



## **ENVIRONMENTAL IMPACT ASSESSMENT FOR THE GOURIKWA TO BLANCO 400KV TRANSMISSION LINE, AND SUBSTATION UPGRADE**

**DRAFT ENVIRONMENTAL SCOPING REPORT & PLAN OF STUDY FOR EIA**

**Public Review Period: 11 January 2017 – 10 February 2017**

**COMPILED BY:**

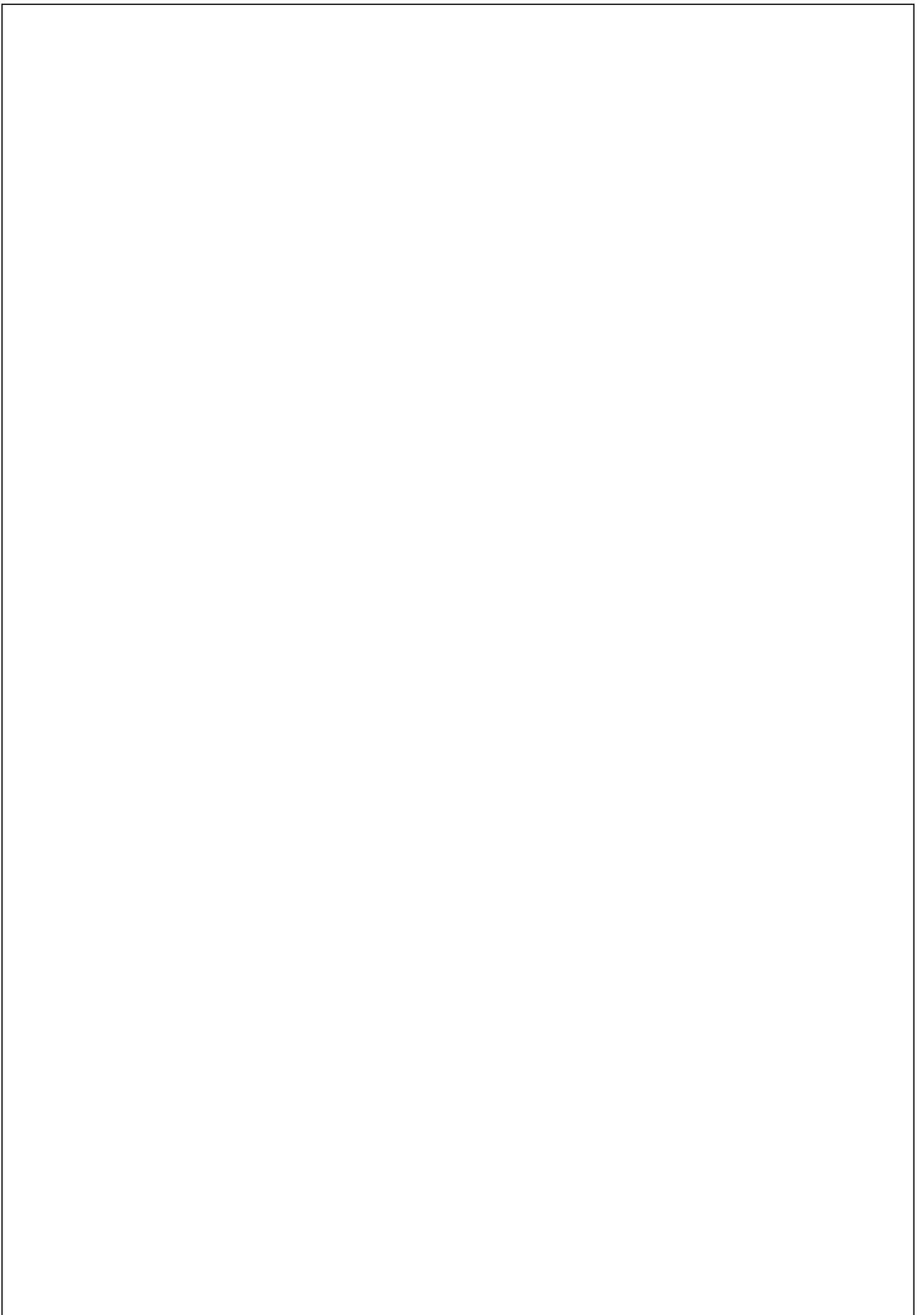
Envirolution Consulting (Pty) Ltd  
PO Box 1898  
Sunninghill  
2157  
Tel: (0861) 44 44 99  
Fax: (0861) 62 62 22  
E-mail: [info@envirolution.co.za](mailto:info@envirolution.co.za)  
Website: [www.envirolution.co.za](http://www.envirolution.co.za)

**PREPARED FOR:**

Eskom Holdings SOC Ltd.  
Eskom Transmission  
P.O.Box 1091  
Johannesburg  
20001  
Tel: (011) 800 2706  
Fax: 086 662 2236

**COPYRIGHT WARNING**

With very few exceptions the copyright of all text and presented information is the exclusive property of Envirolution Consulting (Pty) Ltd. It is a criminal offence to reproduce and/or use, without written consent, any information, technical procedure and/or technique contained in this document. Criminal and civil proceedings will be taken as a matter of strict routine against any person and/or institution infringing the copyright of Envirolution Consulting (Pty) Ltd.



## TABLE OF CONTENTS

<b>1.</b>	<b>INTRODUCTION</b>	<b>17</b>
	1.1 Project Background	17
	1.2 Regulations (2014) guiding the Environmental Scoping Process	18
	1.3 Objectives of the Environmental Scoping Report	20
	1.4 Project Team	20
	1.4.1 Project Applicant	20
	1.4.2 Environmental Assessment Practitioner	20
	1.4.3 Expertise of the EAP to carry out Scoping procedures	20
	1.4.4 Specialists	21
	1.4.5 Authority	22
<b>2.</b>	<b>PROJECT DESCRIPTION</b>	<b>23</b>
	2.1 Project locality	23
	2.2 Project Motivation	25
	2.2.1 Need and Desirability	26
	2.3 Description of Alternatives	27
	2.3.1 No-go	27
	2.3.2 Alternatives for 400 kV servitude	27
	2.3.3 Gourikwa Substation	29
	2.3.4 Blanco (Narina) Substation	29
	2.4 Description of the proposed activities	31
	2.4.1 Infrastructural description	31
	2.4.2 Servitude Requirements	32
	2.4.3 Clearance Requirements	32
	2.4.4 Required Services	32
	2.4.4.1 Access Routes & Storm Water	32
	2.4.4.2 Construction Site Camps	32
	2.4.4.3 Sewage	33
	2.4.4.4 Solid Waste Disposal	33
	2.4.4.5 Electricity	33
	2.5 Eskom Project Procedure – Construction of Power Lines	33
	2.5.1 Planning	33
	2.5.2 Appointment of EIA Practitioners	33
	2.5.3 Land and rights acquisition	34
	2.5.4 Survey and line design	34
	2.5.5 Construction	34
	2.5.6 Rehabilitation & Maintenance	35
<b>3.</b>	<b>LEGISLATION AND GUIDELINES CONSIDERED</b>	<b>36</b>
	3.1 Constitution of the Republic of South Africa, 1996	36
	3.2 National Environmental Management Act, 1998 (Act 107 of 1998 “NEMA”).	36
	3.3 National Water Act (Act No.36 of 1998) (NWA) under Section 21 Water Uses	39
	3.4 The National Environmental Management: Air Quality Act 39 of 2004	39
	3.5 Electricity Regulation Act 4 of 2006	40
	3.6 The Conservation of Agricultural Resources Act 43 of 1983	40
	3.7 National Water Act 36 of 1998	40
	3.8 National Heritage Resources Act 25 of 1999	43
	3.9 Waste Management Act 59 of 2008	43
	3.10 Land Use Planning Legislation	44

3.11	The National Environmental Management Biodiversity Act (NEMBA)	45
3.12	National Development Plan 2030	45
3.13	Additional notable legislation	46
<b>3.14</b>	<b>Policy Guidelines</b>	<b>46</b>
<b>4.</b>	<b>DESCRIPTION OF THE AFFECTED ENVIRONMENT</b>	<b>47</b>
<b>4.1</b>	<b>Climate</b>	<b>47</b>
<b>4.2</b>	<b>Topography, Soils and Geology</b>	<b>48</b>
4.2.1	Topography	48
4.2.2	Soils	48
4.2.3	Geology	49
4.2.4	Irrigated land	50
4.2.5	Soil Erosion Hazard	51
4.2.6	Project impacts on Agriculture	52
4.2.7	Grazing Capacity	53
4.2.8	Vegetation	53
4.2.9	Fauna	57
4.2.10	Avifauna	58
<b>4.3</b>	<b>Land use and Socio-Economical Profile</b>	<b>62</b>
4.3.1	Eden District Municipality (DC4)	63
4.3.2	Local municipalities	63
4.3.2.1	George Local Municipality	64
4.3.2.2	Mossel Bay Local Municipality	66
<b>4.4</b>	<b>Tourism</b>	<b>66</b>
4.4.1	George area	67
4.4.2	Mossel Bay area	68
4.4.3	Nature Reserves	68
<b>4.5</b>	<b>Heritage</b>	<b>69</b>
4.5.1	Historical Background	69
4.5.2	Cemeteries and Graves	70
4.5.3	Palaeontology	70
<b>4.6</b>	<b>Other Infrastructure</b>	<b>71</b>
4.6.1	Road and Rail	71
4.6.2	Renewable Energy	72
<b>4.7</b>	<b>Visual Assessment</b>	<b>73</b>
4.7.1	Landscape Type: Mountainous and Wilderness Area	73
4.7.1.1	Affected Receptors	73
4.7.1.2	Sensitivity Of The Visual Resource	74
4.7.2	Natural Landscapes	74
4.7.2.1	Affected Receptors	75
4.7.2.2	Sensitivity Of Receptors	75
4.7.2.3	Distance From Source Of Impact	75
4.7.3	Landscape type: Coastal Towns And Cities	75
4.7.3.1	Affected Receptors	76
4.7.3.2	Sensitivity Of Receptors	76
4.7.3.3	Distance from Source of Impact	76
4.7.4	Agriculture	76
4.7.4.1	Affected Receptors	76
4.7.4.2	Sensitivity Of Receptors	77
4.7.4.3	Distance From Source Of Impact	77
<b>4.8</b>	<b>Wetlands and Surface Water Bodies</b>	<b>77</b>

<b>5.</b>	<b>DESCRIPTION OF ISSUES AND POTENTIAL IMPACTS</b>	<b>80</b>
	<b>5.1 Identification of Potential Impacts</b>	<b>80</b>
	5.1.1 Socio-Economic Impact	81
	5.1.2 Impact on Land-Use	83
	<b>5.2 Flora and vegetation ecology</b>	<b>83</b>
	5.2.1 Impacts on indigenous natural vegetation	84
	5.2.2 Establishment and spread of declared weeds and alien invader plants	85
	5.2.3 Fragmentation of sensitive habitats	85
	5.2.4 Fauna and Avifauna	85
	i. Fauna	85
	ii. Avifauna	85
	<b>5.3 Wetlands and Surface Water Bodies</b>	<b>87</b>
	<b>5.4 Heritage Impact</b>	<b>88</b>
	5.4.1 Impact on Pre-Colonial Archaeology	88
	5.4.2 Impact on Colonial Period	88
	5.4.3 Impacts to Graves	89
	<b>5.5 Visual and landscape Impact</b>	<b>89</b>
	<b>5.6 Tourism and Economic Impact Assessment</b>	<b>91</b>
	<b>5.7 Social Impact Assessment</b>	<b>91</b>
	5.7.1 Potential Construction Phase Impacts	92
	5.7.2 Potential Operational Phase Impacts	93
	5.7.3 Social issues raised	94
	<b>5.8 Agriculture</b>	<b>96</b>
	<b>5.9 Roads and Traffic</b>	<b>96</b>
<b>6.</b>	<b>PUBLIC PARTICIPATION</b>	<b>97</b>
	<b>6.1 Purpose of Public Participation</b>	<b>97</b>
	<b>6.2 Steps taken to notify I&amp;AP's</b>	<b>97</b>
	<b>6.3 I&amp;AP Register</b>	<b>99</b>
	6.3.1 Registered I&AP entitled to comment on reports and plans	99
	<b>6.4 Review of the Draft Environmental Scoping Report</b>	<b>99</b>
	<b>6.5 Authority Review of SR</b>	<b>100</b>
	<b>6.6 Summary of Issues Raised by I&amp;AP's</b>	<b>100</b>
<b>7.</b>	<b>ASSESSMENT</b>	<b>105</b>
	<b>7.1 Description of the Need and Desirability</b>	<b>105</b>
	<b>7.2 Route Alternative Evaluation</b>	<b>107</b>
	<b>7.3 Impact Evaluation methodology</b>	<b>108</b>
	<b>7.4 Assessment Tables</b>	<b>109</b>
	7.4.1 Ecological Impact Assessment:	110
	7.4.2 Impact on Wetlands and River courses:	120
	7.4.3 Heritage Impacts	122
	7.4.4 Visual Impacts	123
	7.4.5 Impacts on traffic and local roads	125
	7.4.6 Social and Socio-economic Impacts	126
	7.4.7 Agricultural Impacts	132
	<b>7.5 Additional evaluation</b>	<b>133</b>
<b>8.</b>	<b>PLAN OF STUDY FOR ENVIRONMENTAL IMPACT ASSESSMENT</b>	<b>143</b>
	<b>8.1 Description of Tasks</b>	<b>143</b>
	8.1.1 Environmental Impact Assessment Report;	143
	8.1.2 Specialist studies in EIA phase	144
	8.1.3 Public Participation Process of the EIA phase	144
	8.1.4 Proposed Methodology of Assessing Issues and Alternatives	144

8.1.4.1 Assessment Criteria	145
8.1.5 EIA Public Participation Process	147
<b>9. CONCLUSION</b>	<b>148</b>

## LIST OF FIGURES

FIGURE 1. STUDY AREA (SEE LARGE FORMAT MAPS ATTACHED)	23
FIGURE 2. FARMS IN THE STUDY AREA (SUBDIVISIONS NOT SHOWN)	24
FIGURE 3. CLN AND MAJOR TRANSMISSION SYSTEM WESTERN GRID (2011)	27
<b>FIGURE 4. EXISTING POWER LINE INFRASTRUCTURE</b>	<b>28</b>
<b>FIGURE 5. BLANCO (NARINA) TRANSMISSION SUBSTATION PROPOSED SITES</b>	<b>30</b>
FIGURE 6. PYLON OPTIONS	31
FIGURE 7: SOIL MAP	49
FIGURE 8: HIGH POTENTIAL SOILS	50
FIGURE 9: SOIL EROSION MAP	51
FIGURE 10: FARMING ACTIVITIES UNDER ALTERNATIVE 1 LINE (JUST NORTH OF VARINGSRIVIER)	52
FIGURE 11: VEGETATION MAP	53
FIGURE 12: VEGETATION TYPES & THEIR STATUS INTERSECTED BY THE PROJECT (MUCINA ET AL. 2006)	54
FIGURE 13: KNOWN POPULATIONS OF THREATENED PLANT SPECIES. (SANBI:CREW DATABASE)	54
FIGURE 14: GONDWANA GAME RESERVE LANDSCAPE	55
FIGURE 15. VEGETATION IN THE STUDY AREA	55
<b>FIGURE 16: HAWORTHIA KINGIANA</b>	<b>57</b>
<b>FIGURE 17: KLIPSPRINGER</b>	<b>58</b>
<b>FIGURE 18: AARDWOLF</b>	<b>58</b>
<b>FIGURE 19: DENHAM’S BUSTARD AND LUDWIG’S (KORI) BUSTARD</b>	<b>60</b>
<b>FIGURE 20: GREATER FLAMINGO, WHITE THROATED SWALLOWS</b>	<b>61</b>
<b>FIGURE 21: LITTLE BITTERN</b>	<b>61</b>
<b>FIGURE 22: DEAD BIRDS FOUND UNDER EXISTING POWER LINES DURING SITE VISITS</b>	<b>62</b>
<b>FIGURE 23: LANDCOVER MAP</b>	<b>63</b>
<b>FIGURE 24: SPATIAL STRUCTURE OF GEORGE (SOURCE: GEORGE IDP, 2014/15)</b>	<b>64</b>
<b>FIGURE 25: EXAMPLE OF ESA ARTEFACTS NEAR GEORGE, AS FOUND BY KAPLAN (2005)</b>	<b>70</b>
<b>FIGURE 26. EXISTING POWER LINES, MAIN ROADS AND RAILWAY LINES (ALT 3)</b>	<b>72</b>
<b>FIGURE 27. WELBEDACHT WIND FARM IN THE VICINITY OF MOSSEL BAY</b>	<b>73</b>
<b>FIGURE 28. WIND FARM NEAR GOURIKWA POWER STATION, MOSSEL BAY</b>	<b>73</b>
<b>FIGURE 29. RIVERS IN THE STUDY AREA</b>	<b>78</b>
FIGURE 30. DURING CONSTRUCTION OF NEW INFRASTRUCTURE (GYED V-PYLONS)	82
<b>FIGURE 31. BIRD FLAPPERS AND BIRD GUARDS PROPOSED AS MITIGATION MEASURES</b>	<b>87</b>
<b>FIGURE 32. LOCATION OF THE GONDWANA GAME RESERVE IN RELATION TO ALT 1 (BORDERS NOT SHOWN)</b>	<b>90</b>
<b>FIGURE 33. TWO OF THE FARMS AND GUEST HOUSES LOCATED IN THE ALTERNATIVE 1 CORRIDOR</b>	<b>96</b>

## LIST OF TABLES

TABLE 1. PROJECT SPECIALISTS	21
TABLE 2: AVERAGE FARM PRICES FOR A SELECTION OF FARM PROPERTIES	83
TABLE 3: COMMENTS AND CONCERNS RECEIVED	94
TABLE 4. NEED AND DESIRABILITY	105
TABLE 5. <b>GRAZING POTENTIAL</b>	<b>133</b>

<b>TABLE 6. IMPACT RATING SCORE</b> .....	136
<b>TABLE 7. ASSESSMENT CRITERIA</b> .....	146

**LIST OF APPENDICES**

**APPENDIX 1 MAPS**

- APPENDIX 1.1 Locality Map
- APPENDIX 1.2 Preliminary Environmental Sensitivity Maps
- APPENDIX 1.3 Affected Farm portions details & Coordinates of the activity

**APPENDIX 2: APPLICATION FORM**

**APPENDIX 3: DEA CORRESPONDENCES**

**APPENDIX 4: SPECIALIST REPORTS**

- APPENDIX 4.1 Public Participation & Facilitation
- APPENDIX 4.2 Avifauna Assessment
- APPENDIX 4.3 Botanical (Vegetation) Assessment
- APPENDIX 4.4 Socio-Economic & Tourism Assessment
- APPENDIX 4.5 Heritage & Archaeology & Palaeontology
- APPENDIX 4.6 Fauna Assessment
- APPENDIX 4.7 Land Use (this in-house report has been peer reviewed)
- APPENDIX 4.8 Soil & Agricultural Assessment
- APPENDIX 4.9 Social Impact
- APPENDIX 4.10 Visual Impact
- APPENDIX 4.11 Wetlands & River Systems

**APPENDIX 5 PYLON TOWER DIAGRAMS**

**APPENDIX 6 ADDITIONAL INFORMATION**

- APPENDIX 6.1 EAP affirmation and CVs
- APPENDIX 6.2 Specialist Declaration and CVs

## INVITATION TO COMMENT ON THE DRAFT SCOPING REPORT

Envirolution Consulting (Pty) Ltd was appointed by Eskom Holdings SOC Limited to conduct the Environmental Impact Assessment (EIA) Process for the proposed construction of the Gourikwa to Blanco 400kV Power line and Substations upgrade. The development entails the construction of a 50-60km long 400kV Transmission power line from the Gourikwa Substation at Mossel Bay to the Narina (Blanco) Substation at George, in the Western Cape Province. Three alternative routes are being investigated.

