

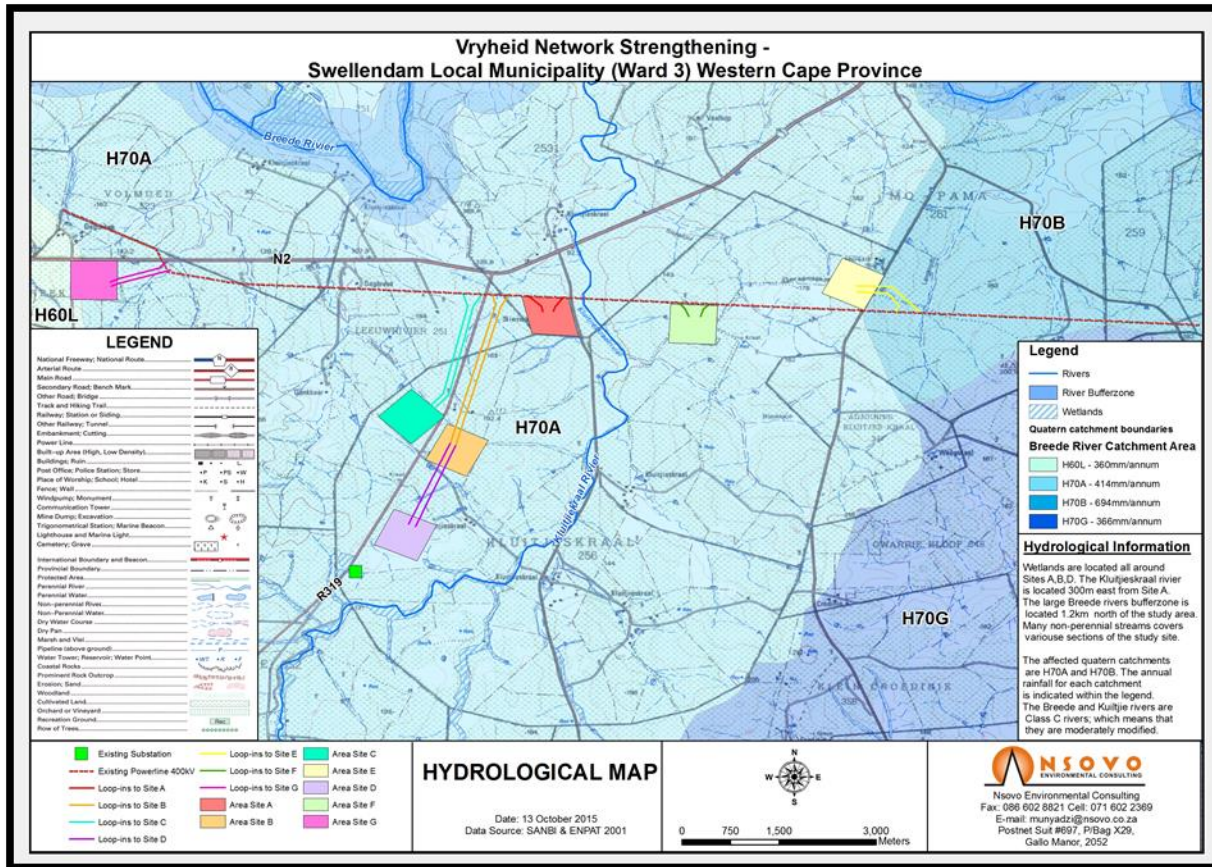


Figure 16: Wetlands and riparian areas within 500m of the proposed within the proposed study area

## 6.6 AIR QUALITY AND POLLUTION

Air quality is defined to include noise and odour and addresses all sources of air pollution, i.e. point, area and mobile sources. The Air Quality Management Plan for the Overberg has been developed to comply with the National Environmental Management: Air Quality Act, 39 of 2004 and more specifically, to provide guidance on Air Quality Management in the Overberg. The Plan identifies air pollution sources in the Overberg as follows:

- Industrial operations especially fish factories in Gansbaai and Hermanus
- Clay brick manufacturing
- Agricultural activities such as crop burning and spraying
- Biomass burning (veld fires)
- Domestic fuel burning (wood and paraffin)
- Vehicle emissions
- Waste treatment and disposal
- Dust from unpaved roads

- Other fugitive dust sources such as wind erosion of exposed areas

There are few sources of air pollutants in the District and even fewer within the immediate study area. The ambient air quality is generally good; however, emissions from industrial boilers are likely to result in local areas of elevated concentrations of air pollutants. Ambient particulate concentrations are likely to be high in low – income residential areas where wood is used as primary fuel source. The motor vehicle congestion in holiday towns and along the N2 road results in elevated ambient concentrations of particulates and NO<sub>2</sub> (Nitrogen Oxides) at times.

## 6.7 FLORA

The proposed project site is situated predominantly within the Eastern Ruens Shale Renosterveld vegetation and partly the Ruens Silcrete Renostreveld (Mucina & Rutherford, 2006) as depicted in **Figure 17** below. According to literature, Renosterveld form part of South Africa's Fynbos Biome and the Cape Floristic Region and they are species rich. However, it is notably different from Fynbos vegetation in several ways. Firstly in contrast to fynbos it occurs on relatively fertile soils, predominantly derived from shales although it can also occur on silcretes and other lithologies. Further, it is considered to be Critically Endangered and is classed as "100% irreplaceable". Of its former extent, only relatively small fragments remain - often in areas that are too steep or rocky to be reached by the farmer's plough. Transformation for agriculture is one of the main threats, closely followed by continuous heavy grazing and mismanagement of the veld. In the Overberg only 4-6% of Renosterveld is left and of that even less is still ecologically intact.

According to the national vegetation map (Mucina & Rutherford 2006) four vegetation types occurs within the study area. North Sonderend Sandstone Fynbos occupies the north-west corner of the site while the Eastern Ruens Shale Renosterveld forms the majority of the site. Only two vegetation types would be impacted by the development. The majority of the site falls within the Eastern Ruens Shale Renosterveld vegetation type, with a small extent of Ruens Silcrete Renosterveld along the southern section of the site, specifically within Site Alternative D. At this stage, the most pertinent feature of these vegetation types is their conservation status, as both are classified as Critically Endangered. Furthermore, according to Mucina and Rutherford (2006), this critically endangered vegetation type is at least 80% transformed mostly by cultivation and croplands.

The vast majority of the site has been transformed by intensive agriculture with all six site alternatives falling within agricultural cropland while remnant vegetation is noted along the drainage systems; however, there is no remnant

vegetation within any of the other alternatives. The listed ecosystems layer shows some occasional pixels of intact vegetation, which is not intact Renosterveld but pioneer vegetation and invader shrubs along road verges or along fences. There is a large amount of transformed habitat in the area and as a result, there is no need for the substation to impact on intact vegetation as there is ample space available to ensure that it generates a low impact on the receiving environment.

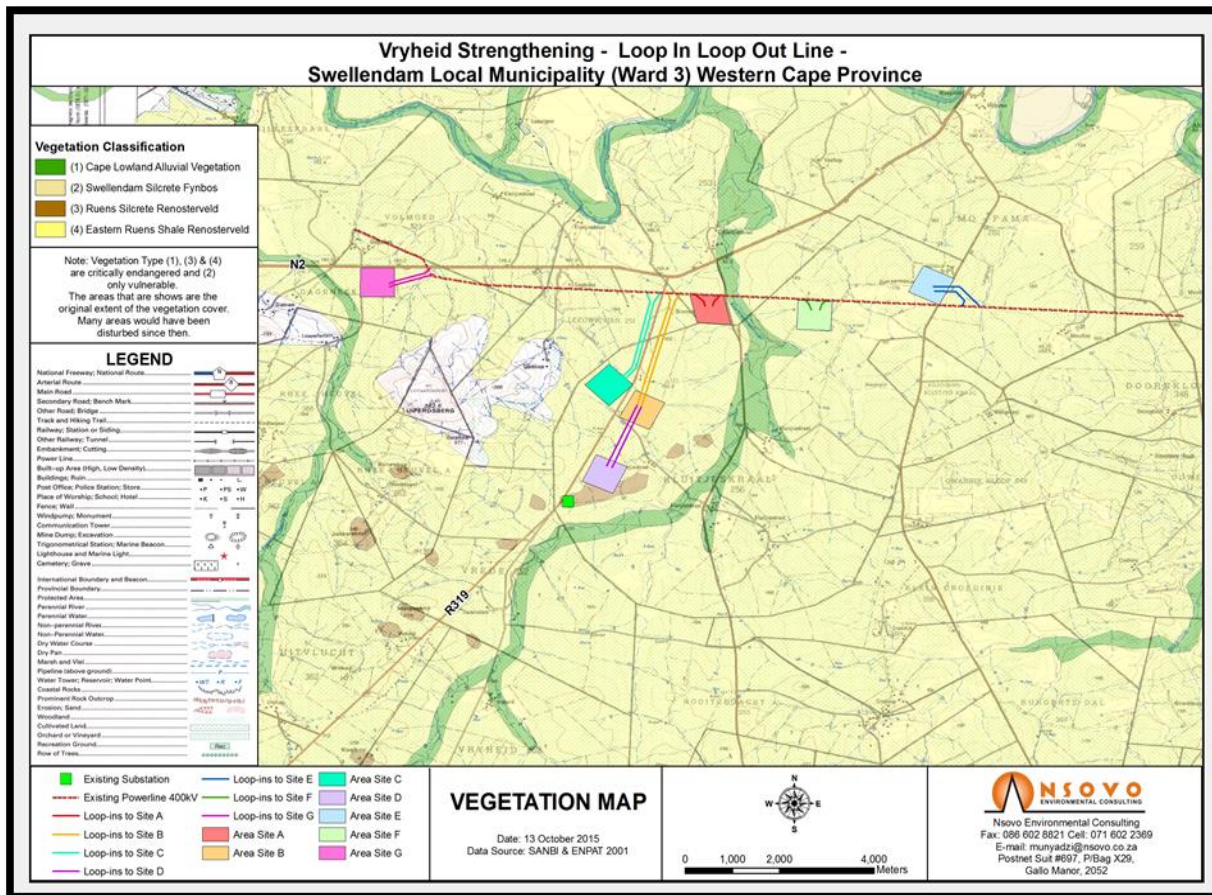
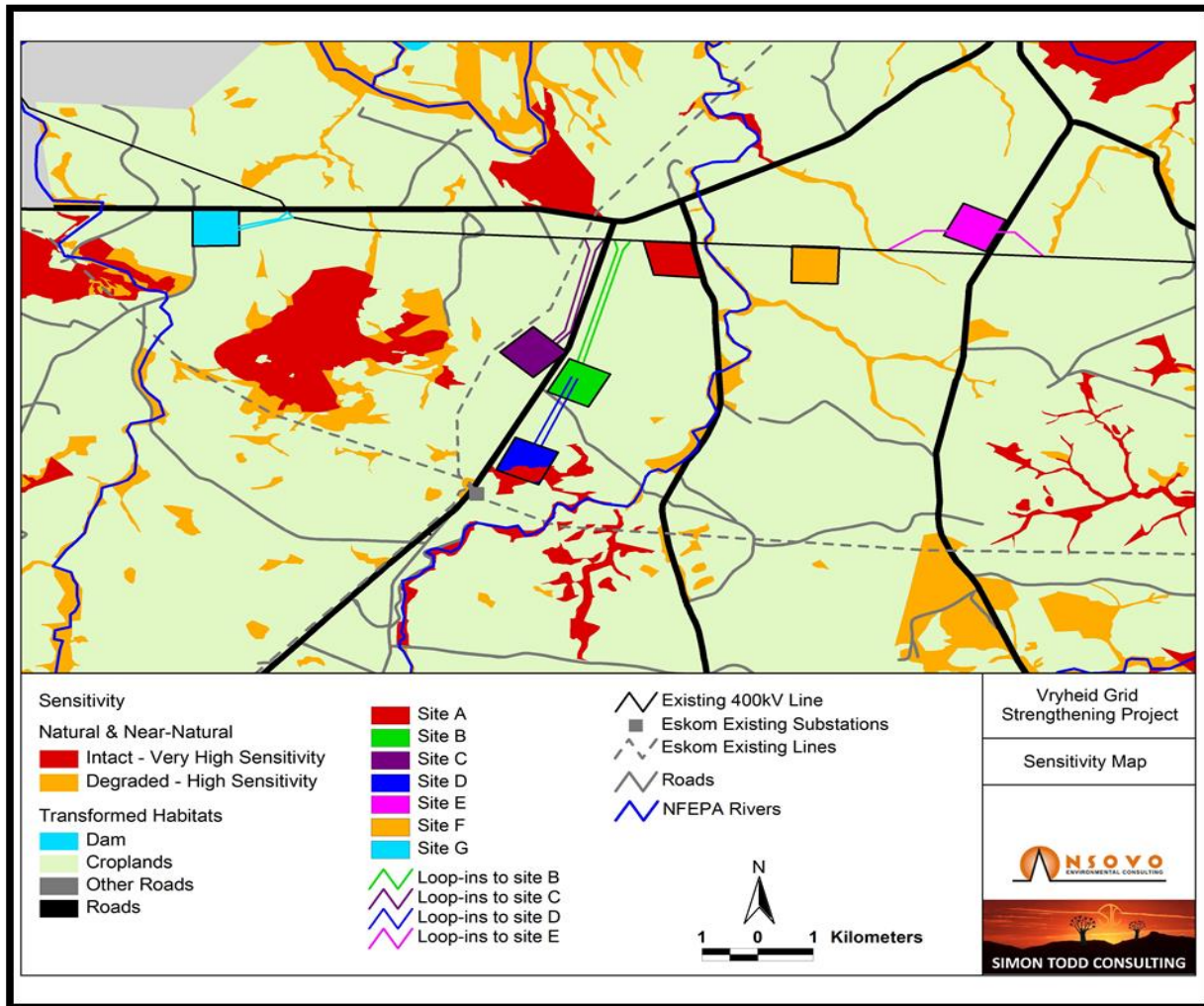


Figure 17: Representation of the vegetation types that the proposed project is situated in.

A draft ecological sensitivity map for the site was developed, which is depicted in Figure 17 below. All of the sites are within transformed habitat considered to be low sensitivity, except for Site D which contains some intact remnants of Ruens Silcrete Renosterveld which is Critically Endangered and considered to be highly sensitive. Due to the high conservation status of this vegetation type, this is considered a fatal flaw.



**Figure 18: Vegetation Sensitivity Map**

### 6.7.1 Listed and Protected Species

The Draft Vegetation Assessment Report indicates that plants of conservation concern that could occur within the area of the proposed development was compiled using information from the South African National Biodiversity Institute’s (SANBI) checklist (SANBI, 2009). According to the SANBI SIBIS database, more than 1000 indigenous species have been recorded from the quarter degree square containing the site. This includes 71 species of high conservation concern, illustrating the high diversity of the area as well as the high treat status faced by many species in the area. This result from the high level of transformation the area has experienced and the small population sizes and localised distributions that many species have been reduced to. As such, any additional impact to the intact remnants in the area are likely to impact listed species and any further loss of intact vegetation in the area is highly undesirable.