The EIA process for the proposed construction of the Gourikwa to Blanco 400kV Power line and Substation commenced in early 2015 with the reference number: 14/12/16/3/3/2/921. This application has however lapsed in accordance with Regulation 23 (1) of the EIA Regulations, 2014 and a new EIA process is currently being initiated. This new process entails (1) the resubmission of a new application to DEA and the project will be assigned a new reference number, (2) the release of a Draft Scoping Report (DSR) to be followed by a Draft Environmental Impact Assessment (DEIA) Report for public review and thereafter (3) submission the final reports to DEA for decision-making.

**It must be noted that the contents of both the Draft Scoping and the Draft EIA report will not change as the scope of the project and the environment still remains the same. Please advise if your comments have remained the same or if you have additional or new comments.**

For new comments, members of the public, local communities and stakeholders are invited to comment on the Draft Scoping Report which has been made available for public review and comment at the following locations from **11 January 2017 – 10 February 2017**:

- The Envirolution website at [www.envirolution.co.za](http://www.envirolution.co.za)
- Dropbox link sent to registered I&APs
- George Public Library and Mossel Bay Public Library

### **Please submit your comments to:**

Company Name: Envirolution Consulting (Pty) Ltd  
Name: Sheila Bolingo  
Physical Address: Vista Place, Suite 1a & 2, No 52 Cnr Vorster Avenue & Glen Avenue, Glenanda  
Postal Address: PO Box 1898, Sunninghill, 2157  
Telephone Number: (0861) 44 44 99  
Fax Number: (0861) 62 62 22  
E-mail: [sheila@envirolution.co.za](mailto:sheila@envirolution.co.za)

Comments can be made as written submission via fax, post or e-mail.

## EXECUTIVE SUMMARY

### I. INTRODUCTION

Envirolution Consulting (Pty) Ltd was appointed by Eskom Holdings SOC Limited to conduct the Environmental Impact Assessment (EIA) Process for the proposed construction of a 400kV Transmission Power line from the Gourikwa Substation to the Blanco Substation and the associated upgrades of these Substations.

A separate application will be submitted for the construction of a 200km long 400kV Transmission power line from the Blanco Substation at George to the Droerivier Substation near Beaufort West, and **the respective impact assessments will be submitted as separate reports.**

In terms of the NEMA EIA Regulations (2014), published in Government Notice R. 982 in Government Gazette No. 38282 of 4 December 2014, under Section 24(5) of the National Environmental Management Act, 1998 (Act No.107 of 1998), a Scoping & Environmental Impact Assessment are required for the development due to the following listed activities (NEMA EIA Regulations 982, 984, 985, ):

- The development of infrastructure or structures covering 50 square metres or more - Listing 2 (12);
- The infilling or depositing of any material of more than 5 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 5 cubic metres from a watercourse – Listing 1 (19);
- The development of a road with a reserve wider than 13,5 meters, or where no reserve exists where the road is wider than 8 metres - Listing 1 (24)
- The expansion of facilities for the transmission and distribution of electricity where the expanded capacity will exceed 275 kilovolts and the development footprint will increase - Listing 1 (47)
- Development of infrastructure for transmission and distribution of electricity (with a capacity of 275kV or more outside an urban area) - Listing 2 (9),
- The clearance of an area of 20 hectares or more of indigenous vegetation - Listing 2 (15),
- Development of masts or towers for telecommunication or radio transmission - Listing 3 (3)
- Development of a road wider than 4 meters but less than 13,5 meters - Listing 3 (4),
- Clearance of an area of 300 sqm or more of indigenous vegetation except - Listing 3 (12),
- The development of infrastructure or structures with a physical footprint of 10 square metres or more within a watercourse; Listing 3 (14),

The National Department Environment Affairs (DEA) will be the relevant decision-making authority as Eskom is a parastatal. The EIA authorisations need to be granted by the DEA for approval and setting of conditions prior to commencement of any construction activities.

The development also triggers activities that require a Water Use License because it crosses several water courses. Therefore, before construction activities may take place, the activity will require a Water Use License as per requirement in the National Water Act (Act No.36 of 1998) (NWA) under Section 21 Water Uses. In terms of the NWA, this development requires a Water Use License for the following water uses:

- Section 21(c) impeding or diverting the flow of water in a watercourse and;
- Section 21 (i) altering the bed, banks, course or characteristics of a watercourse.

## II. PROJECT DESCRIPTION

There are three proposed corridors for the transmission lines.

**Alternative 1 (Red)**, the preferred line is estimated to be 57 km in length and has fewer bends than the other two alternatives (18 bends only). It is also 1 km shorter compared to Alternative 3 and 2 km shorter compared to Alternative 2. Du tot the corridor that exits from Gourikwa substation runs from the north-eastern side parallel to the existing Proteus-Droërvier 400 kV line for about 45 km until it reaches the site of the proposed Blanco (Narina) Transmission substation.

**Alternative 2 (Blue)** exits Gourikwa substation in the same direction as the Red corridor (Alternative 1), but turns easterly to cross over the R327 road to run parallel to existing distribution power lines.

**Alternative 3 (Green)**, is an alternative for the Blue corridor (Alternative 2). The corridor is aligned easterly towards Hartenbos and is aligned along existing power lines to avoid creating a new corridor. Alternative 3 joins Alternative 2 on the northern side of Brandwag River (Project Scope, 2014).

In all cases (lines and substations) a No-Go option will be assessed. Specialists have suggested that a 4th alternative (a combination of the 3 Alternative routes above be considered. This will be investigated in the EIA phase.

Site alternatives for the upgrade of the substations of Gourikwa and proposed Blanco (Narina) Transmission Substation will not be assessed in this Scoping Report since the Gourikwa substation already exists and infrastructure will only be upgraded within the existing footprint to accommodate the additional line connections. **Important note:** The Narina Transmission SS forms part of a separate project for which the EIA is handled by SEF in terms of the 2010 EIA regulations (DEA REF NO: 14/12/16/3/3/2/424 - NEAS REF NO: DEA/EIA/0001519/ 2012). The SEF projects are for the Narina substation and “loop in and out” Droërvier-Proteus 400 kV line.

## III. NEED FOR THE PROJECT

Eskom Holdings is the biggest producer of electricity in South Africa; it also transmits electricity via a transmission network which supplies electricity at high voltages to a number of key customers and distributors. Eskom is a vertically integrated company licensed to generate, transmit and distribute electricity. The transmission licence is held by Eskom Transmission, the Transmission network service provider (TNSP). Planning the transmission network is the responsibility of the Grid Planning Department in the Transmission Division.

According to the Eskom Transmission Ten Year Development Plan 2011-2021 (TDP), the 400kV transmission lines are a result of the development of a more meshed transmission 400kV network to provide greater reliability and thus improve the levels of national network security. These new transmission lines form part of the long-term strategy to develop a main transmission backbone from which regional power corridors can be supported.

The proposed 400kV transmission power line from the Gourikwa Substation to the Blanco Substation forms part of the power corridors that will connect generation pools to one another and to the major load centres in the country. This backbone and regional power corridor network structure will allow the increasing system demand to be supplied and the power from new power stations to be integrated more efficiently into the transmission network and distributed where required, both under system-healthy and system-contingency conditions.

The development of the transmission backbone and the associated regional power corridors were reviewed as part of the Strategic Grid Study which considered the potential development scenarios beyond the 10-year horizon of the Transmission Development Plan (TDP) until 2030. The objective of this strategic study was to align the transmission network with the requirements of the generation future options and those of the growing and future load centres. This Strategic Grid Study has enabled the 10-Year TDP to be aligned with the future long-term development of the whole Eskom system.

A Customer Load Network (CLN) is a network within a specific geographical area, which in turn is a subdivision of a Grid. The West Grid consists of four Customer Load Networks, namely Peninsula, Southern Cape, West Coast and Namaqualand. The proposed 400kV Transmission power line from the Blanco Substation to the Droërivier Substation forms part of Eskom's West Grid and the Southern Cape CLN.

#### IV. IDENTIFICATION OF POTENTIAL IMPACTS AND SPECIALIST STUDIES

Potential risks and key issues identified during the Scoping Phase of the project were based on consultation with Interested and Affected Parties (I&AP's), experience with similar developments, desktop studies and current state of the environment of the site. Specialist investigations that were undertaken during the Scoping phase and added to during the EIA process include:

Discipline/ Specialist field	
Land Use/Regional & Town Planning	Economic & Tourism Assessment
Public Participation & Facilitation	Heritage & Archaeology
Agricultural Assessment	Palaeontological Assessment
Avifauna Assessment	Social Impact
Botanical Assessment	Visual Impact
Faunal Assessment	Wetlands & River Systems

The Department of Environmental Affairs (DEA) will advise on further studies that may be required during the EIA phase. Specialist findings will be assessed and discussed in detail in the Environmental Impact Assessment Report (EIR) that will be provided during the EIA phase.

#### V. PUBLIC PARTICIPATION PROCESS IN COMPLIANCE WITH REGULATION 41 OF THE NEMA 2014 EIA REGULATIONS

Interested and Affected Parties, including surrounding and affected landowners, Provincial, National and Local Governments Departments were involved during the Public Participation Process (PPP). The Public Participation Process (PPP) report is attached to this Draft Scoping Report as Appendix 4.1. The summary of the PPP that commenced in March 2015 is summarised as follows:

In compliance with regulation 41(2) (b): written notice was given to owner or person in control of land via registered mail or hand delivery, if the applicant is not the owner or person in control of the land the occupiers of the site where the line is planned and to owners and occupiers of land adjacent to the site where the line is to be erected and to any alternative sites where the line is to be erected. The PPP practitioner visited landowners between March 2015 and May 2015.

Municipal councillors of the wards in which the sites and alternative sites are situated, and the other known organisations of ratepayers that represent the community in the area were informed of the project by means of invitations to attend the public meetings, where information regarding the project was presented, and opportunity was given for all to raise their concerns. The municipalities with jurisdiction in the project area include the Municipality of Mossel Bay, Beaufort West, George, and the Eden District Municipality.

Organs of state and other parties that were informed, have included the Department of Water Affairs and Sanitation, the Western Cape and Eastern Cape Heritage Agencies. The latter departments have received Notifications of Intend to Develop (NIDs). We have received the comments of the Mossel Bay Heritage Society which will also be considered in the HIA document which is submitted to Heritage Western Cape.

The summary of the PPP that commenced in March 2015 is summarised as follows:

In compliance with regulation 41 (2) (b); written notice was given to owner or person in control of land via registered mail or hand delivery, if the applicant is not the owner or person in control of the land. Notices were given to the occupiers of the sites where the line is planned and to owners and occupiers of land adjacent to the site where the line is to be erected and to any alternative sites where the line is to be erected. Notice boards were placed along the preferred and alternative routes at road crossings and places which are conspicuous and accessible by the public. To achieve this goal notices were erected at the boundary, on the fence or along the corridor of the proposed route, including the alternative routes. Proof of placement is attached in the format of geo-referenced photographs (See PPP report)

In some instances the addresses of land owners were not available from the Title Deeds and other measures had to be taken. The PPP practitioner visited landowners between March 2015 and May 2015 and obtained contact details of neighbours and I&APs from those who could be reached on properties along the routes. Members of the Public Participation Team undertook additional site visits in August 2015, during which time registered I&APs had the opportunity to attend meetings and discuss their concerns.

Flyers were distributed to I&APs accompanied by a Background Information document (BID). A registration form with map was distributed. (Knock and drops) from March 2015 to end May 2015. In compliance with regulation 41 (2) (c) and (d): A Newspaper advertisement was placed in The Herald (Eastern cape) on 8 April 2015, "Die Courier " (Western Cape) on 2 April 2015 & Sunday Times (National) on 29 March 2015 requesting Interested and Affected Parties (I&APs) to register,

and submit their comments. Interviews with newspapers and journalists have resulted in several newspaper articles, some in print and others via social media and the internet.

In compliance with regulation 41 (2)(a), 41(3) and 41 (4): Site notices were displayed within the boundaries of the study area from 5 March 2015.

A pre-assumed institutional I &APs database was developed. The database was expanded through networking and fieldwork throughout the process. Background Information Document (BID) and registration form were compiled and forwarded to I&APs registered on the database. These documents were also distributed at various venues along the route.

Focus group meetings were held with the local councillors and various stakeholder groups to discuss the proposed project. These meetings were documented.

Comments/ issues were captured into a Comment and Response Report (CRR). Issues and comments raised during the public review period of the Draft Scoping Report informed issues requiring further investigation will be carried over to the EIA Phase.

E-mail correspondence between the EAP, the PP consultant and the public has flown freely since the onset of the project and are added to the documentation on a continuous basis. Some e-mails were sent to I&APs in response to their telephonic or faxed queries.

A transparent process was followed. In compliance with regulation 41 (6); the PPP has ensured that information containing all relevant facts in respect of the application or proposed application has been and will be made available to potential interested and affected parties and that participation by potential or registered interested and affected parties is facilitated in such a manner that all potential or registered interested and affected parties are provided with a reasonable opportunity to comment on the application or proposed application.

**NB: Addition Issues and comments raised during the public review period of this Draft Scoping Report (together with previous comments for the Scoping) will be submitted to DEA and carried over to the EIA Phase for further consideration where applicable.**

## VI. ALTERNATIVES/DEVIATIONS CONSIDERED

A Preferred Alternative 1 (red route) and an Alternative 2 route (blue route) have been proposed for the 400 kV transmission line between Gourikwa and Blanco, and a deviation of Alternative 2, namely Alternative 3 (the green route as shown on the Maps). The corridor will be 2km wide although the actual servitude required will only be 55 m. Notice will be given in the placement of the approved line. In instances where other lines traverse on the same property (for instance multiple lines along the road which will be handled as per Eskom Standard Procedures). A wider space will be required in-between in forest and mountainous areas (see Legislation in Chapter 3 of this report).

**Alternative 1:** This corridor exits Gourikwa Substation in a north easterly direction and follows the R327 for approximately 8 km. It turns east and cuts across the mixed agricultural and natural landscape type, passing through the most eastern part of the Gondwana Private Game Reserve. It maintains a north-eastern direction, nearing the mountainous terrain of the Outeniqua Mountains, until reaching the proposed site for the Blanco Substation. The Blanco site is approximately 3-4 km west of the city of George and the Outeniqua Pass (N9).

**Alternative 2:** This corridor starts in the same direction as Alternative 1 but turns east just south of the Gondwana Private Game Reserve. It follows an easterly direction, crossing the Hartebeeskul Dam before turning north east as it reaches the R328 between Hartenbos and Brandwacht. It passes south of Botlierskop Private Game Reserve and crosses Wolwedans Dam before turning north and reaching the Blanco Substation site.

**Alternative 3:** This corridor is a variation of Alternative 2 and exits the Gourikwa Substation in an easterly direction. It brushes past the western outskirts of Hartenbos before turning north and joining Alternative 2. A Corridor of 2km in width was assessed for each route alternative. The route alternatives will also be assessed during the EIA phase and recommendations from the investigations are likely to inform a decision on the preferred alternative.

In all cases (lines and substations) a **No-Go option** will be assessed. Specialists have suggested that a 4<sup>th</sup> alternative (a combination of the 3 Alternative routes above be considered. This will be investigated in the EIA phase.

Site alternatives for the upgrade of the **substations** of Gourikwa and proposed Blanco (Narina) Transmission Substation will not be assessed in this Scoping Report since the Gourikwa substation already exists and infrastructure will only be upgraded within the existing footprint to accommodate the additional line connections. **Important note:** The Narina Transmission SS forms part of a separate project for which the EIA is handled by SEF in terms of the 2010 EIA regulations (DEA REF NO: 14/12/16/3/3/2/424 - NEAS REF NO: DEA/EIA/0001519/ 2012). The SEF projects are for the Narina substation and “loop in and out” Droërivier-Proteus 400 kV line.

## VII. COMPLIANCE CHECKLIST

The National Environmental Management Act, 1998 (Act No. 107 of 1998), makes provision for regulations to carry out the purposes of the Act. The following checklist was based on the **Environmental Impact Assessment Regulations, 2014 (Appendix 2)**, and will guide the reader to the relevant pages of the report.

(2) A scoping report must contain the information that is necessary for a proper understanding of the site selection process, the scope of the assessment and the consultation process to be undertaken through the environmental impact assessment process, and must include—	<b>Referencing in this report:</b>
(a) details of— (i) the EAP who prepared the report; and (ii) the expertise of the EAP including a curriculum vitae.	Paragraph 1.4.3 (p16)  Appendix 6
(b) the location of the activity, including: (i) the 21 digit Surveyor General code of each cadastral land parcel; (ii) where available, the physical address and farm name; (iii) where the required information in items (i) and (ii) is not available, the coordinates of the boundary of the property or properties;	Appendix 1.3 Appendix 1.4 Appendix 1.5 Maps in Appendix 1.6
(c) a plan which locates the proposed activity or activities applied for at an appropriate scale, or, if it is- (i) a linear activity, a description and coordinates of the corridor in which the proposed activity or activities is to be undertaken; or (ii) on land where the property has not been defined, the coordinates within which the activity is to be undertaken;	Appendix 1
d) a description of the scope of the proposed activity, including- (i) all listed and specified activities triggered; (ii) a description of the activities to be undertaken, including associated	Heading 2

structures and infrastructure;	
(e) a description of the policy and legislative context within which the development is proposed including an identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks and instruments that are applicable to this activity and are to be considered in the assessment process;	Heading 3
(f) a motivation for the need and desirability for the proposed development including the need and desirability of the activity in the context of the preferred location;	Heading 2.2.1 (p19)
(h) a full description of the process followed to reach the proposed preferred activity, site and location including:	Heading 2 (p18)
(i) details of the sites and alternative considered	Appendix 1
(ii) details of the public participation process undertaken in terms of regulation 41 of the Regulations, including copies of the supporting documents and inputs;	See Specialist PPP report
(iii) a summary of the issues raised by interested and affected parties, and an indication of the manner in which the issues were incorporated, or the reasons for not including them;	Appendix 4.1 PPP report (9)
(iv) the environmental attributes associated with the alternatives focusing on the geographical, physical, biological, social, economic and cultural aspects;	Heading 4
(v) the impacts and risks for each alternative, including the nature, significance, consequence extent, duration and probability of the impacts, including the degree to which these impacts – (aa) can be reversed (bb) may cause irreplaceable loss of resources and (cc) can be avoided managed or mitigated.	Heading 5 Heading 7 (Assesment)
(vi) the methodology used in determining and ranking the nature, significance, consequences, extent, duration and probability of potential impacts and risks associated with the alternatives	Heading 7
(vii) positive and negative impacts that the proposed activity and alternatives will have on the environment and on the community that may be affected;	Heading 5 Heading 7
(viii) the possible mitigation measures that could be applied and level of residual risk;	Appendix 4 Heading 7
(ix) the outcome of the site selection matrix;	Heading 7 Tables
(x) if no alternatives, including alternative locations for the activity were investigated, the motivation for not considering such and	N/A
(xi) a concluding statement indicating the preferred alternatives, including preferred location of the activity	Heading 9
(i) a Plan Of Study for undertaking the environmental impact assessment, including:	Heading 8
(i) a description of the alternatives to be considered and assessed within the preferred site, including the option of not proceeding with the activity;	Heading 8.1
(ii) a description of the aspects to be assessed as part of the environmental impact assessment process;	Heading 8.1
(iii) aspects to be assessed by specialists;	
(iv) a description of the proposed method of assessing the environmental aspects including a description of the proposed method of assessing alternatives including alternatives to be assessed by specialists;	Heading 8.1.4 Heading 8.1.4
(v) a description of the proposed method of assessing significance;	
(vi) an indication of the stages at which the competent authority will be consulted;	Heading 8.1.5
(vii) particulars of the public participation process that will be conducted during the environmental impact assessment process; and	Heading 8.1.4
(viii) a description of the tasks that will be undertaken as part of the environmental impact assessment process;	
(ix) identify suitable measures to avoid, reverse, mitigate or manage identified impacts and to determine the extent of the residual risks that need to be managed and monitored.	Heading 8
(j) an undertaking under oath or affirmation by the EAP in relation to (i) the correctness of the information provided in the report (ii) the inclusion of comments and inputs from the stakeholders and I&APs and (iii) any information provided by the EAP to interested and affected parties and any responses by the EAP to comments or inputs made by interested and affected	Appendix 6.1 Declaration of EAP & See Specialist PPP report

parties.	Appendix 4.1
(k) An undertaking under oath of affirmation by the EAP in relation to the level of agreement between the EAP and I&APs on the plan of study for undertaking the environmental impact assessment	Appendix 6
l) where applicable, any specific information required by the competent authority	N/A
(m) any other matter required in terms of section 24(4) (a) and (b) of the Act.	N/A

# 1. INTRODUCTION

## 1.1 Project Background

Envirovolution Consulting (Pty) Ltd was appointed by Eskom Holdings SOC Limited to conduct the Environmental Impact Assessment (EIA) Process for the proposed construction of the Gourikwa to Blanco 400kV Power line and Substations upgrade. The development entails the construction of a 50-60km long 400kV Transmission power line from the Gourikwa Substation at Mossel Bay to the Blanco Substation at George, in the Western Cape Province.

The alternative routes that are investigated (Alternative 2 and a deviation thereof, named Alternative 3) are also located in the Western Cape Province. Eskom Holdings SOC Ltd has appointed Envirovolution Consulting (Pty) Ltd to undertake the EIA process for both this study, and another project – a 400kV Transmission Power line between the Blanco Substation and the Droërvier Substation at Beaufort west, through two separate projects that will be conducted at the same time.

In terms of the NEMA EIA Regulations (2014), published in Government Notice R. 982 in Government Gazette No. 38282 of 4 December 2014, under Section 24(5) of the National Environmental Management Act, 1998 (Act No.107 of 1998), a Scoping & Environmental Impact Assessments are required for the development due to the following listed activities:

- Development of infrastructure for transmission and distribution of electricity (with a capacity of 275kV or more outside an urban area) - Listing Notice 2 Activity (9),
- Development of a road wider than 4 meters but less than 13,5 meters - Listing Notice 3 Activity (4),
- clearance of an area of 300 sqm or more of indigenous vegetation except - Listing Notice 3 Activity (12)
- development of masts or towers for telecommunication or radio transmission - Listing Notice 3 Activity (3)

The National Department Environment Affairs (DEA) will be the relevant decision-making authority as Eskom is a parastatal. The EIA authorisations need to be granted by the DEA for approval and setting of conditions prior to commencement of any construction activities.

The development also triggers activities that require a Water Use License because it crosses several water courses. Therefore, before construction activities may take place, the activity will require a Water Use License as per requirement in the National Water Act (Act No.36 of 1998) (NWA) under Section 21 Water Uses. In terms of the NWA, this development requires a Water Use License for the following water uses:

- Section 21(c) impeding or diverting the flow of water in a watercourse and;
- Section 21 (i) altering the bed, banks, course or characteristics of a watercourse.

The proposed projects are subject to the requirements of the Environmental Impact Assessment Regulations (2014 EIA Regulations) in terms of the National Environmental Management Act (NEMA, Act 107 of 1998, as amended). The Act makes provision for the identification and assessment of activities that are potentially detrimental to the environment and which require authorisation from the competent authority (in this case, the national Department of Environmental Affairs, DEA) based on the findings of an EIA.

The application is subject to Scoping and Environmental Impact Reporting. A Scoping and Environmental Impact Assessment Report (EIR) must be completed for the proposed project and the information from the EIR must then be presented to the authorities for decision-making. The application for authorisation was handed in along with the Draft Scoping Reports.

The EIA will be undertaken using the following phased approach as required by the Department of Environmental Affairs (DEA):

- **Phase 1:** Project Initiation: authority consultation, site visits, the initiation of the environmental process and public participation;
- **Phase 2:** Compilation of the Scoping Report, identification of the specialist studies, and compilation of Plan of Study of Environmental Impact Report (EIR);
- **Phase 3:** The compilation of the EIR and the draft Environmental Management Programme (EMPr); and
- **Phase 4:** The compilation of the site specific EMPr.

## **1.2 Regulations (2014) guiding the Environmental Scoping Process**

The 2014 EIA Regulations stipulate time frames for the submission and consideration of a Scoping Report, which applies as follows to this project:

### Submission of scoping report to competent authority

21. (1) *within 44 days of receipt of the application* by DEA, Envirolution (on behalf of Eskom who is the applicant) must submit to DEA a scoping report which has been subjected to a public participation process of at least 30 days and which reflects the incorporation of comments received, including any comments of the competent authority.

### Consideration of scoping report

22. *Within 43 days of receipt* of a scoping report DEA must

- (a) accept the scoping report, with or without conditions, and advise Envirolution to proceed or continue with the tasks contemplated in the plan of study for EIA; or
- (b) refuse environmental authorisation if the proposed activity is in conflict with a prohibition contained in legislation

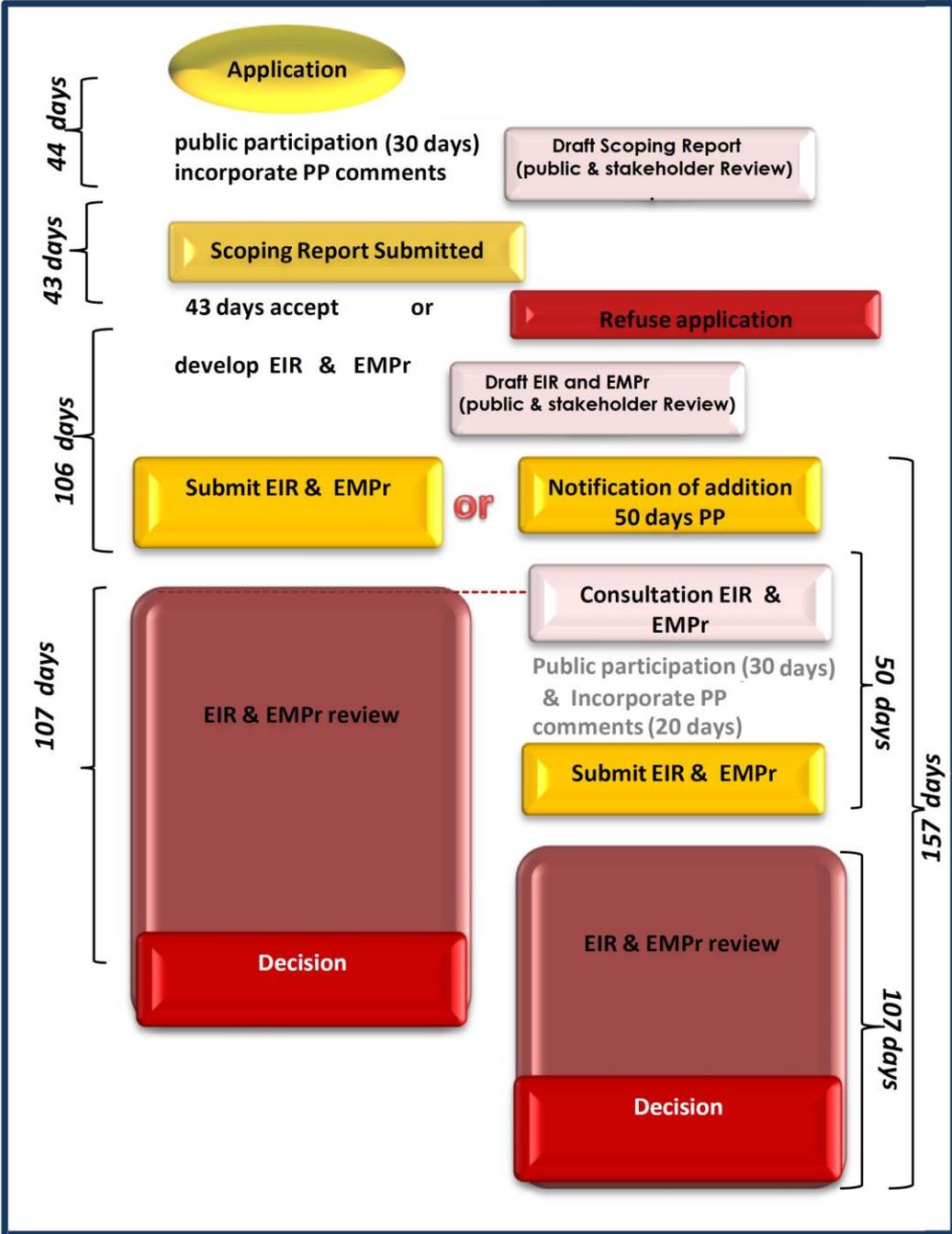
### **Submission and consideration of environmental impact assessment report and environmental management programme**

23. (1) *Within 106 days of the acceptance of the scoping report*, Envirolution must submit to the competent authority-

- (a) an EIA report inclusive of any specialist reports, and an EMPr, which must have been subjected to a public participation process of at least 30 days  
(or a notification in writing that the EIA report inclusive of any specialist reports, and an EMPr, will be submitted within 156 days of acceptance of the scoping report by DEA, as significant changes have been made or significant new information has been added to the environmental impact report or EMPr, which changes or information was not contained in the reports consulted on during the initial public participation process contemplated in subregulation (1)(a), and that the revised environmental impact report or EMPr will be subjected to another public participation process of at least 30 days).

# S&EIR Process

Pre-application (Optional)



### 1.3 **Objectives of the Environmental Scoping Report**

The objective of a Scoping Report is to present an overview of the proposed activity and associated issues that require assessment in the EIA Phase. The EIA process typically comprises two phases, a Scoping Phase and an EIA phase. The Scoping Phase seeks to:

- Engage all Interested and Affected Parties (I&APs) through the advertisement and notification of the project;
- Communicate general and preliminary specialist information regarding the proposed project to all I&APs and other stakeholders in such a manner that it is easily understandable;
- Describe the key project issues and alternatives identified by the proponent, consultants, authorities and the public, which will require more detailed investigations in the EIA phase; and
- Provide the proposed approach to the EIA phase indicating the terms of reference for any specialist studies.
- Elimination of impacts that are of little or no significance in order to direct resources at evaluating and mitigating identified significant impacts.
- The report seeks to identify the best option available to the proponent by means of quantifying the various inputs received from stakeholders, Interested and affected parties, specialists and the experience of the EAP

### 1.4 **Project Team**

#### 1.4.1 **Project Applicant**

Name: **Eskom Holdings SOC Ltd**  
Contact Person: Rudzani RanwedziKentrige Khanyile Makhanya  
(Senior Environmental Advisor, ERE: Land Development)  
Physical Address: Megawatt Park, Maxwell Drive, Sunninghill, Sandton  
Postal Address: P. O. Box 1091, Johannesburg, 2001  
Telephone Number: (011) 800 2706  
Fax Number: 086 662 2236  
Telephone: 011 516 7584011 800 2706  
Cellphone: 079 504 24970828799133  
Email: [RanwedRP@eskom.co.za](mailto:RanwedRP@eskom.co.za)

#### 1.4.2 **Environmental Assessment Practitioner**

Company Name: Envirolution Consulting (Pty) Ltd  
Name: Sheila Bolingo  
Physical Address: Vista Place, Suite 1a & 2, No 52, Cnr Vorster Avenue & Glen Avenue, Glenanda  
Postal Address: PO Box 1898, Sunninghill, 2157  
Telephone Number: (0861) 44 44 99  
Fax Number: (0861) 62 62 22  
E-mail: [sheila@envirolution.co.za](mailto:sheila@envirolution.co.za)

#### 1.4.3 **Expertise of the EAP to carry out Scoping procedures**

- Sheila Muniongo, the principle author of this Basic Assessment holds an Honours Bachelor degree in Environmental Management and 5 years of experience in the consulting field. Her

key focus areas are on strategic environmental assessment and advice on environmental impact assessments; public participation; environmental management programmes, and mapping through ArcGIS for variety of environmental projects. She is currently involved in several diverse projects across the country.

- Gesan Govender, the project manager and Environmental Assessment Practitioner (EAP) responsible for this project, is a registered Professional Natural Scientist and holds an Honours degree in Botany. He has over 15 years of experience within the field of environmental management. His key focus is on strategic environmental assessment and advice; management and co-ordination of environmental projects, which includes integration of environmental studies and environmental processes into larger engineering-based projects and ensuring compliance to legislation and guidelines; compliance reporting; the identification of environmental management solutions and mitigation/risk minimising measures; and strategy and guideline development. He is currently responsible for the project management of EIA's for several diverse projects across the country.

#### 1.4.4 Specialists

The specialists that will undertake the relevant specialist studies are presented below.

**Table 1. Project Specialists**

Discipline	Organisation	Contact Person & Details
Public Participation & Facilitation	3E Consulting Report Appendix 4.1	<b>Samuel M Scott</b> Mobile: +27 (0)835862906 <a href="mailto:sam.scott@vodamail.co.za">sam.scott@vodamail.co.za</a>
Avifauna Assessment	Rodney Crisford Knysna Report Appendix 4.2	<b>Rodney Crisford</b> 044 382 2477 082 552 7187 <a href="mailto:ancientways@absamail.co.za">ancientways@absamail.co.za</a>
Botanical Assessment	Regalis Environmental Services Oudtshoorn Report Appendix 4.3	<b>Jan Vlok</b> Tel: 044-279 1987 Fax: 044-279 2185 <a href="mailto:janvlok@mweb.co.za">janvlok@mweb.co.za</a>
Economic & Tourism Assessment	Economic Modelling Solutions (EMS) Report Appendix 4.4	<b>Dr Johannes Jordaan</b> <a href="mailto:johannes.jordaan@economicmodelling.co.za">johannes.jordaan@economicmodelling.co.za</a> +27 82 320 9996 (mobile) +27 86 552 1942 (fax)
Heritage & Archaeology	ACO Associates Report Appendix 4.5	<b>Dr Lita Webley</b> Tel: 021 706 4104 <a href="mailto:lita.webley@aco-associates.com">lita.webley@aco-associates.com</a>
Palaeontological Assessment	Naturaviva Report Appendix 4.6	<b>John Almond &amp; Dr Wendy Taylor</b> 021 462 3622 <a href="mailto:naturaviva@universe.co.za">naturaviva@universe.co.za</a>
Land Use/Regional & Town Planning	Envirolution Consulting Report Appendix 4.7	<b>Marinda le Roux</b> Envirolution <a href="mailto:marinda@envirolution.co.za">marinda@envirolution.co.za</a> 0614174281
Agricultural Assessment	ARC-Institute for Soil, Climate and Water Report Appendix 4.8	<b>Dr Garry Paterson</b> 012 310 2601 (w); 083 556 2458 (cell) <a href="mailto:garry@arc.agric.za">garry@arc.agric.za</a>
Social Impact	Amina Ismail Report Appendix 4.9	<b>Amina Ismail</b> 082 452 9799 <a href="mailto:solanum@worldonline.co.za">solanum@worldonline.co.za</a>
Visual Impact	i-scape Report Appendix 4.10	<b>Mr. Mader van den Berg</b> Cell: 076 169 1435 Fax: 086 520 4677 <a href="mailto:i-scape@vodamail.co.za">i-scape@vodamail.co.za</a>
Wetlands & River	Blue Science	<b>Dana Grobler</b>

#### 1.4.5 Authority

Name: Department of Environmental Affairs  
Contact Person: Toinette van der Merwe  
Physical Address: Fedsure Building, 315 Pretorius Street, Pretoria  
Postal Address: P O Box X447, Pretoria, 0002  
Telephone Number: (012) 399 8630  
Fax Number: (012) 320 7539  
E-mail: [tvandermerwe@environment.gov.za](mailto:tvandermerwe@environment.gov.za)

## 2. PROJECT DESCRIPTION

### 2.1 Project locality

The study area falls within the boundaries of the Eden District Municipality, in the Western Cape Province. Refer to Figure 1 for an overview of the study area.