**Table 13: Number of species within the different conservation status categories (SANBI SIBIS database)**

Status/ IUCN Red List Category	No. Species
<b>Critically Endangered (CR)</b>	<b>5</b>
<b>Endangered (EN)</b>	<b>31</b>
<b>Vulnerable (VU)</b>	<b>35</b>
<b>Near Threatened (NT)</b>	<b>27</b>
<b>Rare</b>	<b>9</b>
<b>Declining</b>	<b>6</b>
<b>Data Deficient - Insufficient Information (DDD)</b>	<b>2</b>
<b>Data Deficient - Taxonomically Problematic (DDT)</b>	<b>11</b>
<b>Least Concern</b>	<b>1006</b>
<b>Total</b>	<b>1131</b>

### 6.7.2 Critical Biodiversity Area

Critical Biodiversity Areas (CBA's) are terrestrial and aquatic features in the landscape that are critical for retaining biodiversity and supporting continued ecosystem functioning and services (SANBI 2007). These form the key output of a systematic conservation assessment and are the biodiversity sectors inputs into multi-sectoral planning and decision making. CBA's are therefore areas of the landscape that need to be maintained in a natural or near-natural state in order to ensure the continued existence and functioning of species and ecosystems and the delivery of ecosystem services. In other words, if these areas are not maintained in a natural or near-natural state then biodiversity conservation targets cannot be met. Maintaining an area in a natural state can include a variety of biodiversity-compatible land uses and resource uses (Desmet et al, 2009).

The CBA map for the general area surrounding the site is depicted below in **Figure 19**. The CBA map corresponds closely with the remaining vegetation in the area and all remnant fragments have been classified as CBAs on account of the very high threat status of the remaining vegetation and the high biodiversity value of these areas. Only Site D contains CBA.

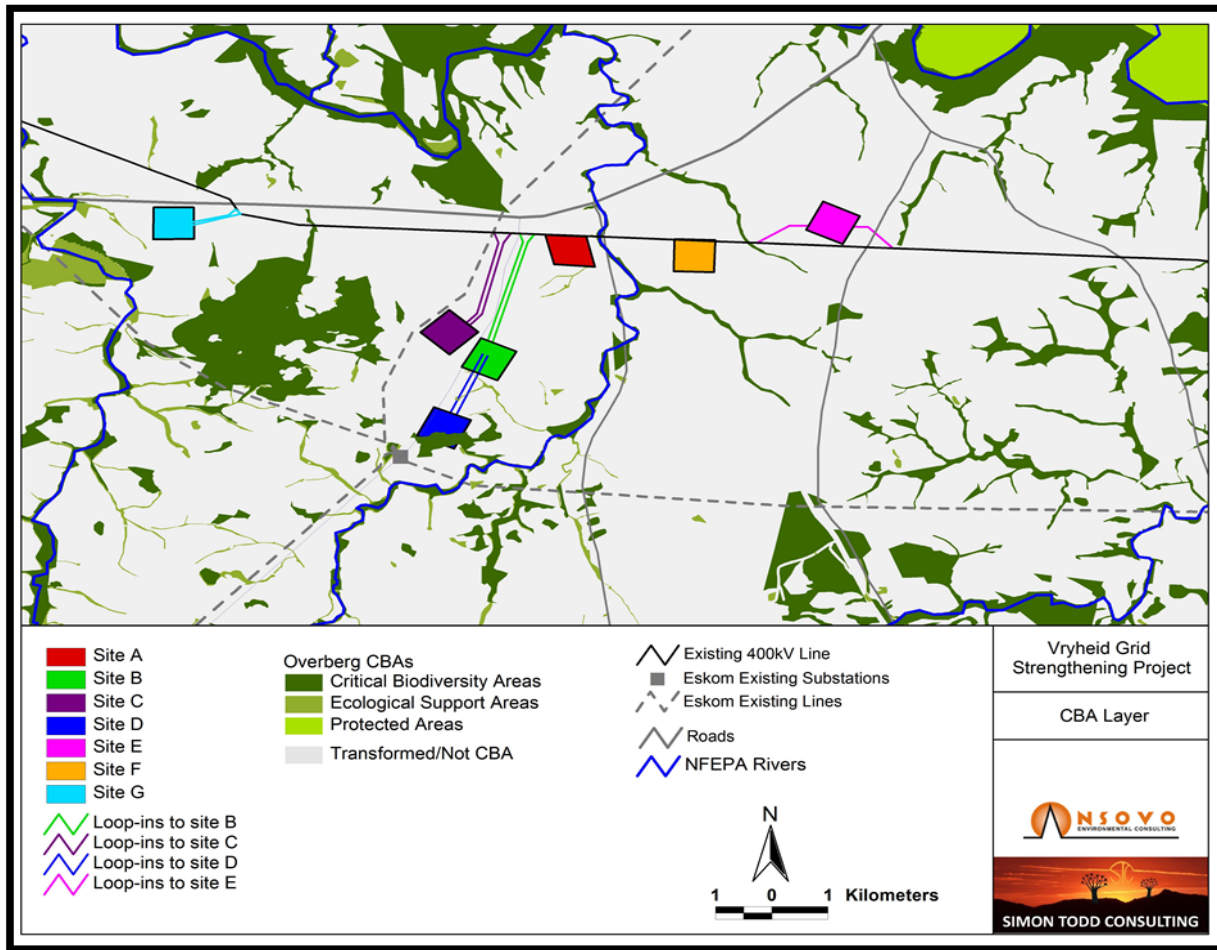


Figure 19: Map indicating Critical Biodiversity Areas within the study area

## 6.8 FAUNA

### 6.8.1 Mammals

According to the Mammal Map database contained in the Fauna Assessment Report only 35 mammals have been recorded from the area, including several conservation dependent species such as Cape Mountain Zebra and Bontebok which would not be encountered in the study area. Given the high level of transformation the area has experienced, this relatively low total is not surprising. Three species of conservation concern occur in the wider area, the White-tailed Mouse *Mystromys albicaudatus* (Endangered), *Leopard Panthera pardus* (Near Threatened) and the Honey Badger *Mellivora capensis* (SARDB Endangered). Given the high level of transformation and intensive agriculture in the area, it is highly unlikely that the Leopard occurs at the site, but both the White-tailed Mouse and Honey Badger potentially occur in the area, but would be unlikely to frequent the transformed areas much as prey is too low or disturbance too high in these areas.



In the wider area, as many as 50 mammal species may occur, but as the affected area is highly transformed, few of these would actually be present within the affected areas. Larger mammals observed to be present at the local area include Grey Rhebok *Pelea capreolus*, Steenbok *Raphicerus campestris*, Common Duiker *Sylvicapra grimmia*, Porcupine *Hystrix africaeaustralis* and Aardvark *Orycteropus afer*. Smaller mammals observed include Namaqua Rock Mouse *Aethomys namaquensis*, Bush Vlei Rat *Otomys unisulcatus*, Scrub Hare *Lepus saxatilis*, Cape Gerbil *Gerbilliscus afra*, Cape Grey Mongoose *Herpestes pulverulentus* and Marsh Mongoose *Atilax paludinosus*. As the intact habitats would be most important for these species, the development would have a low impact on these species as the loss of intact habitat would be very negligible.

### 6.8.2 Reptiles

The ecological specialist report further indicates that according to the Reptile Map database, only 9 reptile species have been recorded from the quarter degree covering the site. Despite the high level of transformation in the area, this is an underestimate of the reptile richness of the area and according to the literature, as many as 35 reptile species may occur at the site. This is however still a comparatively low total suggesting that the site has a relatively depauperate reptile assemblage. Based on distribution maps and habitat requirements, the composition of the reptile fauna is likely to comprise 2 tortoises, 1 terrapin, 16 snakes, 14 lizards and skinks and 2 geckos.