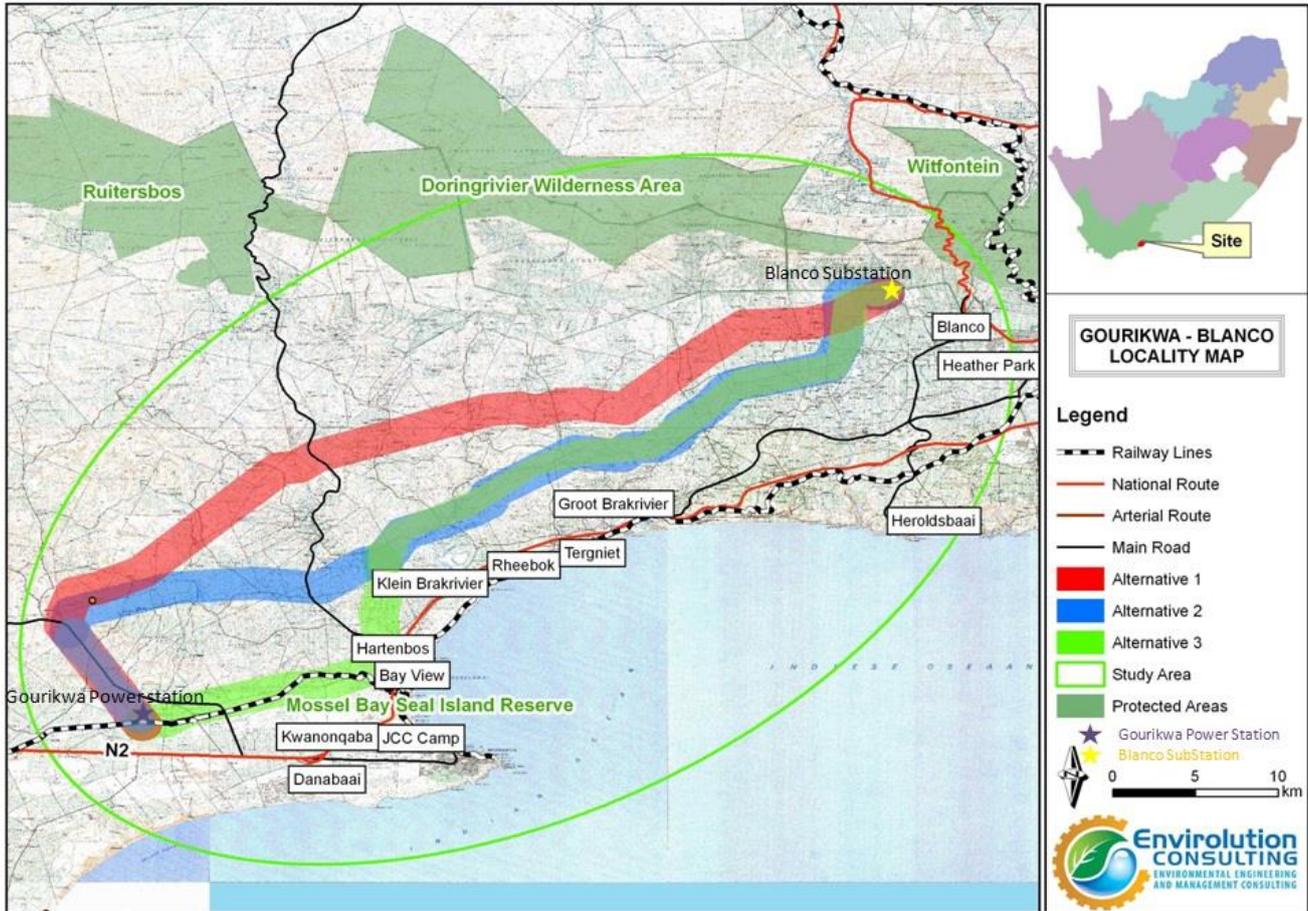


Figure 1. Study Area (See large format maps attached)

**Alternative 1:** This corridor exits Gourikwa Substation in a north easterly direction and follows the R327 for approximately 8 km. It turns east and cuts across the mixed agricultural and natural landscape type, passing through the most eastern part of the Gondwana Private Game Reserve. It maintains a north-eastern direction, nearing the mountainous terrain of the Outeniqua Mountains, until reaching the proposed site for the Blanco Substation. The Blanco site is approximately 3-4 km west of the city of George and the very picturesque Outeniqua Pass (N9).



**Alternative 2:** This corridor starts in the same direction as Alternative 1 but turns east just south of the Gondwana Private Game Reserve. It follows an easterly direction, crossing the Hartebeeskuil Dam before turning north east as it reaches the R328 between Hartenbos and Brandwacht. It passes south of Botlierskop Private Game Reserve and crosses Wolwedans Dam before turning north and reaching the Blanco Substation site.

**Alternative 3:** This corridor is a variation of Alternative 2 and exits the Gourikwa Substation in an easterly direction. It brushes past the western outskirts of Hartenbos before turning north and joining Alternative 2. A Corridor of 2km in width was assessed for each route alternative. The route alternatives will also be assessed during the EIA phase and recommendations from the investigations are likely to inform a decision on the preferred alternative.

In all cases (lines and substations) a No-Go option will be assessed. Specialists have suggested that a 4th alternative (a combination of the 3 Alternative routes above be considered. This will be investigated in the EIA phase.

Site alternatives for the upgrade of the substations of Gourikwa and proposed Blanco (Narina) Transmission Substation will not be assessed in this Scoping Report since the Gourikwa substation already exists and infrastructure will only be upgraded within the existing footprint to accommodate the additional line connections. **Important note:** The Narina Transmission SS forms part of a separate project for which the EIA is handled by SEF in terms of the 2010 EIA regulations (DEA REF NO: 14/12/16/3/3/2/424 - NEAS REF NO: DEA/EIA/0001519/ 2012). The SEF projects are for the Narina substation and “loop in and out” Droërivier-Proteus 400 kV line.

## 2.2 Project Motivation

Eskom is planning to increase the power output at the existing Gourikwa Power Station generating facility at Mossel Bay in the Western Cape. This will increase the output at Gourikwa by 375 MW, increasing the total output at the power station to an expected 1125 MW by 2018. An increase in power output will require strengthening of the existing Transmission network, in order to evacuate the additional power generated.

Various combinations of 400 kV and 765 kV Transmission lines were assessed for the loading scenarios at Gourikwa. Results showed that loading will result in islanding of the Gourikwa power station in one scenario, and the islanding of the power station together with the Blanco and Proteus Transmission Substations in the second scenario. This means that if the project does not go ahead, then increased power generation at Gourikwa will overload the grid and cut off power supply from the power station. Therefore, in order to ensure that Gourikwa is Grid Code compliant, a third line needs to be built out of the facility. Three options for the proposed third line were considered.

When all three options were technically evaluated, the line into Droërivier Substation via Blanco Substation was preferred based on the natural path for the power to flow. This can be attributed to the future generation in the Cape Peninsula and surrounding area. This option is also in alignment with the proposed second Droërivier – Proteus 400 kV line as per the Technical Development Plan. For the Gourikwa-Blanco option, a 400 kV Transmission line from Gourikwa to Blanco (which is the next closest load centre) will have to be established.

Servitudes for the Transmission lines will need to be acquired. The EIA is being undertaken to

assess the impact of the introduction of the Transmission lines between Mossel Bay and George. Impacts associated with the physical infrastructure of the power line and its 55m servitude (27.5m on either side of the centre of the line) will be assessed for the study. In addition, impacts associated with a distance of 1 km alongside each side of the line will also be assessed.

If the project is authorised and routes secured, it is expected that the construction phase of the project will be over a period of up to 2 years, subject to confirmation by Eskom. The operations phase is expected to be for a period of 40 to 50 years.

### **2.2.1 Need and Desirability**

Eskom Holdings is the biggest producer of electricity in South Africa; it also transmits electricity via a transmission network which supplies electricity at high voltages to a number of key customers and distributors. Eskom is a vertically integrated company licensed to generate, transmit and distribute electricity. The transmission licence is held by Eskom Transmission, the transmission network service provider (TNSP). Planning the transmission network is the responsibility of the Grid Planning Department in the Transmission Division.

According to the Eskom Transmission Ten Year Development Plan 2011-2021 (TDP), the 400kV transmission lines are a result of the development of a more meshed transmission 400kV network to provide greater reliability and thus improve the levels of national network security. These new transmission lines form part of the long-term strategy to develop a main transmission backbone from which regional power corridors can be supported.

The proposed 400kV transmission power line from Gourikwa Substation to the Blanco Substation forms part of the power corridors that will connect generation pools to one another and to the major load centres in the country. This backbone and regional power corridor network structure will allow the increasing system demand to be supplied and the power from new power stations to be integrated more efficiently into the transmission network and distributed where required, both under system-healthy and system-contingency conditions.

The development of the transmission backbone and the associated regional power corridors were reviewed as part of the Strategic Grid Study which considered the potential development scenarios beyond the 10-year horizon of the Transmission Development Plan (TDP) until 2030. The objective of this strategic study was to align the transmission network with the requirements of the generation future options and those of the growing and future load centres. This Strategic Grid Study has enabled the 10-Year TDP to be aligned with the future long-term development of the whole Eskom system.

A Customer Load Network (CLN) is a network within a specific geographical area, which in turn is a subdivision of a Grid. The West Grid consists of four Customer Load Networks, namely Peninsula, Southern Cape, West Coast and Namaqualand. The proposed 400kV Transmission power line from the Blanco Substation to the Droërivier Substation forms part of Eskom's West Grid and the Southern Cape CLN. The current transmission network and CLNs are shown in the figure below:

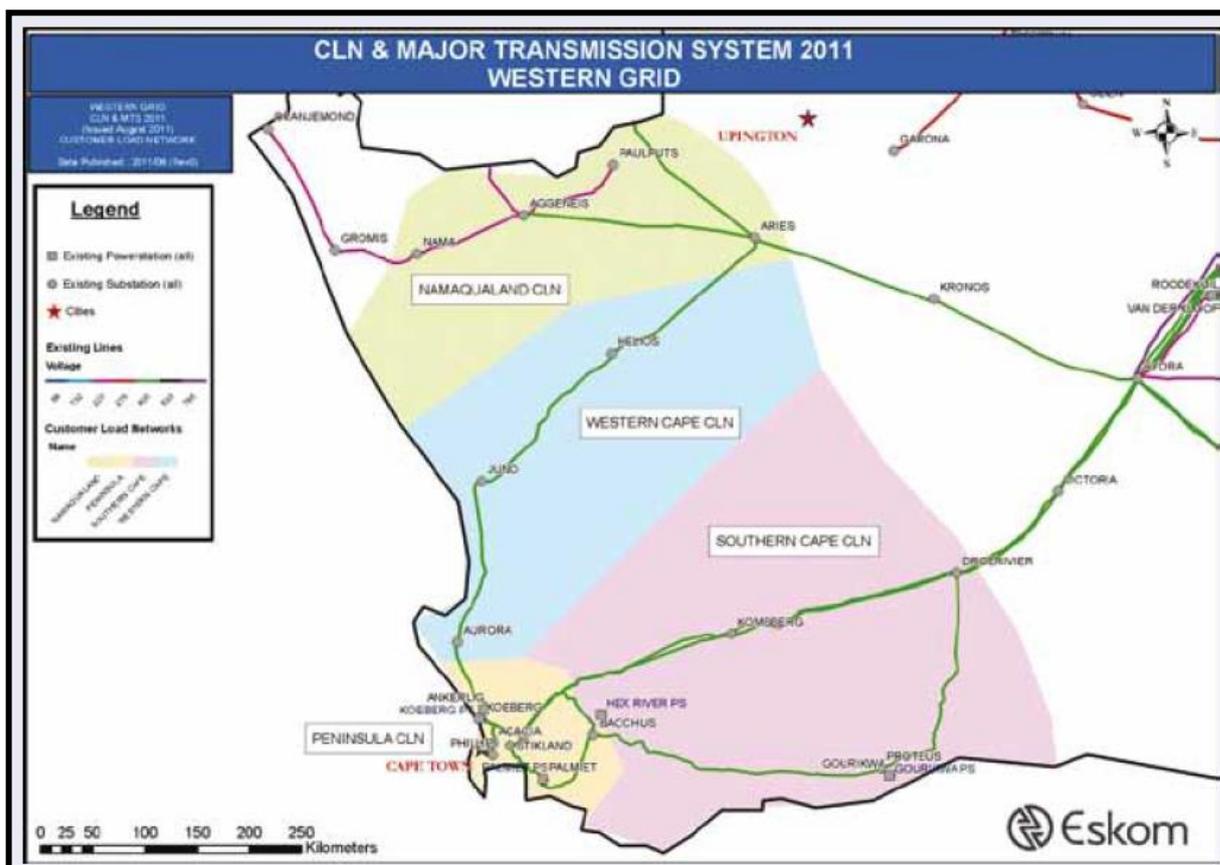


Figure 3. CLN and major Transmission System Western Grid (2011)

Local benefits of the proposed development include benefits to the local economy through possible job creation in the construction phase as well as during the operational phase of the development. The construction for the proposed power line is estimated to last for approximately two years.

## 2.3 Description of Alternatives

### 2.3.1 No-go

The No-go option implies that the Project does not proceed, and Eskom does not go ahead with the construction of the 400 kV power line or the upgrade of the substations.

### 2.3.2 Alternatives for 400 kV servitude

Options will be further assessed during the EIA phase and recommendations from the investigations are likely to inform a decision on the alternative with the least possible impacts. During Scoping phase, a corridor of 2 km in width was assessed for each alternative.

The Gourikwa substation is located on the farm Mossel Bay Rd 399/0 and it is located west of Gourikwa power station. The substation is located about 15 km west of the town of Mossel Bay, and is north of the N2 highway.

The different aspects for each Alternative are shown as comparison in the table below:

Aspect	Alternative 1 (preferred)	Alternative 2	Alternative 3
Length	57km	59km	58km
No of Bends	18	29	29
Access	Fair	Fair	Fair
Tx Line Crossings	0	0	0
Dx HV Line Crossings	6	6	4
Rail Crossings	0	0	0
National Road Crossings	0	0	0
Regional road Crossings	2	2	3
Land Use	Agricultural lands, Grazing lands and game farming	Agricultural lands, Grazing lands and game farming	Agricultural lands, Grazing lands and game farming
Topography	Undulating	Undulating	Undulating

The 400kV powerline between Gourikwa substation and the Blanco (Narina) Transmission substation has to be constructed in a narrow band between the mountains and the ocean. This presents a serious challenge in terms of providing three practical corridors. Two corridors (Alternative 1 = Red and Alternative 2 = Blue) have been identified. A third corridor Alternative 3 (Green) is a deviation from the Blue corridor to the south before it joins the alignment of Alternative 2. All the proposed corridors have been aligned to run parallel to existing power lines where possible. The existing power lines are shown on the map below.

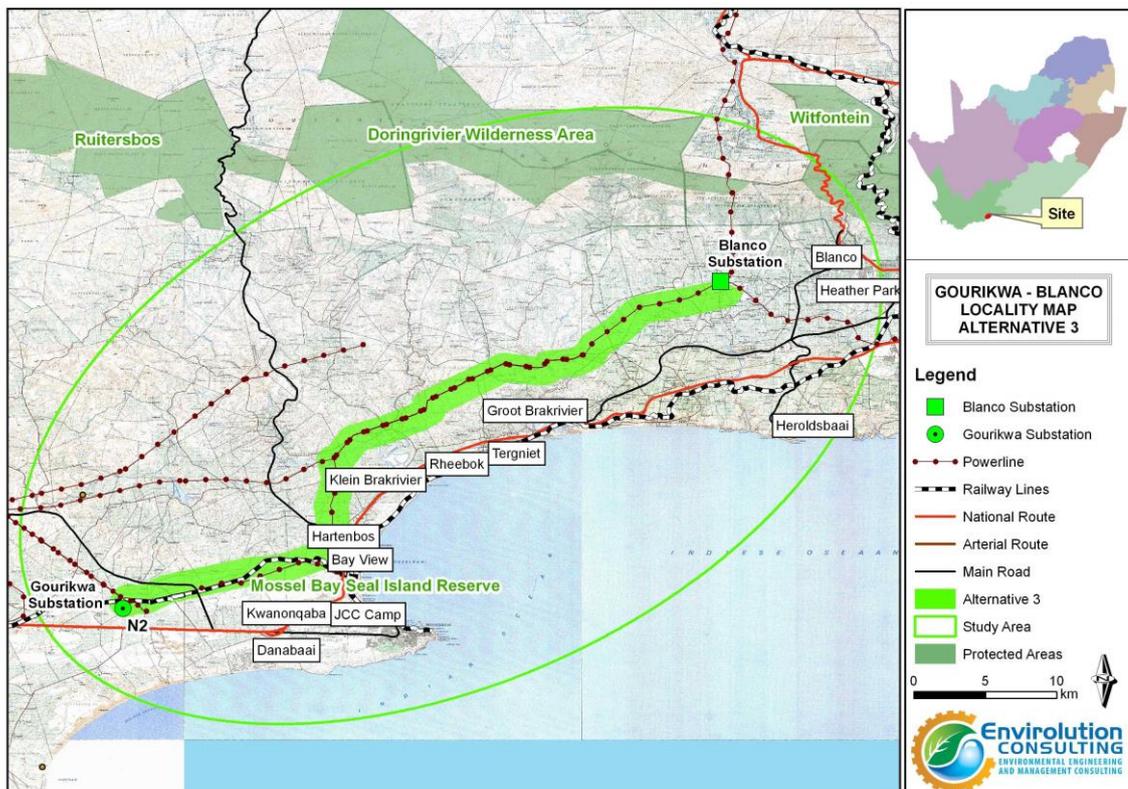


Figure 4. Existing power line infrastructure

### 2.3.3 Gourikwa Substation

Gourikwa Substation is located on farm Mossel Bay Rd 399/0 and it is located to the West of Gourikwa power-station.

The substation is located approximately 15km West of Mossel Bay Town north of the N2 road. The substation is in the Western Cape Province. The 400kV yard is located on the Northern side of the substation.

The expansion of the Gourikwa substation (to accommodate the proposed new 400kv Transmission line to Blanco) will require new infrastructure in the immediate vicinity of the existing substation. This is an existing facility, thus no site alternative to this option is feasible.

### 2.3.4 Blanco (Narina) Substation

**Blanco (Narina) Substation is not yet built.** It is currently proposed to be situated 60km North-East of Gourikwa substation. The EIA for this substation is still in process and is anticipated to be concluded in the middle of 2015. The application for the Substation does not form part of this EIA for the 400kV line between the proposed Blanco Substation and Gourikwa Power Station.

**Alternative 1:** This corridor exits Gourikwa Substation in a north easterly direction and follows the R327 for approximately 8 km. It turns east and cuts across the mixed agricultural and natural landscape type, passing through the most eastern part of the Gondwana Private Game Reserve. It maintains a north-eastern direction, nearing the mountainous terrain of the Outeniqua Mountains, until reaching the proposed site for the Blanco Substation. The Blanco site is approximately 3-4 km west of the city of George and the very picturesque Outeniqua Pass (N9).

**Alternative 2:** This corridor starts in the same direction as Alternative 1 but turns east just south of the Gondwana Private Game Reserve. It follows an easterly direction, crossing the Hartebeeskuil Dam before turning north east as it reaches the R328 between Hartenbos and Brandwacht. It passes south of Botlierskop Private Game Reserve and crosses Wolwedans Dam before turning north and reaching the Blanco Substation site.

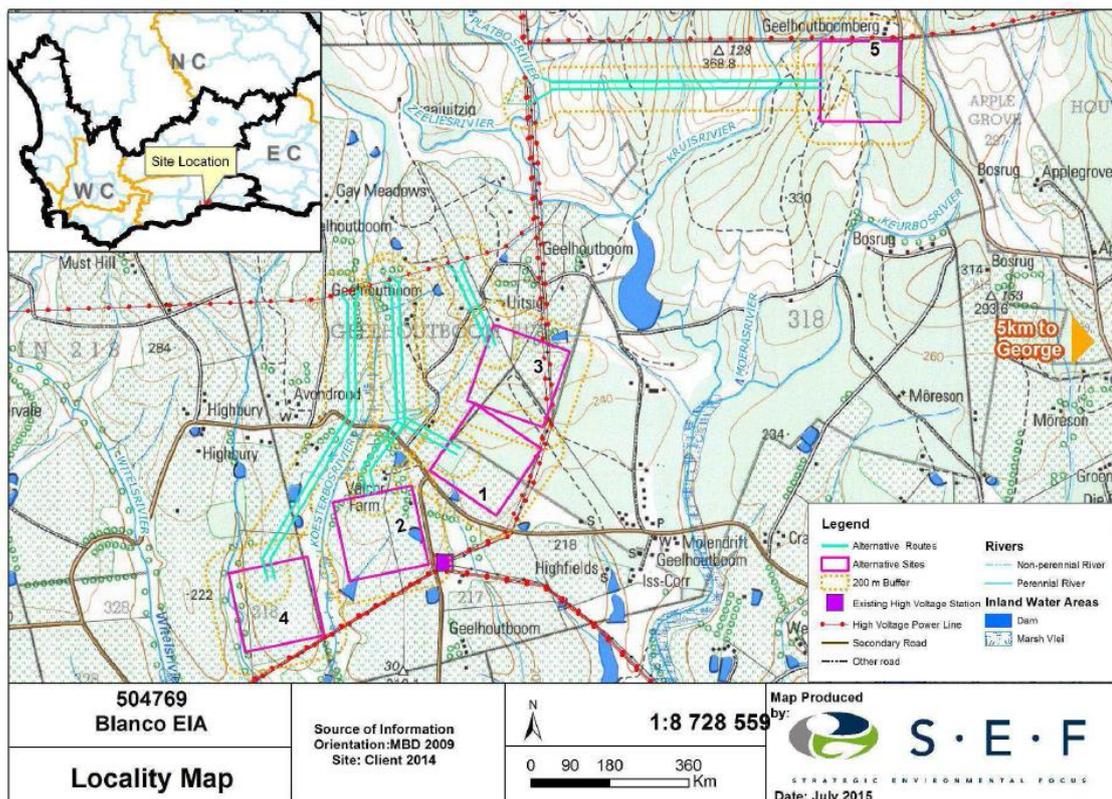
**Alternative 3:** This corridor is a variation of Alternative 2 and exits the Gourikwa Substation in an easterly direction. It brushes past the western outskirts of Hartenbos before turning north and joining Alternative 2. A Corridor of 2km in width was assessed for each route alternative. The route alternatives will also be assessed during the EIA phase and recommendations from the investigations are likely to inform a decision on the preferred alternative.

As an alternative to the above, a **No-Go option** will be assessed.

The project will require connection to the proposed Blanco (Narina) substation. Five alternative sites are under investigation. The Blanco Narina Transmission SS forms part of a separate project for which the EIA is handled by SEF in terms of the 2010 EIA regulations (DEA REF NO: 14/12/16/3/3/2/424 - NEAS REF NO: DEA/EIA/0001519/ 2012).

The construction of the Blanco Narina Transmission Substation falls outside the scope of this project, and have been applied for in a separate EIA, in which SEFSA investigated the following alternatives:

- Alternative substation site 1 on the north eastern side of the existing 132kV Blanco substation, across the existing gravel road – Geelhoutboom road. The site is located on agricultural land and is the preferred option for the construction of the new substation in terms of the site’s proximity to the existing Blanco substation and the grid network (easy integration into the existing network).
- Alternative substation site 2 is located immediately North West of the existing 132kV Blanco substation, and South West of Alternative 1.
- Alternative substation site 3 is located north of alternative 1 and Geelhoutboom Road, and approximately 1.5km north east of the existing Blanco Distribution Substation.
- Alternative substation site 4 is located approximately 1.2km south west of the existing Blanco substation.
- Alternative substation site 5 is located in the foothills of the Outeniqua Mountains, approximately 4.5km north east of the existing Blanco Distribution Substation.



**Figure 5. Blanco (Narina) Transmission Substation proposed sites**

## 2.4 Description of the proposed activities

### 2.4.1 Infrastructural description

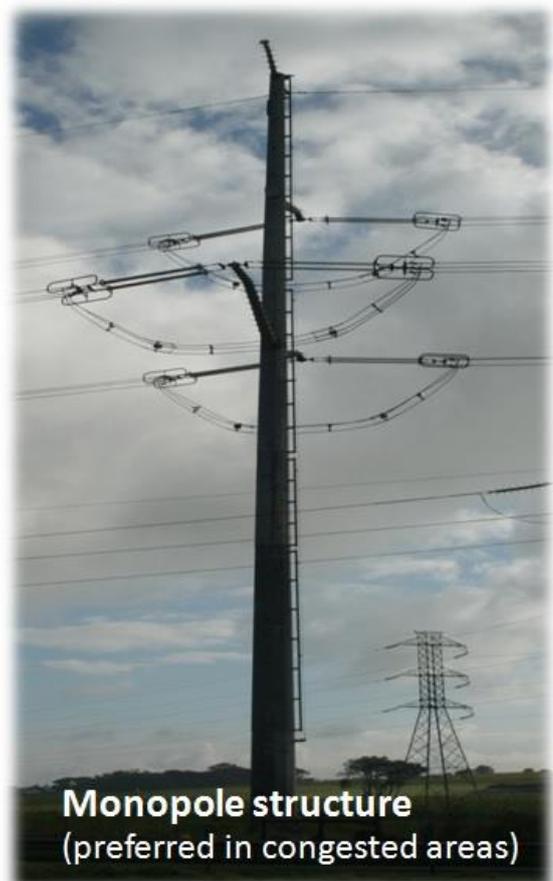
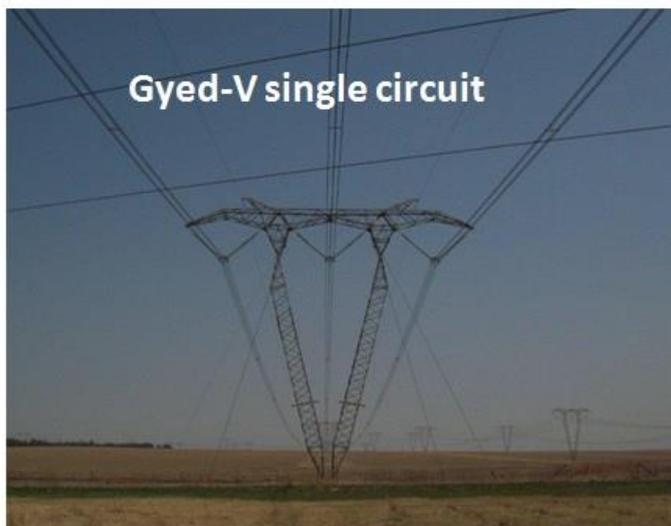
The three route alignment alternatives should require similar tower designs, with the same technical specifications. The specialist studies during the EIA process will determine which route is the preferred route, after which details regarding the number, tower design and other support infrastructures associated with the power line will be finalised.

Based on similar projects, it is anticipated that the following types of towers may be used on this project:

- Cross rope suspension tower;
- Compact cross rope suspension tower;
- Guyed-V suspension tower;
- Self-supporting suspension tower;
- Self-supporting strain tower; or
- Guyed strain structures.

The design of the pylons/towers can only be finalised once the specific placement has been determined. Illustrative examples of 400 kV transmission pylons are shown as Figure 6.

**Figure 6. Pylon options**



## 2.4.2 Servitude Requirements

A servitude of at least 55m is required for a single 400kV power line. A separation distance will be required between the 400kV and other lines, since some of the proposed routes will run parallel to existing power lines for a distance. In forest areas, a wider separation distance will be required for safety reasons. Power line servitudes are occasionally secured along existing servitudes such as roads and pipelines. In cases where the servitude is required next to a road reserve, a distance up to 95m from the centre of road to edge of power line servitude may be required. The land beneath the overhead lines can be continued to be used, as normal, by the landowners. Eskom, however, require that no dwellings or vegetation/crops higher than 4 m be established within the servitude.

## 2.4.3 Clearance Requirements

It is anticipated that a 6m strip will be cleared to facilitate access and construction, except where tower erection and stringing requires more space. Eskom have their internal guidelines and standards for Bush Clearance and Maintenance within Overhead Power line Servitudes. This document provides minimum clearances for overhead conductors that will need to be taken into account in the formulation of any power line development.

## 2.4.4 Required Services

During the EIA phase, all alternatives will be assessed and findings will be included in the Environmental Impact Assessment Report (EIR). In addition, the Environmental Management Programme (EMPr) will include a site walk down exercise that will guide the final location of proposed infrastructure.

### 2.4.4.1 Access Routes & Storm Water

Most areas along the three proposed routes are reasonably accessible and can be reached via the existing public and farm roads. During the site visits it was noted that some sections of the Preferred Option (Alternative 1, Red line) transverses large Private Game Reserve areas, for which careful planning and mitigations will be crucial, should these areas not be avoided in totality. Temporary access routes will be required to construct the lines in areas where the pylons will be placed on private properties, such as farms and reserves. The details and permissions will be negotiated after the project has been approved.

Storm water will be managed according to the Eskom Guidelines for Erosion Control and Vegetation Management as well as the Environmental Management Programme (EMPr), which will be compiled for the construction phase.

### 2.4.4.2 Construction Site Camps

The power line construction contractor would need to set up at least one site camp but this does not necessarily need to be near the power line route. The contractor may however prefer to use a fully serviced site at another location. The contractor will be encouraged to utilise already disturbed areas for construction camp purposes, in order to minimise cumulative impacts. It is likely that a number of construction camps would need to be established for the construction period.

#### **2.4.4.3 Sewage**

A negligible sewage flow is anticipated for the duration of the construction period. Chemical toilets will be utilised during construction, and the contractor will ensure regular treatment of these facilities. The toilets will be serviced regularly, as specified by the final site specific EMPr.

#### **2.4.4.4 Solid Waste Disposal**

All solid waste will be collected at a central location at each construction site and will be stored temporarily until removal to an appropriately permitted landfill site in the vicinity of the construction site.

#### **2.4.4.5 Electricity**

The construction team might have temporary connection and supply of electricity from the existing network. Diesel generators will be utilised as an option for the provision of electricity.

### **2.5 Eskom Project Procedure – Construction of Power Lines**

Eskom uses the following procedure<sup>1</sup> for the construction of their new transmission lines.

#### **2.5.1 Planning**

The Transmission System Planning Department of Eskom are the system network planners which formulate five-year, ten-year or 20-year Transmission Development Plans (TDP), which are strategic documents aimed at identifying the entire infrastructure required throughout South Africa for the transmission of electricity.

All projects initiated by the Eskom planners have to be in line with the requirements stipulated in the TDP. All projects which are initiated are thoroughly investigated to ensure that they are both viable and feasible before being approved for implementation.

#### **2.5.2 Appointment of EIA Practitioners**

Once a project is internally approved to be investigated, the Eskom Land and Rights Department initiates the process of the Environmental Impact Assessment (EIA). In the case of the Blanco to Droërivier project, a Scoping and EIA Process will be followed by Envirolution Consulting (Pty) Ltd. The purpose of the EIA process is as follows:

- To identify both the positive and the negative impacts on the environment, communities and the local economy;
- To identify the impact on the proposed infrastructure;
- To recommend all possible mitigation measures for each impact identified; and

sk

<sup>1</sup>Eskom Fact Sheet: Construction of power lines

- To develop a plan for implementing the mitigating measures.

All the above information will be gathered and collated into a document called the Environmental Impact Report (EIR), which will be submitted to the decision making authority, the National Department of Environmental Affairs (DEA). The document will provide the DEA with all the alternative routes assessed during the EIA process and recommend the least impacting route for authorisation. If authorised, the DEA will issue an Environmental Authorisation, which will allow Eskom to implement the project. An Environmental Authorisation (EA) normally stipulates all conditions that should be adhered to before construction can commence. One such condition would be to draft an Environmental Management Programme (EMPr) for approval by DEA before construction can commence. During construction, an Environmental Compliance Officer (ECO) must be employed to ensure that the specifications of the EA and EMPr are adhered to.

### **2.5.3 Land and rights acquisition**

Once a positive uncontested Environmental Authorisation has been granted, the process of securing the servitude or title of the said portions of land will commence. To achieve this, the following activities have to be completed:

- The legal boundaries are identified for each property affected by the project;
- The legal ownership of each property is identified;
- An independent property evaluator is appointed to determine the market value of the affected properties; and
- Negotiations are conducted by Transmission negotiators with each lawful landowner to acquire the rights to construct power lines over their properties. Rights are also acquired from affected statutory bodies and mineral right holders.

All land and rights acquired for the purpose of building power lines are registered at the Deeds Office accordingly under title deeds or servitudes.

### **2.5.4 Survey and line design**

Topographical surveys are conducted subsequent to identifying and securing servitudes. The survey information is used by the design engineers to design the tower foundations, structures, buildings, and the exact placement of structures.

The EMPr will be finalised when all the profiles and local site plans are available. The EMPr will outline all activities to be undertaken, where such activities are to take place, responsible persons, all possible environmental or social impacts, mitigation measures, rehabilitation plans, monitoring methods, the frequency of monitoring as well as performance indicators. The EMPr is a legally binding document which is used to ensure that Eskom adheres to all conditions of the Environmental Authorisation and EIR.

### **2.5.5 Construction**

A procurement process is followed to identify a suitable construction contractor. During this process all potential contractors are invited to bid for the implementation of the project. Various factors are considered when appointing these contractors. Factors considered include

but are not limited to; capacity, legal status, adherence to all Eskom standards (ie safety, quality, environment) and other legislated regulations, policies and procedures.

## **2.5.6 Rehabilitation & Maintenance**

After the project has been completed, all affected properties are rehabilitated to their original status. Landowners sign off release forms to confirm the rehabilitated status.

Vegetation in servitudes needs to be kept under control to allow access and to prevent the spread of veld fires. This will be undertaken by experienced contractors and permission will be obtained from land owners where access is required over private property.

### 3. LEGISLATION AND GUIDELINES CONSIDERED

Appendix 2 of the 2014 Environmental Impact Assessment Regulations states that one of the purposes of the scoping report is to identify the relevant policies and legislation relevant to the activity. The scoping report must include a description of the policy and legislative context within which the development is proposed including an identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks and instruments that are applicable to this activity and are to be considered in the assessment process. It has been determined that a Scoping & Environmental Impact Assessment Report (S&EIR) process must be completed in respect of activities listed in a notice issued by the Minister in terms of section 24D of the NEMA. Accordingly, Eskom has applied for Authorisation of the listed activities relevant to this project. The scope and content of the Scoping Report has been guided by the following legislation and guidelines.

#### 3.1 Constitution of the Republic of South Africa, 1996

The Constitution of the Republic of South Africa, 1996 has major implications for environmental management. The main effects are the protection of environmental and property rights, the drastic change brought about by the sections dealing with administrative law such as access to information, just administrative action and broadening of the *locus standi* of litigants. These aspects provide general and overarching support and are of major significance in the effective implementation of the environmental management principles and structures of the Environment Conservation Act and NEMA. Section 24 in the Bill of Rights of the Constitution specifically states:

*"Everyone has the right –*

- *To an environment that is not harmful to their health or well-being; and*
- *To have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that -*
  - *Prevent pollution and ecological degradation;*
  - *Promote conservation; and*
  - *Secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development."*

Section 24 of the Constitution therefore places a duty on all spheres of government to take reasonable steps, including making laws, preventing pollution, promoting conservation and ensuring sustainable development. **Eskom is committed to abide by this requirement.**

#### 3.2 National Environmental Management Act, 1998 (Act 107 of 1998 "NEMA").

The overarching environmental legislation for the management of the environment in South Africa is the National Environmental Management Act, 1998 (Act 107 of 1998) ("NEMA"). Its preamble states that sustainable development requires the integration of social, economic and environmental factors in the planning, implementation and evaluation of environmental decisions to ensure that development serves present and future generations. Important sections of NEMA include:

- Section 2: The NEMA principles
- Section 28 Duty Of Care

- Section 30 The Prevention of incidents and reporting should an incident occur

Chapter 5 of NEMA makes provisions for regulations to be formulated and published. In December 2014, new EIA Regulations were published, that are relevant to the EIA to this project:

**Regulation Gazette No. 10328 Vol. 594 Pretoria, 4 December**

R. 982: Environmental Impact Assessment Regulations (EIA Regulations)

R. 984.: EIA Regulations Listing notice 2

R. 985.: EIA Regulations Listing notice 3

The development triggers activities in terms of the National Environmental Management Act, Government Notices R982, R984 and R985. In terms of the 2014 NEMA EIA Regulations, Scoping & Environmental Impact Assessments are required for the servitude between Gourikwa to Blanco (BD) due to the following listed activities:

Detailed description of listed activities associated with the project	
Listed activity as described in GN R 983, 984 and 985	Description of project activity that triggers listed activity
GR 983 Listing Notice 1 (12): The development of (xii) infrastructure or structures covering 50 square metres or more Where such construction occurs- (c) if no development setback line, within a watercourse or within 32 metres of a watercourse, measures from the edge of a watercourse,	The proposed power line pylons may impede upon watercourses or pylon structures situated within 32 metres of a watercourse.
GR 983 Listing Notice 1 (19): The infilling or depositing of any material of more than 5 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 5 cubic metres from- i.) a watercourse	The power line may require the removal or infilling of material more than 5 cubic metres from a watercourse.
GR 983 Listing Notice 1 (24): The development of- ii) a road with a reserve wider than 13,5 meters, or where no reserve exists where the road is wider than 8 metres	The project entails the development of temporary access roads of approximately 6m wide to allow vehicles to access the areas of construction. These roads will be required in areas where the alignment will not follow the existing roads and servitudes where access will be possible without new roads.
GR 983 Listing Notice 1 (47): The expansion of facilities for the transmission and distribution of electricity where the expanded capacity will exceed 275 kilovolts and the development footprint will increase.	Additional 400kV feeder bays will be required at the Droerivier Substation
GR. 984 Listing notice 2 (9): The development of facilities or infrastructure for the transmission and distribution of <b>electricity with a capacity of 275kV or more</b> , outside an urban area or industrial complex	The project entails the development of infrastructure for transmission and distribution of electricity (with a capacity of 275kV, of which sections will be located outside the urban areas)
GR 984 Listing Notice 2 (15): The clearance of an area of 20 hectares or more of indigenous vegetation	The clearing of more than 20 hectares of indigenous vegetation may be undertaken during construction of the power line.