There are no listed species which are known to occur in the area. Species observed in the immediate area include the Cape Girdled Lizard *Cordylus cordylus* which is associated with rocky outcrops, the Angulate Tortoise *Chersina angulata*, Brown House Snake *Lamprophis capensis* and Cape Skink *Mabuya capensis* all of which occur within intact remnants. The most important habitats in the area for reptiles are likely to be rocky outcrops for lizards as well as the densely vegetated lowlands and areas around the drainage lines for snakes. As the development should be restricted to the transformed areas, the impact on reptiles would be low.

### 6.8.3 Amphibians

Fourteen frog species are known from the area, but these do not include any listed species and only a small proportion of these would be likely to occur within the affected area. The transformed areas are likely to be of very low importance for frogs and frogs would only be impacted within intact areas through impact to their habitat through erosion or siltation and pollution due to runoff from the development during construction or operation.

No potential breeding sites for the giant bullfrog is present on any of the five study sites. Considering the size of the five substation sites and that no breeding sites for bullfrogs are found on or near any of these or in sample points along the servitude routes, the possibility of giant bullfrogs occurring on the study site is regarded very minimal. Refer to **Appendix C1** for Flora and Fauna Assessment Report.

## 6.9 AVIFAUNA

As indicated above the proposed study area is located within the Renosterveld vegetation which is highly transformed due to agricultural activities. Subsequently, it is important to relate the avifauna to the biomes and vegetation types present in the area. Harrison et al (1997) in “The Atlas of Southern African Birds” provides a description of the various vegetation types represented in the region and the associated bird species. It is generally accepted in the ornithological field that vegetation structure is more important in determining avian species’ abundance distribution than vegetation species composition (Harrison et al., 1997).

According to the draft Avifaunal study, **arable lands** are the dominant land cover throughout the study area and are the most common micro-habitat within the study area. Wheat and other cereals are the dominant crops within the area as well as Canola cultivated within the study area. Relevant bird species that will be attracted to these areas include most importantly Denham’s Bustard, Blue Cranes and various Heron species. In particular the white stork has a high affinity for arable land, with 80% of sightings in South Africa recorded within this habitat (Dean & Ryan 2005). However, active agricultural lands are not a favourable environment for certain avian species due to the lack of vegetation cover and the regular disturbance experienced during the harvesting period. During the site visit it was noted that most of the arable land did not appear to be very productive.

The eastern section of the study area contains seasonal **pans** as depicted below. Pans are defined as a near-level shallow depression or basin, usually containing an intermittent supply of water. At certain times of the year, they are characterised by slow flowing water and tall emergent vegetation. These factors provide habitats for various water birds and the pans in this study area will be particularly important for the Black and White Storks, Spur-Winged Goose and various Heron species. Furthermore, these water sources are often used by large flocks of granivorous bird species such as Cape Sparrow, Canary Species and Southern Red Bishop’s.



**Figure 20: Pans identified in the area (Avifauna Specialist Report, 2015)**

**Drainage lines** traverse the eastern and western boundaries of the study area. Various species of water bird are mostly restricted to riverine habitat in Southern Africa. After good rains the standing water will attract species such as Black and White Stork and Cape Teals. These drainage lines are important for Denham's Bustard as they provide foraging opportunities in the form of invertebrates and small vertebrates. Furthermore, the riparian habitat also provides habitat for various species such as Kingfishers, Robin-Chats, Thrushes and Hammerkop. Although the drainage lines within the area are negatively impacted due to the disturbance and encroachment from the croplands, they provide important corridors of natural vegetation, cover and nesting opportunities for many avian species within the largely agricultural landscape. They also represent an important flight path for many species.

A total of 216 species were recorded in 3240AB by SABAP2, with six species (3%) classified as Red Data species (Barnes 2000). Information on the avian micro-habitat level was obtained during the site visit conducted on the 6-9 July 2015 and the following was recorded by the specialist:

- A total of 71 bird species were recorded within the study area. This figure was much lower than the species rich area to the east of the site within the Bontebok National Park (219 species recorded).
- The most commonly recorded species within the study sites were granivorous (seed eater) species such as Waxbills, Sparrows and Canaries as well as species often associated with anthropogenically modified landscapes (Pied Crow, Common Starling and Cape Crow). The drainage lines were observed to have the highest species richness and abundance of species as opposed to the open agricultural land. The agricultural lands within the proposed site alternatives were fairly unproductive with a low avian species diversity and abundance. This habitat type was dominated by Common Fiscal, African Stone Chat, Common Waxbill and Cape Sparrows and Southern Red Bishop's.
- There were no sightings of the Cape Vulture and Martial Eagle during the site visit. The SABAP2 reporting rate for both species within the pentad was very low and this was further supported by the lack of suitable habitats for both species. Furthermore, the availability of nest sites and suitable habitat is often a limiting factor for both species. Both species also suffer from the direct (trapping and shooting) and indirect (poisoning) persecution by farmers (Birdlife International Factsheet 2010). As the study area falls within agricultural land these factors may account for the limited sightings within this landscape.
- The Black Harrier was only recorded on the eastern boundary of the study area and the flight path was in the direction of the Nation Park. This area has large sections of natural Renosterveld vegetation. Although this species forages within agricultural landscapes they require untransformed Rensoterveld habitat for breeding (Bird Life SA). This may account for the confined sightings within the area.
- Blue Cranes and Denham's Bustard were recorded within the southern and eastern sections of the proposed study area. Both species are vulnerable to collisions with power lines (Allan 1996b). The existing 400kV power line is located within the northern section of the study area and may account for the limited sightings within its proximity. The study area falls within the Overberg Wheat Belt and this Important Bird Area (IBA) contains 30% of South Africa's Blue Crane population. This was confirmed during the site visit with groups of 20-30 individuals observed with the agricultural landscape.

Refer to **Appendix C3** for the Avifauna specialist report.

## 6.10 LAND TYPES AND AGRICULTURAL POTENTIAL

The geology of study area is situated on the Bokkeveld Group Shales dominated by clay and loamy soils. Soils are both shallow and well drained including the Mispah and Clovelly soil forms (Mucina and Rutherford, 2006; Agis agric). According to the Land Types and Agricultural Potential specialist report, Land type data for the site was obtained from the Agricultural Research Council (ARC). The land type data is presented at a scale of 1:250000 and entails the division of land types, typical terrain cross sections for the land type and the presentation of dominant soil types for each of the identified terrain units (in the cross section). The soil data is classified according to the Binomial System. The soil data was interpreted and re-classified according to the Taxonomic System (Land Type Survey Staff. (1972-2006).

All sites fall within Fb41 land type which is predominantly associated with shallow soils of the Mispah and Clovelly Form. The Mispah soils are very shallow (0,2m) and characterised by an Orthic A topsoil over hard rock/saprolite horizon while the Clovelly soil samples were also very shallow (200-350mm) with an Orthic A horizon over a yellow brown apedal sub horizon.

Textures ranged from loamy sand to sandy loam texture (2 - 15% clay in the A). Textures range from fine sand to clay with most texture classes within the sandy loam category with 2-6% clay and soils are generally shallow with underlying shale bedrock, usually no deeper than 300mm, but in many areas even shallower. Field inspection revealed that the soil surface has little or no organic mulch layer over the surface as a result of tillage and the mixing of horizons.

### 6.10.1 Agricultural Potential

Augur points were dug throughout the site as well as outside of the study boundary in order to determine the extent of soil types located within the target sites. **Figure 21** below indicates the 26 points augured within the study area while Table 11 accordingly classifies the soil to determine the agricultural potential.