<p>GR 984 Listing Notice 3 (3): 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 (b) will exceed 15 metres in height</p> <p><b>(f) In Western Cape:</b> i. All areas outside urban areas; or ii. Areas designated for conservation use in Spatial Development Frameworks adopted by the competent authority, or zoned for a conservation purpose, within urban areas.</p>	<p>Masts for telecommunication will be constructed at existing and proposed sub-stations. These masts are required to receive communication from surrounding towers.</p>
<p>GR 985 Listing notice 3 (4): The development of a <b>road wider than 4 meters</b> with a reserve less than 13,5 meters.</p> <p><b>(f) In Western Cape</b> (i) Areas outside urban areas; (aa) Areas containing indigenous vegetation (ii) Areas in urban areas; (cc) areas zoned for conservation use (dd) Areas designated for conservation use in Spatial Development Frameworks adopted by the competent authority</p>	<p>The project entails the development of temporary access roads of approximately 6m wide to allow vehicles to access the areas of construction. These roads will be required in areas where the alignment will not follow the existing roads and servitudes where access will be possible without new roads.</p>
<p>GR 985 Listing Notice 3 (12): The <b>clearance of an area of 300 sqm or more of indigenous vegetation</b> except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with a maintenance management</p> <p>(a) In Western Cape provinces:</p> <ol style="list-style-type: none"> <li>i. Within any critically endangered or endangered where such clearance of ecosystem listed in terms of section 52 of the NEMBA or indigenous vegetation is prior to the publication of such a list, within an area that is required for maintenance has been identified as critically endangered in the purposes undertaken in National Spatial Biodiversity Assessment 2004;</li> <li>ii. Within critical biodiversity areas identified in bioregional management plan.</li> <li>iii. Within the littoral active zone or 100 metres inland from high water mark of the sea or an estuarine functional zone, whichever distance is the greater, excluding where such removal will occur behind the development setback line on erven in urban areas; or</li> <li>iv. On land, where, at the time of the coming into effect of this Notice or thereafter such land was zoned open space, conservation or had an equivalent zoning.</li> </ol>	<p>The project will require the clearance of more than 300 sqm of indigenous vegetation between Mossel Bay and George. Sections of the lines will be located in areas of Fynbos vegetation n land that is zoned open space. Private Game Ranches are located on the corridors that are proposed for the infrastructure, where conservation is practised.</p>
<p>GR 985 Listing Notice 3 (14): The development of: (xii) infrastructure or structures with a physical footprint</p>	<p>There is drainage lines on the proposed study are which will be impacted by the proposed infrastructures within an area defined as a CBA.</p>

of 10 square metres or more.  
within a watercourse;

**(f) In Western Cape**

- i. Areas outside urban areas;  
(aa) Areas containing indigenous vegetation
- ii. Areas in urban areas;  
(cc) areas zoned for conservation use  
(dd) Areas designated for conservation use in Spatial Development Frameworks adopted by the competent authority

### 3.3 National Water Act (Act No.36 of 1998) (NWA) under Section 21 Water Uses

The development also triggers activities that require a Water Use License (WUL) because it crosses several water courses. Therefore, before construction activities may take place, the activity will require a Water Use License as per requirement in the National Water Act (Act No.36 of 1998) (NWA) under Section 21 Water Uses. In terms of the NWA, this development requires a Water Use License for the following water uses:

- Section 21(c) impeding or diverting the flow of water in a watercourse and;
- Section 21 (i) altering the bed, banks, course or characteristics of a watercourse.

The purpose of the EIA Regulations is “to regulate the procedures and criteria as contemplated in Chapter 5 of the National Environmental Management Act relating to the submission, processing and consideration of, and decision on applications for environmental authorisation for the commencement of activities in order to avoid detrimental impacts on the environment, or where it cannot be avoided, ensure mitigation and management of impacts to acceptable levels, and to optimise positive environmental impacts, and for matters pertaining thereto”.

### 3.4 The National Environmental Management: Air Quality Act 39 of 2004

The National Environmental Management: Air Quality Act 39 of 2004 provides for the setting of national norms and standards for regulating air quality monitoring, management and control and describes specific air quality measures so as to protect the environment and human health or well-being by: preventing pollution and ecological degradation; and promoting sustainable development through reasonable resource use. It also includes reference to the control of offensive odours whereby reasonable steps to prevent the emission of any offensive odours caused by activities on a premises are required. Other local legislation in this regard, include:

- Eden District Air Quality Management By-Law  
Published in Western Cape Provincial Gazette 7043 of 12 October 2012.
- George Local Municipality Air Pollution Control By-Law  
Published under PN 439 in Western Cape Provincial Gazette 6816 of 30 November 2010.
- MOSSEL BAY LOCAL MUNICIPALITY AIR QUALITY CONTROL BY-LAW  
Published in Western Cape Provincial Gazette 7184 of 4 October 2013

### **3.5 Electricity Regulation Act 4 of 2006**

This Act governs the control of generation and supply of electricity in South Africa and the existence and functions of the National Energy Regulator. The Act aims to establish a national regulatory framework for the electricity supply industry; to make the National Energy Regulator the custodian and enforcer of the national electricity regulatory framework; to provide for licences and registration as the manner in which generation, transmission, distribution, trading and the import and export of electricity are regulated; and to provide for matters connected therewith.

### **3.6 The Conservation of Agricultural Resources Act 43 of 1983**

The Act provides for control over the utilization of the natural agricultural resources of the Republic in order to promote the conservation of the soil, the water sources and the vegetation and the combating of weeds and invader plants; and for matters connected therewith. Since the alternative routes will cross streams and will be located in the vicinity of water courses, impacts such as soil erosion, alien plants, flooding and pollution must be avoided by all means.

### **3.7 National Water Act 36 of 1998**

The National Water Act aims to manage the national water resources to achieve sustainable use of water for the benefit of all water users. The purpose of the Act is to ensure that the nation's water resources are protected, used, developed, conserved, and managed in ways, which take into account:

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

**Section 19** of the National Water Act addresses water pollution during construction:

(1) An owner of land, a person in control of land or a person who occupies or uses the land on which -

- (a) any activity or process is or was performed or undertaken; or
- (b) any other situation exists, which causes, has caused or is likely to cause pollution of a water resource, must take all reasonable measures to prevent any such pollution from occurring, continuing or recurring.

(2) The measures referred to in subsection (1) may include measures to -

- (a) cease, modify or control any act or process causing the pollution;
- (b) comply with any prescribed waste standard or management practice;
- (c) contain or prevent the movement of pollutants;
- (d) eliminate any source of the pollution;

- (e) remedy the effects of the pollution; and
  - (f) remedy the effects of any disturbance to the bed and banks of a watercourse.
- (3) A catchment management agency may direct any person who fails to take the measures required under subsection (1) to -
- (a) commence taking specific measures before a given date;
  - (b) diligently continue with those measures; and
  - (c) complete them before a given date.
- (4) Should a person fail to comply, or comply inadequately with a directive given under subsection (3), the catchment management agency may take the measures it considers necessary to remedy the situation.
- (5) Subject to subsection (6), a catchment management agency may recover all costs incurred as a result of it acting under subsection (4) jointly and severally from the following persons:
- (a) Any person who is or was responsible for, or who directly or indirectly contributed to, the pollution or the potential pollution;
  - (b) the owner of the land at the time when the pollution or the potential for pollution occurred, or that owner's successor-in-title;
  - (c) the person in control of the land or any person who has a right to use the land at the time when -
    - (i) the activity or the process is or was performed or undertaken; or
    - (ii) the situation came about; or
  - (d) any person who negligently failed to prevent -
    - (i) the activity or the process being performed or undertaken; or
    - (ii) the situation from coming about.
- (6) The catchment management agency may in respect of the recovery of costs under subsection (5), claim from any other person who, in the opinion of the catchment management agency, benefitted from the measures undertaken under subsection (4), to the extent of such benefit.
- (7) The costs claimed under subsection (5) must be reasonable and may include, without being limited to, labour, administrative and overhead costs.
- (8) If more than one person is liable in terms of subsection (5), the catchment management agency must, at the request of any of those persons, and after giving the others an opportunity to be heard, apportion the liability, but such apportionment does not relieve any of them of their joint and several liability for the full amount of the costs.

**Section 20** of the National Water Act addresses the reporting of incidents

20. (1) In this section "incident" includes any incident or accident in which a substance -
- (a) pollutes or has the potential to pollute a water resource; or
  - (b) has, or is likely to have, a detrimental effect on a water resource.
- (2) In this section, "responsible person" includes any person who -
- (a) is responsible for the incident;
  - (b) owns the substance involved in the incident; or
  - (c) was in control of the substance involved in the incident at the time of the incident.
- (3) The responsible person, any other person involved in the incident or any other person with knowledge of the incident must, as soon as reasonably practicable after obtaining knowledge of the incident, report to -
- (a) the Department;
  - (b) the South African Police Service or the relevant fire department; or

- (c) the relevant catchment management agency.
- (4) A responsible person must -
  - (a) take all reasonable measures to contain and minimise the effects of the incident;
  - (b) undertake clean-up procedures;
  - (c) remedy the effects of the incident; and
  - (d) take such measures as the catchment management agency may either verbally or in writing direct within the time specified by such institution.
- (5) A verbal directive must be confirmed in writing within 14 days, failing which it will be deemed to have been withdrawn.
- (6) Should -
  - (a) the responsible person fail to comply, or inadequately comply with a directive; or
  - (b) it not be possible to give the directive to the responsible person timeously, the catchment management agency may take the measures it considers necessary to -
    - (i) contain and minimise the effects of the incident;
    - (ii) undertake clean-up procedures; and
    - (iii) remedy the effects of the incident.
- (7) The catchment management agency may recover all reasonable costs incurred by it from every responsible person jointly and severally.
- (8) The costs claimed under subsection (7) may include, without being limited to, labour, administration and overhead costs.
- (9) If more than one person is liable in terms of subsection (7), the catchment management agency must, at the request of any of those persons, and after giving the others an opportunity to be heard, apportion the liability, but such apportionment does not relieve any of them of their joint and several liability for the full amount of the costs.

**Section 21** of the National Water Act describes water uses as follows:

- (a) *taking water from a water resource,*
- (b) *storing water,*
- (c) *impeding or diverting the flow of water in a watercourse,*
- (d) *engaging in a stream flow reduction activity contemplated in section 36,*
- (e) *engaging in a controlled activity identified as such in section 37(1) or declared under section 38(1),*
- (f) *discharging waste or water containing waste into a water resource through a pipe, canal, sewer, sea outfall or other conduit,*
- (g) *disposing of waste in a manner which may detrimentally impact on a water resource,*
- (h) *disposing in any manner of water which contains waste from, or which has been heated in, any industrial or power generation process,*
- (i) *altering the bed, banks, course or characteristics of a watercourse,*
- (j) *removing, discharging or disposing of water found underground if it is necessary for the efficient continuation of an activity or for the safety of people, and*
- (k) *using water for recreational purposes.*

**Section 22** of the National Water Act prescribes permissible water uses.. Section 22 (2) further states that a person who uses water as contemplated in subsection (1):

- (a) *must use the water subject to any condition of the relevant authorisation for that use,*
- (b) *is subject to any limitation, restriction or prohibition in terms of this Act or any other applicable law,*

(c) in the case of the discharge or disposal of waste or water containing waste contemplated in section 21(f), (g), (h) or (j), must comply with any applicable waste standards or management practices prescribed under section 26(1)(h) and (i), unless the conditions of the relevant authorisation provide otherwise,

(d) may not waste that water, and

(e) must return any seepage, run-off or water containing waste which emanates from that use, to the water resource from which the water was taken, unless the responsible authority directs otherwise or the relevant authorisation provides otherwise.

**Section 41** of the National Water Act provides details on the procedure to follow for licence applications. Section 27 (1) prescribes the factors that should be considered by the Department of Water Affairs and Sanitation in the consideration of a licence application.

Since the alternative routes will cross streams and will be located in the vicinity of water courses, impacts such as soil erosion, alien plants, flooding and pollution must be avoided by all means.

In addition to the above, the Mossel Bay Local Municipality has a "Water Conservation Policy" that was Published in Western Cape Provincial Gazette 6788 of 10 September 2010 and amended by: PG 6836 (2011/01/14) and PG 6905 (2011/09/09 -entire text replaced with amended version).

### 3.8 National Heritage Resources Act 25 of 1999

The National Heritage Resources Act 25 of 1999 was introduced to ensure protection of South Africa's important heritage features. Section 38 of the Act requires that:

*any person who intends to undertake a development categorised as: **The construction of a road, wall, power line, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length;** must at the very earliest stages of initiating such a development, notify the responsible heritage resources authority and furnish it with details regarding the location, nature and extent of the proposed development.*

The Heritage Specialists on the project team will ensure compliance with these requirements, and has submitted the Notice of Intent to Develop (NID) to Western Cape Heritage.

### 3.9 Waste Management Act 59 of 2008

Waste management is regulated by the National Environmental Management: Waste Act 59 of 2008 ("the Waste Act") with effect from 1 July 2009. The Waste Act defines waste as:

(a) any substance, material or object, that is unwanted, rejected, abandoned, discarded or disposed of, or that is intended or required to be discarded or disposed of, by the holder of that substance, material or object, whether or not such substance, material or object can be re-used, recycled or recovered and includes all wastes as defined in Schedule 3 to this Act; or

(b) any other substance, material or object that is not included in Schedule 3 that may be defined as a waste by the Minister by notice in the Gazette, but any waste or portion of waste, referred to in paragraphs (a) and (b), ceases to be a waste-

(i) once an application for its re-use, recycling or recovery has been approved or, after such approval, once it is, or has been re-used, recycled or recovered;

(ii) where approval is not required, once a waste is, or has been re-used, recycled or recovered;

(iii) where the Minister has, in terms of section 74, exempted any waste or a portion of waste generated by a particular process from the definition of waste; or

(iv) where the Minister has, in the prescribed manner, excluded any waste stream or a portion of a waste stream from the definition of waste.

Section 16 of the Waste Act states that the holder of waste must, within the holder's power, take all reasonable measures to:

(a) *avoid the generation of waste and where such generation cannot be avoided to minimise the toxicity and amounts of waste that are generated;*

(b) *reduce, re-use, recycle and recover waste;*

(c) *where waste must be disposed of, ensure that the waste is treated and disposed of in an environmentally sound manner;*

(d) *manage the waste in such a manner that it does not endanger health or the environment or cause a nuisance through noise, odour or visual impacts;*

(e) *prevent any employee or any person under his or her supervision from contravening this Act; and*

(f) *prevent the waste from being used for an unauthorised purpose.*

### 3.10 Land Use Planning Legislation

Legislation that regulates Land Use Planning has led to “spatial planning tools” that are contained in Municipal and District Strategic Management Frameworks (SMFs), Strategic Development Initiatives (SDIs) and Municipal By-laws. These include the by-Laws of the Eden District Municipality, the George Local Municipality and the Mossel Bay Municipality. The Eden District Municipality’s Municipal Health By-Laws were Published in Western Cape Provincial Gazette 6566 of 17 October 2008. (see Chapter 8 waste management). and the Mossel Bay Local Municipality’s By-Law Relating To Public Nuisances (Published in Western Cape Provincial Gazette 6688 of 18 January 2010) has relevance. The Land Use Planning Ordinance (Ordinance 15 of 1985) has relevance in the Western Cape Province.

**The Spatial Planning And Land Use Management Act 16 OF 2013** (Published under PN 227 in *Western Cape Provincial Gazette 7427* of 15 July 2015) has the main objectives to:

- provide for a uniform, effective and comprehensive system of spatial planning and land use management for the Republic;
- ensure that the system of spatial planning and land use management promotes social and economic inclusion;
- provide for development principles and norms and standards;
- provide for the sustainable and efficient use of land;

- provide for cooperative government and intergovernmental relations amongst the national, Regulations under the SPLUMA not in force yet.

**The Development Facilitation Act** contains development facilitation regulations under the Regulations under Development facilitation Act 3. The Act is directed at provincial and local spheres of government; and serves to re-address the imbalances of the past and to ensure that there is equity in the application of spatial development planning and land use management systems.

### 3.11 The National Environmental Management Biodiversity Act (NEMBA)

NEMBA (Act 10 of 2004); Chapter 4 and 5 are important to this project, in terms of the following Regulations:

- *National List Of Ecosystems that are threatened and in need of protection* (Published under Government Notice 1002 in Government Gazette 34809 of 9 December 2012)
- *Publication Of Lists Of Critically Endangered, Endangered, Vulnerable And Protected Species* (Published under Government Notice R151 in Government Gazette 29657 of 23 February 2007)
- *Threatened Or Protected Species Regulations* (Published under Government Notice R152 in Government Gazette 29657 of 23 February 2007)
- *Alien And Invasive Species Regulations* (Published under Government Notice R598 in Government Gazette 37885 of 1 August 2014).
- *Publication Of National List Of Invasive Species* (Published under Government Notice R507 in Government Gazette 36683 of 19 July 2013).

### 3.12 National Development Plan 2030

The National Development Plan (NDP) offers a long-term perspective for development in the country. The NDP aims to eliminate poverty and reduce inequality by 2030. According to the plan, South Africa can realise these goals by drawing on the energies of its people, growing an inclusive economy, building capabilities, enhancing the capacity of the state, and promoting leadership and partnerships throughout society.

- The planning is that the NDP and its proposals are to be implemented in the right order over the next 17 years. Three phases have been identified.
- Government has already started a process to align the long term plans of departments with the NDP and to identify areas where policy change is required to ensure consistency and coherence.
- The NDP is a plan for the whole country. Government will engage with all sectors to understand how they are contributing to implementation, and particularly to identify any obstacles to them fulfilling their role effectively.
- The Plan will shape budget allocation over the next 17 years.
- The Plan identifies the task of improving the quality of public services as critical to achieving transformation. This will require provinces to focus on identifying and overcoming the obstacles to achieving improved outcomes, including the need to strengthen the ability of

local government to fulfil its developmental role. Electricity provision and strengthening and adding to networks (such as this project) in support of the NDP.

### **3.13 Additional notable legislation**

Other applicable legislation includes:

- Electricity Act (Act 41 of 1987);
- Western Cape Province, Land Use Planning Ordinance (Ordinance 15 of 1985);
- Civil Aviation Authority Act (Act 40 of 1998);
- Civil Aviation Act (Act 13 of 2009) and Civil Aviation Regulations (CAR) of 1997;
- National Road Traffic Act (Act No. 93 of 1996); and
- Subdivision of Agricultural Land Act (Act 70 of 1970)

### **3.14 Policy Guidelines**

The following Guideline documents have been considered in the preparation of this report:

- Department of Environmental Affairs (DEA) Integrated Environmental Management Guideline Series 7, Public Participation in the EIA Process as published in Government Gazette No. 33308, 18 June 2010; and
- Implementation Guidelines (published for comment) in Government Notice 603 of 2010
- Integrated Environmental Management Information Series (Booklets 0 to 23) (DEAT, 2002 – 2005);
- Western Cape Department of Environmental Affairs & Development Planning (DEA&DP Guideline on Transitional Arrangements, August 2010)
- (DEA&DP Guideline on Alternatives, August 2010)
- DEA&DP, Guideline on Public Participation (August 2010)
- DEA&DP Guideline on Need and Desirability (, August 2010)
- Guidelines for Involving Specialists in the EIA Processes Series (DEA&DP; CSIR and Tony Barbour, 2005 – 2007)
- DEAT (2004) Cumulative Effects Assessment, Integrated Environmental Management, Information Series 7.

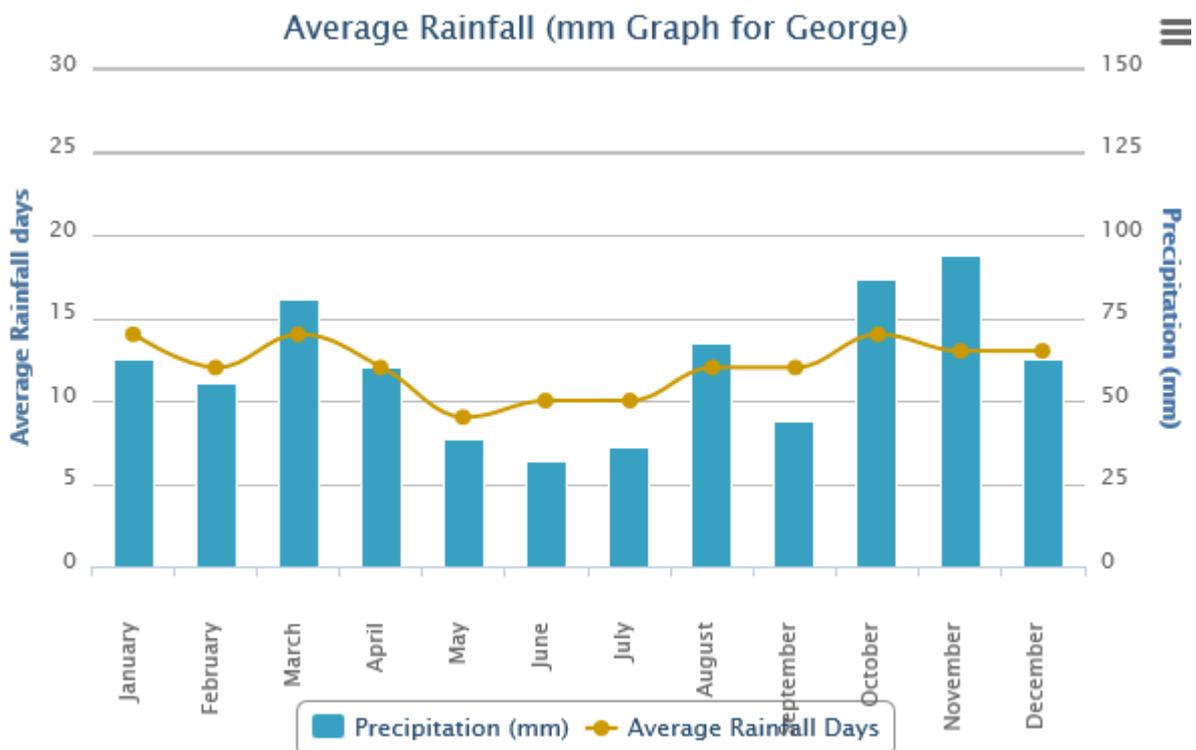
## 4. DESCRIPTION OF THE AFFECTED ENVIRONMENT

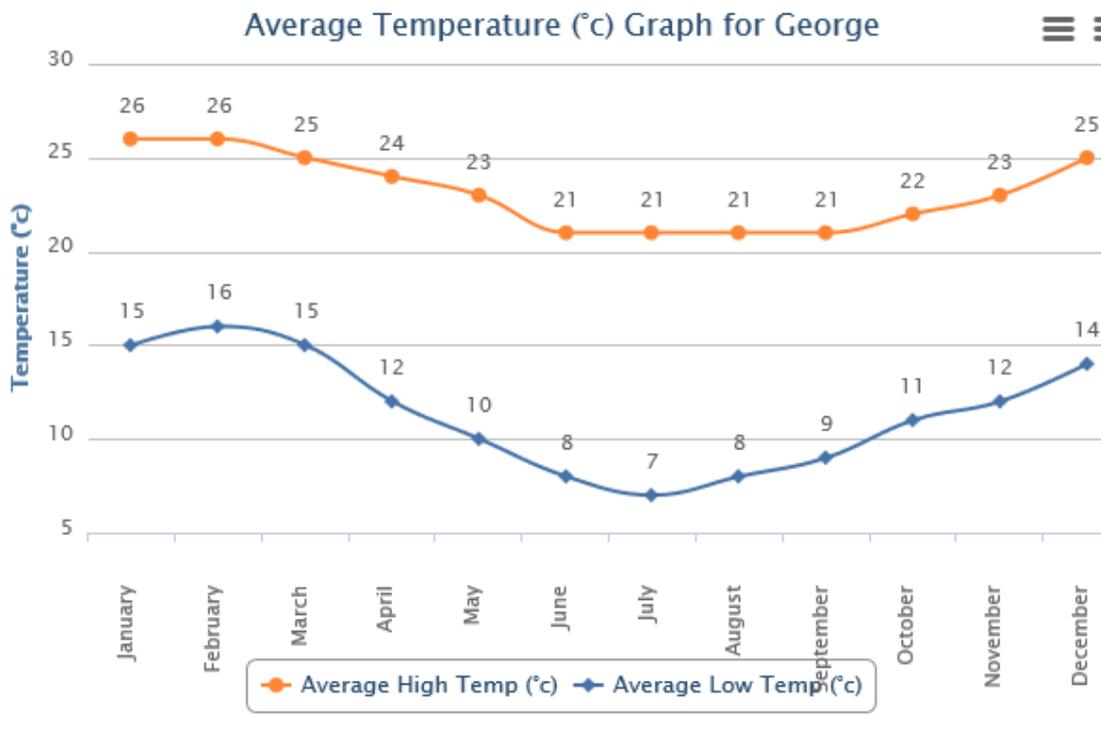
This section provides a description of the environment that may be affected by the proposed Gourikwa to Blanco project. It is intended to provide an overview of the affected environment and is not a detailed environmental study. Detailed environmental specialist studies, which focus on significant environmental issues of the project, will be provided during the impact assessment phase.

### 4.1 Climate

The coastal belt has cool, moist to wet winters and warm, moist summers (Koch, 2006). The long-term average annual rainfall is between 800 and 1 000 mm. Average temperatures vary between 12oC (daily min) and 27oC (daily max) in summer and between 6oC (daily min) and 13oC (daily max) in winter. The extreme high temperature that has been recorded is 39.5oC and the extreme low temperature –1.5°C.

The area normally receives about 662mm of rain per year, with rainfall occurring throughout the year. The lowest rainfall (36mm) occurs in June and the highest (78mm) in November. The average midday temperatures for George range from 18.2°C in July to 27.6°C in February. The region is the coldest during July when the mercury drops below 7°C on average during the night.





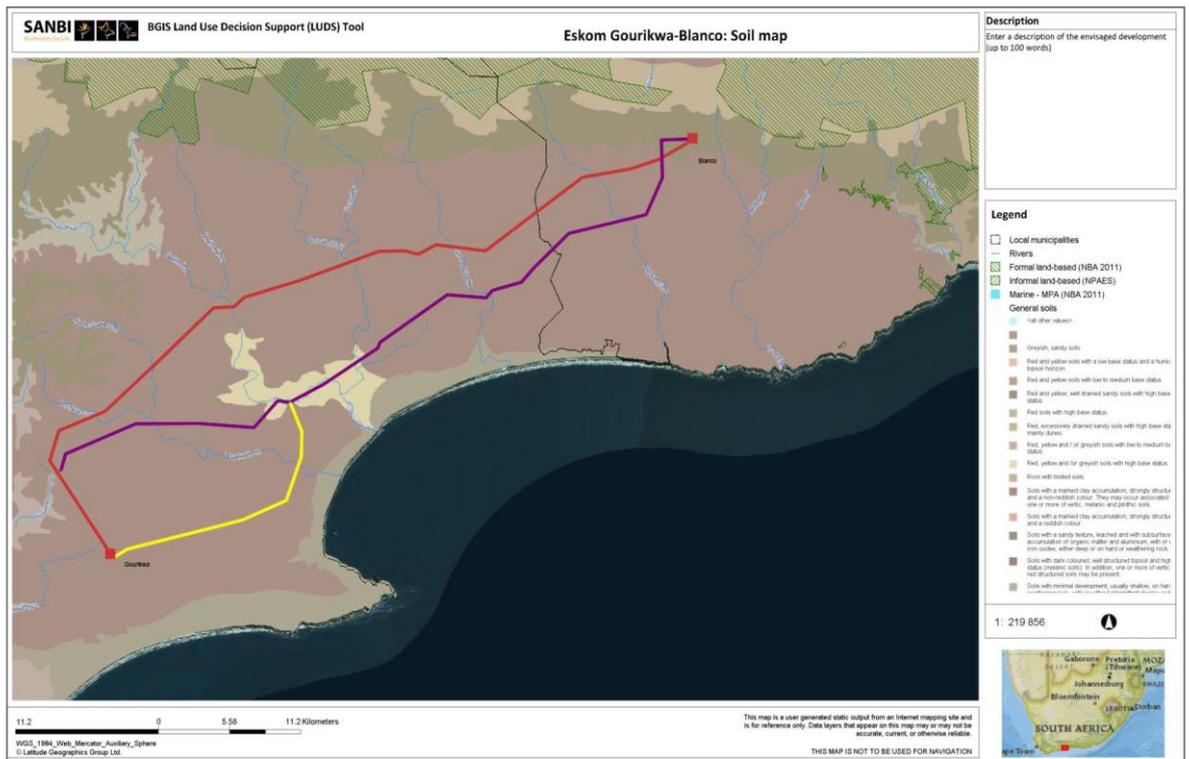
## 4.2 Topography, Soils and Geology

### 4.2.1 Topography

The topography in general slopes relatively steeply from the Outeniqua Mountains towards the sea, with foothills just south of the mountains followed by a narrow, flat coastal strip which is interspersed with river valleys.

### 4.2.2 Soils

The soils consist largely of poorly drained soils with a marked clay accumulation (dusky pink areas in Figure 5), becoming seasonally wet and having a high erosion potential. Within the valley floors of the lower river reaches as well as along the coastal strip (cream/pale brown areas) grey sandy soils occur that overlie deeper alluvial soils. On the slopes of the foothills (grey/brown areas), sandy leached soils with organic matter overlay hard or weathering rock.



**Figure 7: Soil Map**

### 4.2.3 Geology

Rocks of the Cape Supergroup underlie most of the area, while Pre-Cape and Cretaceous rocks and unconsolidated deposits of recent age occupy smaller areas. The Pre-Cape rocks comprise the Maalgaten Granite to the west of George. Strata of the pre-Cretaceous Table Mountain Group, which consists mainly of super mature quartz sandstones with subordinate shales, were subjected to severe north-south orientated compressive stresses. This produced the Cape Fold Belt with the more resistant strata, the Peninsula and Kouga Formations, forming the prominent east-west trending mountain ranges. The softer sandstones of the Tchando Formation and the shales of the Cederberg and Baviaanskloof Formations have weathered to form the intermountain and platform valleys.

## Agriculture

During the desk top investigation, it was found that no map units occur where more than 50% of the soils are of high potential. The areas with the highest proportions occur in the western half of the study area, along the Hartenbos and Little Brak Rivers. Alternative 1 crosses a smaller proportion of such zones, while Alternatives 2 and the deviation cross more high potential soils.

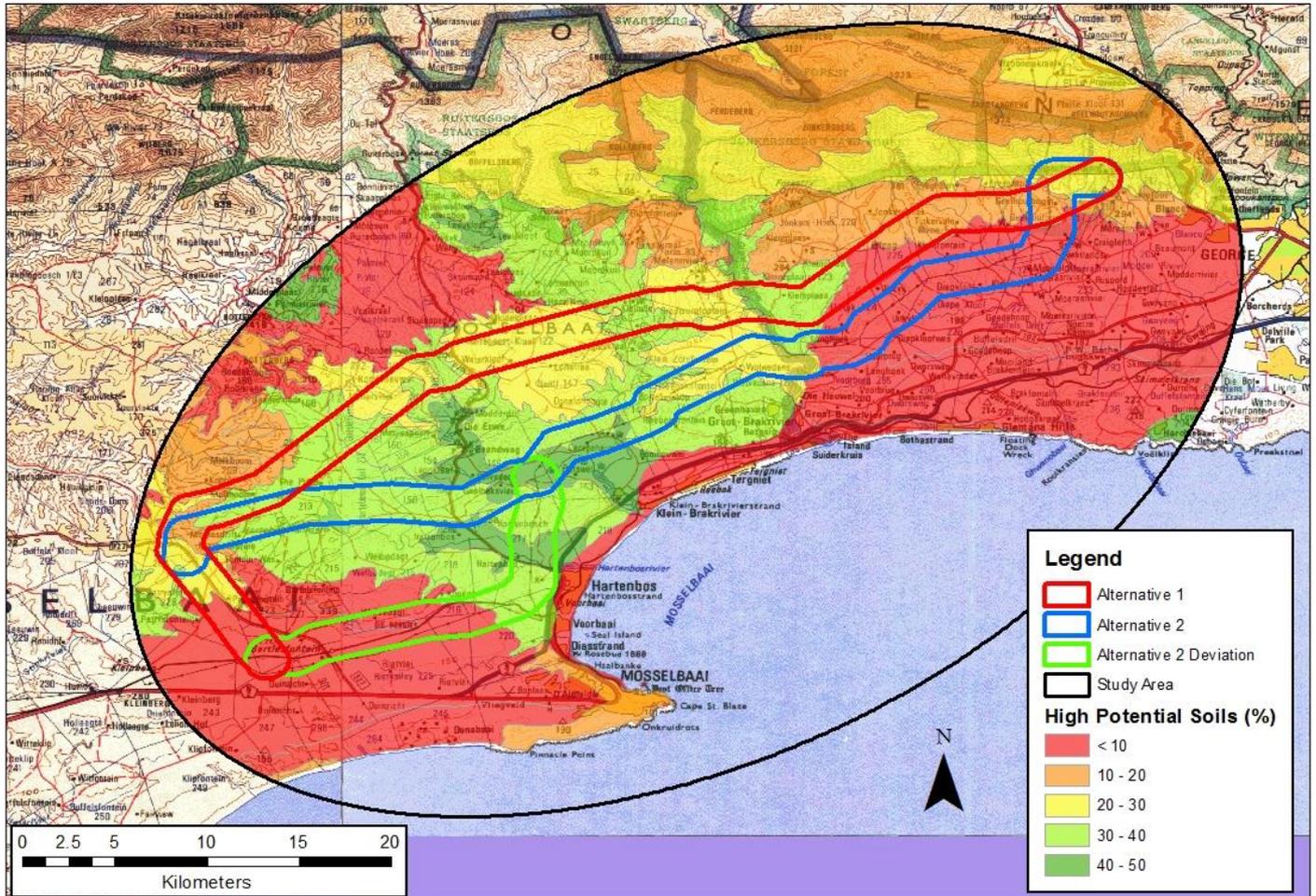


Figure 8: High potential Soils

### 4.2.4 Irrigated land

In terms of irrigation, the areas within the study area under irrigation co-incide with the zones with the highest potential soils, along the rivers mentioned above. Such irrigation will mostly be operative in the hotter, drier summer months. The coastal belt (south of the study area) has sufficient rainfall for dryland cultivation, where suitable soils occur.

Spanning such areas with a transmission line might well be problematic, so more in-depth studies would need to be carried out at potential crossing points to avoid active areas of irrigation, such as centre-pivots or any overhead sprayers.

#### 4.2.5 Soil Erosion Hazard

Erosion is a natural, though long-term, process and without it, soil formation would not occur. However, when the process is unnaturally accelerated, usually by human intervention, the results can be severe. The two forms of soil erosion are wind erosion, where sandy topsoils that become exposed may be removed in the dry season by the action of wind, and water erosion, where topsoils that become exposed can be washed away by water flowing over the soil surface.

The study area is not one where significant zones of soils susceptible to water erosion occur (le Roux et al., 2008). Susceptible areas would generally include soils where sandy topsoils abruptly overly more clayey, usually structured subsoils (“duplex” soils), but in a relatively high rainfall area such as the southern Cape coastal belt (Section 2.4), there will generally be enough of a vegetation cover to ensure that water erosion does not occur, except in isolated extreme cases. This is supported by the absence of areas of sheet erosion, as recorded in the National Land-Cover Database (CSIR, 2005). In addition, there are only isolated erosion gullies that have been mapped.