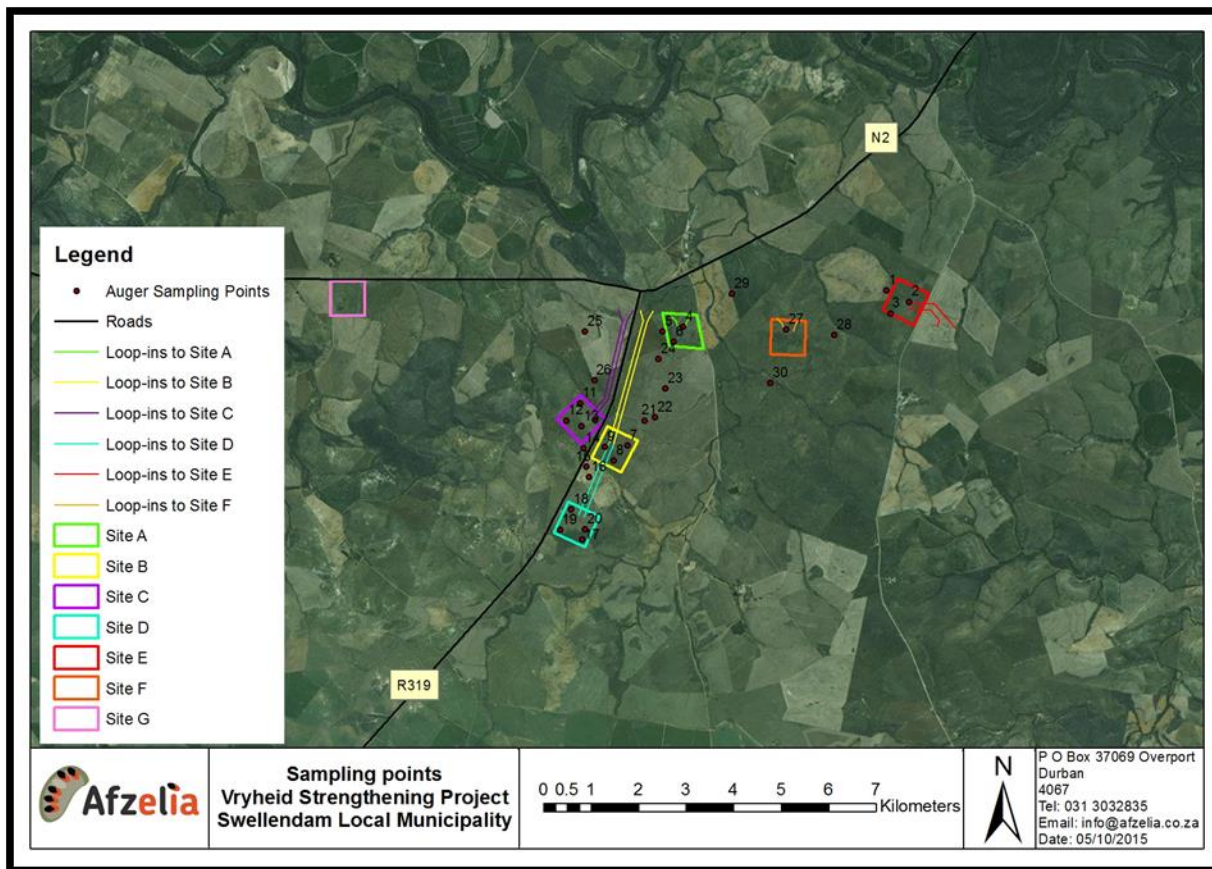


Figure 21: Sampling points to determine agricultural potential

Table 14: The outcomes of the sampling were as follows:

Aspect	Description
<b>Surface texture</b>	All sites have a low clay percentage (less than 10%) and can be classified as loamy sand, sandy loam or loam. These textures are not a limitation to crop production.
<b>Soil depth</b>	A large percentage of rocks were noted on all target sites. These caused a limitation in the auger sampling depth. Soil depth were therefore recorded as between <200mm-350mm. Due to the fact that rocks in the profile are not a solid layer but are rather mixed with soil, root growth will permeate between these rock layers, making the effective rooting depth for particular plants deeper.
<b>Subsoil permeability</b>	Soils classified as Clovelly have a 'Rapid' to 'Good' subsoil permeability which is not a limitation to crop growth. Sub soils are not associated with the Mispah Soil Form.
<b>Slope</b>	There is a wide range in slopes, which for the land capability classification, have been grouped as follows:

Aspect	Description
	<ul style="list-style-type: none"> <li>o 0-8% - land, which depending on soil profile characteristics is potentially in Class II</li> <li>o 8-12% - land, which depending on soil profile characteristics is potentially in Class III</li> <li>o 12-20% - land, which depending on soil profile characteristics is potentially in Class IV</li> <li>o &gt;20% - land, which is in Class VI or even VII, on slopes greater than 40%.</li> </ul>
<b>Terrain</b>	<p>All sites consisted of terrain within the 0-8% category.</p> <ul style="list-style-type: none"> <li>• Rockiness: Rockiness is a major limitation to crop growth and limits the type of plant that can be cultivated at all sites.</li> <li>• Crusting: In the field this was found to not be a limitation to cultivation. There is thus no need to consider this factor further.</li> <li>• Wetness: In the field this was found to not be a limitation to cultivation. There is thus no need to consider this factor further.</li> </ul>

Taking into account the above information as well as the limitations to cultivation as a result of soil depth, and rockiness, all target sites have been classified as Class IV. This Class has severe limitations to the choice of crop cultivated at the site as well as the need for careful management of these crops.

With all that considered; the area has a strong agricultural sector which comprises 11.6 percent of all agricultural production in the Western Cape.

### 6.10.2 Visual Aspects

Visual appreciation or dislike is subjective and thus what is aesthetically pleasing to one can be displeasing to another. The visual analysis of a landscape, the impact of new developments and structures tend to be complicated and it is evident from previous experience that when dealing with reaction to landscape changes, a large diversity of opinion exists.

Much of the study area is utilised for purposes of agriculture. The undulating agricultural landscapes of much of the study area are not necessarily sensitive but are important to preserve for their aesthetics. It is, thus, necessary

to maintain a near natural visual landscape, with limited effect on aesthetic, to enable the continuation of nature-based economic activities such as ecotourism in the area.

In this regard, it is an imperative that Eskom be sensitive from a visual impact perspective, to the requirements of the local people, notably rural communities, farmers and operators involved in eco-tourism activities. Many topographical features influence this environment and these features will need to be utilised when selecting substation location and loop alignment so as to minimise visual impacts and intrusions.

## 7. APPLICABLE LEGISLATION AND GUIDELINES

Documented in the subsequent section is a list of the current South Africa environmental legislation, which is considered to be pertinent to the construction and operation of the proposed Vryheid Network Strengthening. A description of legislation pertaining to the project is summarised in **Table 15** below.

The list of legislations that are applicable to the project is not an exhaustive analysis; however, it provides a guideline to the relevant aspects of each Act.

**Table 15: Legislation pertaining to the proposed project**

Aspect	Relevant Legislation	Brief Description
Environment	<ul style="list-style-type: none"> <li>National Environmental Management: Act 1998, (Act No. 107 of 1998) as amended.</li> <li>Environmental Impact</li> </ul>	<ul style="list-style-type: none"> <li>The overarching principles of sound environmental responsibility are reflected in the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA), the principles set out in the National Environmental Management Act, 1998 (Act No. 107 of 1998), hereafter referred to as NEMA, apply to all listed projects. Construction and operation have to be conducted in line with the generally accepted principles of sustainable development, integrating social, economic and environmental factors.</li> <li>The EIA Regulations, December 2014 promulgated in terms of NEMA under</li> </ul>



Aspect	Relevant Legislation	Brief Description
	<p>Assessment Regulations, December 2014</p>	<p>Government Notice (GN) No. R983, 984 and R985 outline the activities for which Basic Assessments or EIAs should apply. Developments which trigger activities within GN R983 and R985 require a Basic Assessment and those that trigger GN R984 require a full EIA. Due to the construction of a substation, transmission lines and associated works, a full EIA is being conducted. The Environmental Impact Assessment (EIA) process followed is in compliance with the NEMA and the Environmental Impact Regulations of 2014 (GNR 982, 983, 984 and 985 of December 2014). The proposed development involves “listed activities”, as defined by NEMA. Listed activities are activities which may potentially have detrimental impacts on the environment and therefore require environmental authorisation from the relevant Competent Authority.</p>
<p>Biodiversity</p>	<p>National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004)</p>	<p>The purpose of the National Environmental Management Biodiversity Act, 2004 (Act No. 10 of 2004) (NEMBA) is to provide for the management and conservation of South Africa's biodiversity within the framework of the NEMA and the protection of species and ecosystems that warrant national protection. As part of its implementation strategy, the National Spatial Biodiversity Assessment was developed.</p> <p>The entire proposed site falls within a critical endangered ecosystem Eastern Ruens Shale</p>

Aspect	Relevant Legislation	Brief Description
		<p>Renosterveld.</p> <p>Bontebok National Park (buffer zone) is located 1.55km north east from site.</p>
Protected Areas	National Environmental Management: Protected Areas Act, 2003 (Act No. 57 of 2003)	The purpose of this Act is to provide for the protection, conservation and management of ecologically viable areas representative of South Africa's biological diversity and its natural landscapes.
Heritage Resources	National Heritage Resources Act, 1999 (Act No. 25 of 1999)	The National Heritage Resources Act, 1999 (Act No. 25 of 1999) legislates the necessity for cultural and heritage impact assessment in areas earmarked for development, which exceed 0.5 ha. The Act makes provision for the potential destruction to existing sites, pending the archaeologist's recommendations through permitting procedures. Permits are administered by the South African Heritage Resources Agency (SAHRA).
Air quality management and control	National Environmental Management: Air Quality Act, 2004 (Act 39 of 2004)	<p>The objective of the Act is to protect the environment by providing reasonable measures for the protection and enhancement of the quality of air and to prevent pollution of air and ecological degradation.</p> <p>The Act makes provision for measures to control dust, noise and offensive odours.</p> <p>Section 32 of The National Environmental Management: Air Quality Act, 2004 (Act 39 of 2004)</p>

Aspect	Relevant Legislation	Brief Description
		deals with dust control measures in respect of dust control. Whilst none are promulgated at present, it provides that the Minister or MEC may prescribe measures for the control of dust in specified places or areas, either in general or by specified machinery or in specified instances, the steps to be taken to prevent nuisance by dust or other measures aimed at the control of dust.
Noise Management and Control	Noise Control Regulations in terms of the Environmental Conservation, 1989 ( Act 73 of 1989)	The assessment of impacts relating to noise pollution management and control, where appropriate, must form part of the EMP. Applicable laws regarding noise management and control refer to the National Noise Control Regulations issued in terms of the Environment Conservation , 1989 ( Act 73 of 1989).
Water	National Water Act, 1998 (Act 36 of 1998)	<p>This Act provides for fundamental reform of law relating to water resources and use<sup>1</sup>. The preamble to the Act recognizes that the ultimate aim of water resource management is to achieve sustainable use of water for the benefit of all users and that the protection of the quality of water resources is necessary to ensure sustainability of the nation's water resources in the interests of all water users.</p> <p>Wetlands are located around site A, B and D. The Kuiltjieskraal River is located 300m east of site A. The large Bree river buffer zone is located 1.2km north of the study site. Many non-perennial streams cover various sections of the study area.</p>

Aspect	Relevant Legislation	Brief Description
Agricultural Resources	Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983)	The Act aims to provide for control over the utilization of natural agricultural resources in order to promote the conservation of the soil, water resources and vegetation and to combat weeds and invader plants. Section 6 of the Act makes provision for control measures to be applied in order to achieve the objectives of the Act
Human	The Constitution of South Africa, 1996 (Act No. 108 of 1996)	<p>The Constitution of South Africa, 1996 (Act No. 108 of 1996) provides for an environmental right (contained in the Bill of Rights, Chapter 2). In terms of Section 7, the state is obliged to respect, promote and fulfil the rights in the Bill of Rights. The environmental right states that:</p> <p>“Everyone has the right -</p> <p>a) To an environment that is not harmful to their health or well-being; and</p> <p>b) To have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that -</p> <ul style="list-style-type: none"> <li>-Prevent pollution and ecological degradation;</li> <li>-Promote conservation; and</li> <li>-Secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development.”</li> </ul>

These Acts must be read with the Eskom Policies and Environmental Guidelines.

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## 8. DESCRIPTION OF THE ENVIRONMENTAL ISSUES AND POTENTIAL IMPACTS INCLUDING CUMULATIVE IMPACTS IDENTIFIED

This section of the draft Scoping Report describes the potential impacts that the proposed project may pose on the receiving environment. Impacts associated with the relevant environmental components within the study area as identified, have been assessed based on the consultant's opinion after numerous visits to the site and previous experience on similar undertakings. Refer to **Table 16** below, for the potential impacts identified.

**Table 16: Environmental Potential impact Identified**

Issue	Rating	Description
Employment	Positive-No mitigation required	Job creation and investments into the project will result in opportunities during the planning and design phase. This impact will typically be limited to skilled engineers and planning professionals. Proposed project will result in very limited opportunities to the skilled local community during the construction phase. This impact will be positive and provincial in extent.
Air Pollution	Neutral	Potential air pollutant during construction may be dust emanating from site preparation and excavations during construction. Given the nature and magnitude of the proposed project it is anticipated that if not mitigated the impact may be local in extent, and short term. Mitigation measures such as regular dust suppression can reduce the impact to become site specific.
Visual Impact	Negative	<p>The visual impact of an object in the landscape decreases quickly as the distance between the observer and the object increases. The visual impact at 1 km is approximately a quarter of the impact viewed from 500m, and at 2km, is one eighth of the impact viewed from 500m. Therefore, objects appear insignificant in any landscape beyond 5km.</p> <p>The visibility of the proposed structure and infrastructure would be a function of several factors, including: landform, vegetation, views and visibility, genius loci (or sense of place), visual quality, existing and future land use, landscape character and scale.</p> <p>The proposed activity will indeed change the visual character of the site particularly considering that the proposed site is located in an area that is sloping; the elevated points of the site can be viewed from the nearby roads, however, it must be noted that there are already existing overhead power lines located within</p>

Issue	Rating	Description
		<p>the vicinity of the proposed project site. Local variations in topography and man-made structures could cause local obstruction of views in certain parts of the view shed. Given the topography of the site and the exact location of the station the impact can be considered definite, long term, local in extent but low in significance.</p>
Fauna	Negative	<p>Considering the insignificant extent of the substation campus and the relatively narrow and linear servitude it is not expected that any endangered species' conservation will be put at risk.</p> <p>No sensitive species or sensitive areas are flagged. The project will not substantially change the reigning ecological character of the general area. Further, the proposed project will not significantly impact negatively on the assemblages and conservation of the general area.</p>
Flora	Negative	<p>Potential ecological impacts resulting from the development of the Vryheid substation and grid strengthening would stem from a variety of different activities and risk factors associated with the preconstruction, construction and operational phases of the project potentially including the following:</p> <p><b>Construction Phase</b></p> <ul style="list-style-type: none"> <li>• Vegetation clearing for access roads, laydown areas and the substation site itself may impact intact vegetation.</li> <li>• Increased erosion risk would occur due to the loss of plant cover and soil disturbance created during the construction phase. Some of the site options are steep and risk of erosion would be high. This may impact downstream riparian and wetland habitats if a lot of silt enters the drainage systems.</li> <li>• Increased human presence can lead to illegal plant harvesting and other forms of disturbance such as fire.</li> </ul>

Issue	Rating	Description
		<p><b>Operational Phase</b></p> <ul style="list-style-type: none"> <li>• The presence of the facility may disrupt the connectivity of the landscape for some species which may impact their ability to disperse or maintain gene flow between subpopulations.</li> <li>• The facility will require management and if this is not done appropriately, it could impact adjacent intact areas through impacts such as erosion, alien plant invasion and contamination from pollutants, herbicides or pesticides.</li> </ul> <p><b>Cumulative Impacts</b></p> <p>The development would contribute to the cumulative fragmentation of the landscape and would potentially disrupt the connectivity of the landscape for fauna and flora and impair their ability to respond to environmental fluctuations.</p>
Noise	Negative	<p>In South Africa, the assessment of noise levels in the environment is governed by the South African Bureau of Standards (SABS) noise standard 0103 – ‘The measurement and rating of environmental noise with respect to annoyance and to speech communication’ (SABS 1994). Additional SABS standards cover the measurement of noise over different distances from the source (SABS 0357 – ‘The calculation of sound propagation by the Concave method’), and standards for different sectors (e.g. industry).</p> <p>An increase in noise is expected to emanate from construction activities, which might have an impact especially on the surrounding farms. Noise associated with the construction activities can be mitigated by limiting the construction operation to business hours, during which noise will not be of such a big concern to surrounding residents. According to the SABS 0103 acceptable noise levels at day time is 45dBA. A noise intrusion is disturbing if it exceeds 7dBA or more. Given the nature of the project, it is highly unlikely that the stipulated noise levels will be exceeded at any given time. During the operational phase the impact of noise</p>



Issue	Rating	Description
		<p>will also be reduced to almost insignificant levels, given the nature of the proposed project.</p> <p>Given the remoteness of the site to communities, noise has been identified as a potentially low impact aspect. The noise impact may be local during construction and site specific during operations.</p>
Soil and Agricultural potential	Negative	<p>The predominant land use within the study area is commercial agriculture. Any development activity in a natural system will have an impact on the surrounding environment, usually in a negative way. The construction of the substation will not have a significant impact on the agricultural activities at any of the target sites however the impact will be slightly higher at Sites 'B', 'D', 'E', 'F' and 'G' as crops are actively cultivated in these areas.</p> <p>The overall impacts of the proposed substation on the soil and agricultural capability of any of the target sites and their immediate surrounds will be low due to the shallow soils present, the relatively small size of the substation (600m x 600m) and the continued use of the land adjacent to the substation for agricultural activities.</p>
Bird Population	Negative	<p>Due to its size and prominence, electrical infrastructure constitutes an important interface between wildlife and man. Negative interactions between wildlife and electricity structures take many forms, but two common problems in southern Africa are electrocution of birds (and other animals) and birds colliding with power lines. With proper mitigation measures implemented, these potential impacts will be reduced to acceptable levels.</p> <p>For the proposed project, major risks to wild and domestic birds that may be caused by the proposed facilities are disturbance by construction activities (temporary), on-going disturbance during operation phase (semi-permanent), collision wires, collision with supporting power line and electrocution on associated power line.</p>

Issue	Rating	Description
		<p>The construction of the proposed new Agulhas MVA transmission substation and associated power line will pose a limited threat to the birds occurring in the vicinity of the new infrastructure. This is largely due to the extensive impacts already evident at the site (existing 400kV power line, transformed landscape and few suitable avian micro-habitats) coupled with the short length (273m) of the proposed power line. The power line poses a low collision risk and a low electrocution risk. The impact of displacement due to habitat transformation will have a low impact on avifauna due the largely transformed nature of the proposed site.</p> <p>The construction and maintenance activities associated with the proposed development will have an impact on avifaunal species through disturbance. Species will be particularly sensitive to this disturbance during the breeding season. The proposed site alternatives are located within an agricultural habitat close to National and Domestic roads as well as the Vryheid substation. Therefore, species within this landscape often experience disturbance and as a result disturbance of birds by the proposed substation is anticipated to be low. The impact assessment phase will undertake a comprehensive assessment of the extent of the impact at all the five alternative sites.</p>
Waste	Negative	<p>Naturally, the inhabitation of the land will result in the accumulation of various forms of waste in the area. The aesthetic value of the area would decrease if such waste is not collected and disposed of appropriately. Waste material will be generated during the construction phase. Such waste may accumulate from the workers campsite or from litter left around the work area by the construction staff. Other waste substances may accumulate from cement bags amongst other construction material.</p>

Issue	Rating	Description
		The impact of waste is definite and will last for the duration of the construction phase.
Soil Erosion	Negative	Movement of heavy machinery across the land as well as vegetation clearance may cause destabilisation of soils which then become susceptible to erosion. Continuous movement of vehicles over the land during the construction phase may leave it susceptible to erosion.
Heritage	Negative	The heritage significance of each alternative site has been assessed in terms of the National Heritage Resources Act, 1999 (No 25 of 1999). A Phase 1 Archaeological Impact Assessment was conducted and the results were incorporated in the draft Scoping Report.
Servitudes	Neutral	Existence of servitudes needs to be taken into consideration in the design and layout of the proposed project. Regulations pertaining to servitudes needs to be taken into consideration. There are existing lines in the area which will be taken into consideration. Potential impacts on this servitude will be investigated during the EIA phase.
Surface and Ground Water Pollution	Neutral	<p>The proposed alternatives cross rivers, streams and dams. The impact on water quality if any could be sedimentation, decrease in quality and possible contamination of surface and ground water. This could result from fuel spillages, sewer systems etc.</p> <p>An increased volume of storm water runoff, peak discharges, and frequency and severity of flooding is therefore often characteristic of transformed catchment. The impact on water is site specific but can be local or regional if proper measures are not put in place.</p>

Issue	Rating	Description
		There may be a need to apply for water use licences with DWS considering the proximity of the study area to surface water bodies.
Social Environment	Negative	The construction phase may have an impact on the surrounding landowners if not properly managed. It could result to disturbance of residents as a result of construction related activities. Other social related issues may include theft and risk of fire. This impact will be local.
Climate	Neutral	Local climate conditions do not appear to be of a significant concern to the proposed project. In a broader scale the project will have no impact on the local and/or global climate change.
Topography	Negative	The topography of the study area is undulating; this may pose design challenges particularly in the steeper area.
Tourism	Neutral	N2 road is part of the Garden route which is one of the South Africa's well sought tourist attraction. The positioning of the substation and the power line must take into consideration the potential impact on tourism in the area.

## 9. PUBLIC PARTICIPATION PROCESS

The Regulations, requires that during a Scoping and EIA process, the organs of State together with interested persons and the general public be informed of the application and also be afforded an opportunity to comment on the application.

Public Participation Process (PPP) is any process that involves the public in problem solving and decision-making and it forms an integral part of the Scoping and EIA process. The PPP provides people who may be interested in or affected by the proposed development, with an opportunity to provide comments and to raise issues or concern, or to make suggestions that may result in enhanced benefits for the project.

Chapter 6, Regulation 39 through 44, of the EIA Regulations stipulates the manner in which PPP should be conducted as well as the minimum requirements for a compliant process. These requirements include (but not limited to):

- (a) fixing a notice board at a place conspicuous to the public at the boundary or on the fence of—
  - (i) the site where the activity to which the application relates is or is to be undertaken;
- (b) giving written notice to—
  - (i) the occupiers of the site where the activity is or is to be undertaken or to any alternative site where the activity is to be undertaken;
  - (ii) the owners or persons in control of that land occupiers of land adjacent to the site where the activity is or is to be undertaken or to any alternative site where the activity is to be undertaken;
  - (iii) the municipal councillor of the ward in which the site or alternative site is situated and any organisation of rate payers 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;
- (c) placing an advertisement in—
  - (i) one local newspaper

The primary purpose of the report is as follows:

- To outline the PPP that was undertaken;
- To synthesise the comments and issues raised by the key stakeholders, interested and affected parties; and
- To ensure that the EIA process fully address the issues and concerns raised, if any.

## 9.1 PUBLIC PARTICIPATION PRINCIPLES

The principle of the Public Participation holds that those who are affected by a decision have the right to be involved in the decision-making process i.e. the public's contribution will influence the decision. One of the primary objectives of conducting the PPP is to provide interested and affected parties with an opportunity to express their concerns and views on issues relating to the proposed project. The principles of public participation are to ensure that the PPP:

- Communicates the interests of and meet the process needs of all participants.
- Seek to facilitate the involvement of those potentially affected.
- Involves participants in defining how they participate.
- Is as inclusive and transparent as possible, it must be conducted in line with the requirements of Regulations 39-44 of the 2014 EIA Regulations.

## 9.2 APPROACH AND METHODOLOGY

The Public Participation approach adopted in this process is in line with the processes contemplated in Regulation 39- 44 of the National Environmental Management Act, 1998 (Act 107 of 1998) ("the Act"), which provides that:

## 9.3 IDENTIFICATION OF INTERESTED AND AFFECTED PARTIES

Interested and Affected Parties (I&APs) identified include pre-identified stakeholders (government department), landowners and the general public.

#### 9.4 PUBLIC PARTICIPATION DATABASE

In accordance with the requirements of the EIA Regulations under Section (24) 5 of NEMA, (Regulation 42 of GNR 982), a Register of I&APs must be kept by the public participation practitioner.

In fulfilment of this requirement such a register is compiled and details of the I&APs including their comments will be updated throughout the project cycle. The database is attached as **Appendix D5**.

#### 9.5 SITE NOTICES

On the 9 June 2015, eight A2 size notices were fixed at different conspicuous locations within and around the proposed project site including the Swellendam Local Municipality, existing Vryheid substation, Swellendam public library, at Site A, B, C and D along R319 and Site E which is 5km east of Site A. Photographic evidence of the site notices is attached as **Appendix D1**.

#### 9.6 DISTRIBUTION OF NOTICES TO SURROUNDING LAND OWNERS/ OCCUPIERS

Notification letters were posted via registered mail to stakeholders on the 15<sup>th</sup> June 2015 (Refer to **Appendix D3** for proof of postage), whereas site notices were hand delivered to landowners/occupiers on the 9<sup>th</sup> June 2015. These notifications were informing government stakeholders and the public of the project as well as affording them an opportunity (30 days as per the NEMA Regulations) to register as I&AP and also to comment or raise any issue that they might have.

#### 9.7 MUNICIPALITY IN WHICH THE SITE IS SITUATED AND OTHER GOVERNMENTAL AUTHORITIES

The project falls within the jurisdiction of Swellendam Local Municipality under the Overberg District Municipality in the Western Cape Province. Notification and request for comments were submitted to the following key stakeholders:

- Swellendam Local Municipality;
- South African Heritage Resource Agency;
- Western Cape Department of Transport and Public Works;

- Western Cape Department of Water and Sanitation ;
- Wildlife and Environmental Society of South Africa;
- Cape Nature;
- Western Cape Department Environmental Affairs and Development plan; and
- National Department of Water and Sanitation.

The notifications were sent by registered mail; refer to **Appendix D3**

## **9.8 PLACEMENT OF ADVERTISEMENT IN THE LOCAL NEWSPAPER**

An advertisement was placed on the Langeberg Bulletin on the 12<sup>th</sup> June 2015. The advertisement was aimed at further informing the interested and affected parties of the proposed activity. A 30 day period was allowed for the public to submit their comments, issues and concerns. Proof of newspaper advertisement is attached as **Appendix D2**.

## **9.9 PUBLIC MEETINGS**

A public meeting will be scheduled accordingly depending on the input from the stakeholders and the public.

## **9.10 SYNTHESIS OF ISSUES AND RESPONSE**

**Appendix D4** contains the comments, issues and concerns raised together with the responses provided by the Environmental Assessment Practitioner.

# **10. DESCRIPTION OF THE NEED AND DESIRABILITY OF THE PROPOSED ACTIVITY**

## **10.1 MOTIVATION FOR THE DEVELOPMENT**

Eskom Transmission's ten years plan indicates that a reliable electricity supply of acceptable quality is essential for the economic development of South Africa. It is also a prerequisite for socio-economic development, as it paves the way to access to education, improved nutrition and health care, and jobs, amongst others. The



transmission system plays a vital role in the delivery of a reliable, high quality supply throughout South Africa and the region, by delivering electricity in bulk to load centres and very large end-users. From there, the distribution networks owned by Eskom and municipalities deliver electricity to end-users. The transmission system needs to be well-maintained to deliver a reliable supply of electricity, and it also needs to be strengthened to meet changing customer needs.

Consequently, the proposed Agulhas substation and loop in and out lines form part of the Vryheid Network Strengthening which is driven by tourism and agriculture and it forms part of the new infrastructure that Eskom has planned, the objective being to ensure reliable energy supply.

The proposed project will ensure the following:

- That the link between the existing Vryheid substation and the proposed Agulhas substation supply network is strengthened;
- Improvement in reliability of electricity supply which will benefit agriculture and tourism; and
- Improvement of South Africa's economic status.

## 10.2 BENEFITS OF THE PROJECT

The proposed project is beneficial as it will allow for load growth in the region. It is envisaged that the proposed project would ensure reliable supply to industry, predominantly the agricultural, tourism and manufacturing industries in the area; this will indirectly benefit communities as reliable electricity will result in uninterrupted production and therefore growth in industry, which could potentially yield additional jobs. The overarching impact will be positive economic spinoffs, which benefit the community, the region and country at large.

Electrification has significant positive benefits from a socio-economic and ecological perspective. The provision of electricity leads to a number of social benefits for organs of State, individuals, industries and communities including the following:

- Enables development; and
- Encourages small and medium enterprise development, and as a result, contributes to a possible increase in disposable income.

### **10.2.1 Supporting Strategies**

At the regional level, the project would contribute to reliability of power supply. There would also be a less tangible but nonetheless important benefit of positioning the Municipality ahead in terms of sustainable energy supply.

At the national level, the project would contribute to implementing South Africa's new energy policy as embodied in the White Paper on Energy (DME 1998). The priorities to which this project would contribute are laying the groundwork for promoting electrification and off-grid power supply.

## **11. PLAN OF STUDY FOR EIA**

Please refer to **Appendix G** for Plan of Study for EIA.

## **12. CONCLUSION**

The Scoping study was performed as dictated by the NEMA and associated Regulations as well as the EIA Regulation of December 2014.

The sites have been under detailed assessment and the primary objective is to assess the suitability of the proposed sites for the intended use as well as to assess the impacts of the proposed development i.e. the Agulhas substation and associated loop in and loop out power lines on the environment. This report has comprehensively addressed the baseline environment which will form the backdrop of the impact assessment. Information provided has been supported by specialist studies that were undertaken and attached hereto.

No fatal flaws or highly significant impacts were identified during the scoping phase that would necessitate substantial redesign or termination of the project. The main impacts are outlined below, and mitigation recommendations and a summary of site suitability and residual impacts will further be assessed in detail during the EIA phase. Such potential impacts include the following:

- Impacts on agriculture;

- Impacts on flora and fauna;
- Impacts on Avifauna;
- Impacts on water resources;
- Impacts on heritage and archaeology;
- Impact on aesthetics;
- Impact on noise; and
- Impact on tourism.

The subsequent EIA phase will assess the identified issues, rate the significance accordingly and propose mitigation measures as applicable.

### 13. REFERENCES

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