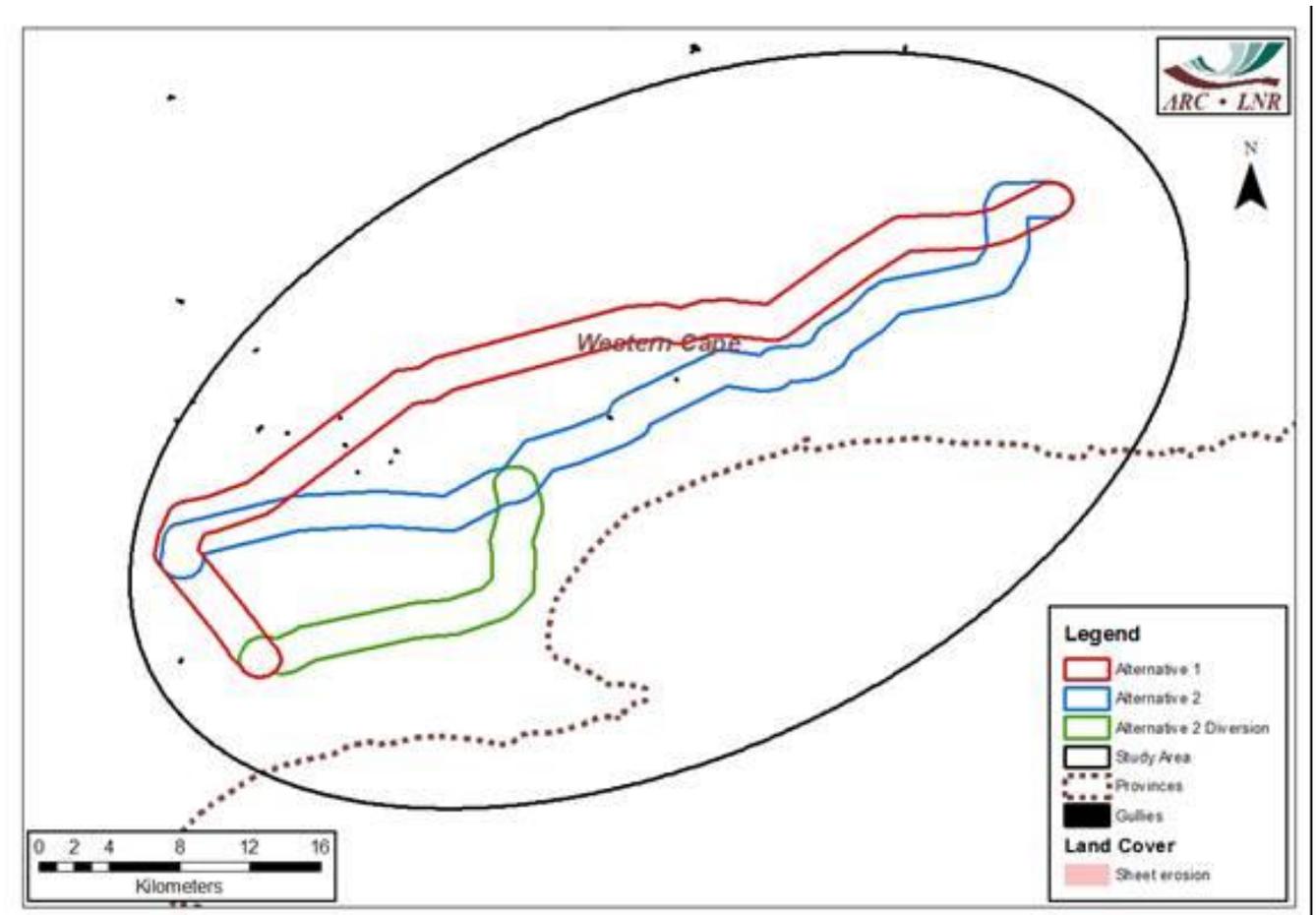


Figure 9: Soil Erosion map

Wind erosion is also not potentially a serious problem for most of the study area. The topsoils are not excessively sandy, and the low rainfall means that grazing pressures are generally low, although organic carbon levels for the area are generally between 0.5% and 1.0% (Schoeman &

van der Walt, 2004).

#### 4.2.6 Project impacts on Agriculture

The construction of a transmission line has only isolated impacts on the soil resource, due to the relatively small, separated footprints of the pylons. However, if an access road is constructed, especially in steeper areas or where erodible soils occur, the possibility of accelerated soil erosion is a reality.

Mitigation: Specific soil conservation measures, such as contouring, culverts and diversion channels would need to be considered in susceptible areas. In addition, regular monitoring of such roads would need to be carried out.

Regarding cultivation and agricultural potential, the main susceptible areas would be areas of irrigation, such as where the transmission line crosses rivers. Mitigation: Here, care should be taken to avoid any areas where irrigation is currently being practiced.

All three alternatives cross agricultural land with grazing land, central pivot irrigation, fruit trees and planted dry lands. As is evident from Figure 10, a large percentage of agricultural activities can still continue unhindered, but there will be some economic losses. From aerial photos, it seems as if the crossing of prime agricultural land seems to be the least with Alternative 1. From an economic point of view, Alternative 1 is preferred given that this is the shortest option, with the least number of bends. It also seems to be the option that will have the least impact on prime agricultural land.



Figure 10: Farming activities under Alternative 1 line (just north of Varingsrivier)

## 4.2.7 Grazing Capacity

The coastal belt has a relatively favourable situation, with the capacity in the range of 5-10 ha/lsu, compared to around 14-20 ha/lsu or more in the Klein Karoo (Schoeman & van der Walt, 2004). This classification does not apply to game farming, where more detailed specialized knowledge is required, mainly in terms of relating plant species composition in both the grass layer and woody layer to the requirements of various grazing and/or browsing species of game. Ecology

## 4.2.8 Vegetation

Much of the indigenous vegetation within the coastal plan has however been transformed by agriculture, with only the steeper hill and mountain slopes still containing largely indigenous vegetation. Within the river valleys, indigenous vegetation still remains within narrow riparian zones but has become invaded by alien shrubs and trees such as black wattles *Acacia mearnsii* and *Eucalyptus sp.* Sedges and reeds occur within the stream channels.

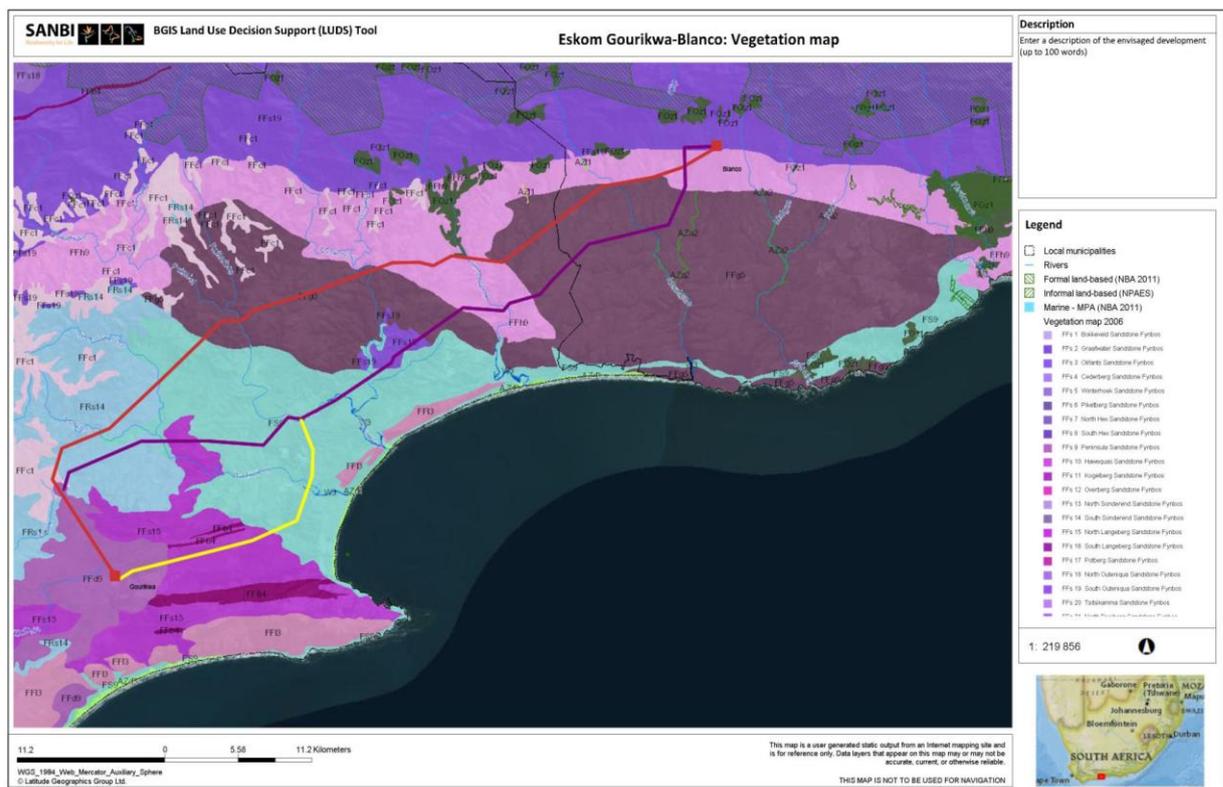


Figure 11: Vegetation map

The regional data indicates that the extent of intersection of highly threatened aquatic and terrestrial **vegetation types that are still ecologically intact will be highest in alternative 3.**

Alternatives 1 and 2 do not differ much in terms of intersection of CBA's. Both Alternatives 1 and 2 intersect areas that contain known populations of threatened plant species (see Map

below). The data regarding occurrence of threatened species are not complete and several other threatened species populations may occur along the proposed corridors.

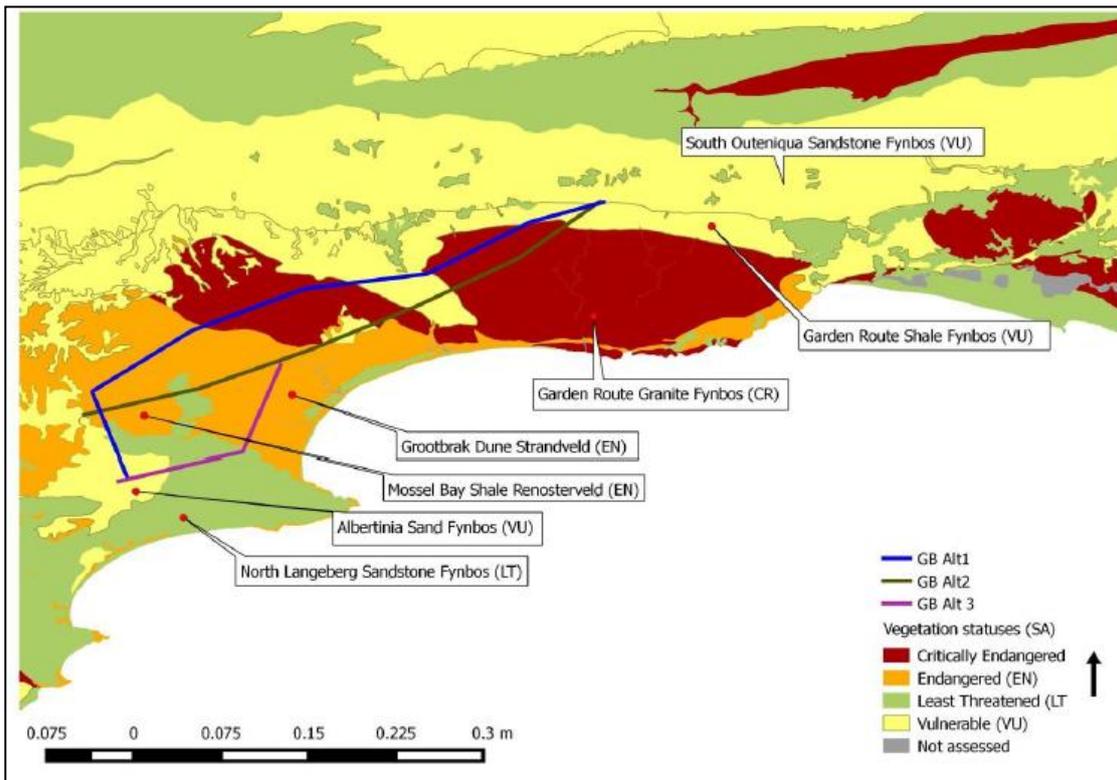


Figure 12: Vegetation types & their status intersected by the project (Mucina et al. 2006)

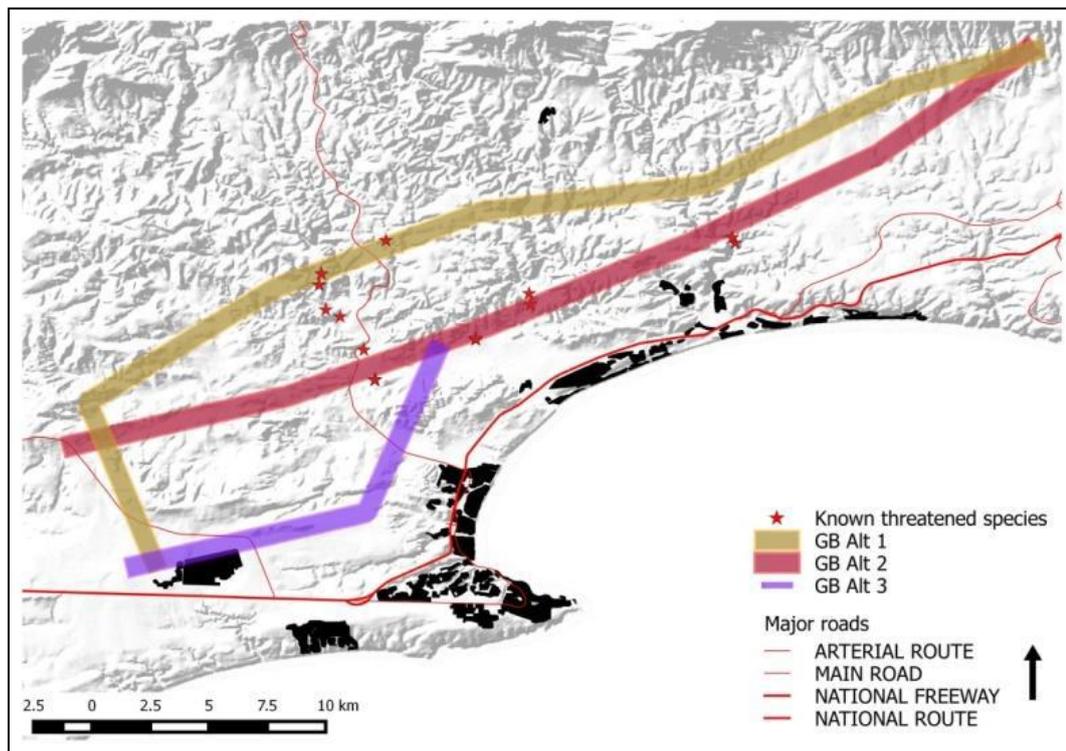


Figure 13: Known populations of threatened plant species. (SANBI:CREW database)

Alternatives 1, 2 and 3 intersect known populations of threatened plant species. Alternative 2 marginally intersects more populations than Alternative 1, but it should be kept in mind that the available data are not complete. A field study may show that the reverse is true.



**Figure 14: Gondwana Game Reserve landscape**



**Figure 15. Vegetation in the Study Area**

The following Indigenous Plant Species list was received from the Brandwag Farmers Association (via Pierre Fourie from the Nyaru Game Reserve), regarding species that can be found in the **remaining natural** areas (reserves) between Mossel Bay and George:

**Nyaru Indigenous Plant Species List:**

**Dicotyledons:**

*Acacia karroo*  
*Acrodon bellidiflorus*  
*Agathosma capensis*  
*Anthospermum aethiopicum*  
*Azima tetraantha*  
*Buddleja saligna*  
*Carissa bispinosa*  
*Carpobrotus edulis*  
*Chironia baccifera*  
*Cotyledon orbiculata* var. *orbiculata*  
*Crassula orbicularis*  
*Crassula rupestris*  
*Diospyros dichrophylla*  
*Drosera aliciae*  
*Elytropappus rhinocerotis*  
*Erica densifolia*  
*Erica discolor*  
*Eriocephalus capitellatus*  
*Euphorbia mauritanica*  
*Glottiphyllum depressum*  
*Grewia occidentalis*  
*Helichrysum petiolare*  
*Hermannia saccifera*  
*Hibiscus trionum*  
*Leonotis leonurus*  
*Leucodendron salignum*  
*Metalasia acuta*  
*Olea europaea* subsp. *africana*  
*Orbea variegata*  
*Oxalis ciliaris*  
*Oxalis pendulifolia*  
*Pelargonium peltatum*  
*Polygala myrtifolia*

*Protea neriifolia*  
*Schotia afra* var. *afra*  
*Searsia pterota*  
*Searsia pyroides* var. *pyroides*  
*Searsia undulata*  
*Sideroxylon inerme*  
*Tarchonanthus camphoratus*  
*Viscum rotundifolium*

**Monocotyledons:**

*Aloe ferox*  
*Aponogeton distachyos*  
*Bobartia macrospatha*  
*Bonatea speciosa*  
*Boophone disticha*  
*Brunsvigia orientalis*  
*Commelina africana*  
*Crossyne guttata*  
*Cynodon dactylon*  
*Cyperus textilis*  
*Disa sagittalis*  
*Gladiolus floribundus*  
*Haemanthus sanguineus*  
*Haworthia chloracantha* var. *subglauca*  
*Haworthia kingiana*  
*Holothrix parviflora*  
*Hypoxis hemerocallidea*  
*Massonia echinata*  
*Moraea polyanthus*  
*Phragmites australis*  
*Romulea fibrosa*  
*Satyrium longicolle*  
*Sporobolus africanus*  
*Themeda triandra*  
*Typha capensis*



**Figure 16: Haworthia Kingiana**

#### 4.2.9 Fauna

The following list was received from the Brandwag Farmers Association (via Pierre Fourie from the Nyaru Game Reserve), regarding animals that have been found in the remaining natural areas (reserves) surrounding Mosselbay:

Aardwolf	<i>Proteles cristatus</i>	Impala	<i>Aepyceros melampus</i>
Blue Duiker	<i>Philantomba monticola</i>	Klipspringer	<i>Oreotragus oreotragus</i>
Blue Wildebeest / Brindled Gnu	<i>Connochaetes taurinus taurinus</i>	Large Grey Mongoose	<i>Herpestes ichneumon</i>
Bontebok	<i>Damaliscus pygargus dorcas</i>	Nyala	<i>Tragelaphus angasii</i>
Bushpig	<i>Potamochoerus larvatus</i>	Plains / Burchell's Zebra	<i>Equus quagga</i>
Cape Clawless Otter	<i>Aonyx capensis</i>	Rock Dassie / Rock Hyrax	<i>Procavia capensis</i>
Cape Gerbil	<i>Gerbilliscus afra</i>	Sable Antelope	<i>Hippotragus niger</i>
Cape Golden Mole	<i>Chrysochloris asiatica</i>	Scrub Hare	<i>Lepus saxatilis</i>
Cape / Southern Grysbok	<i>Raphicerus melanotis</i>	Small Spotted Genet	<i>Genetta genetta</i>
Cape Porcupine	<i>Hystrix africaeaustralis</i>	Small-grey Mongoose	<i>Galerella pulverulenta</i>
Cape Serotine Bat	<i>Neoromicia capensis</i>	SA Large-spotted Genet	<i>Genetta tigrina</i>
Caracal / African Desert Lynx	<i>Caracal caracal</i>	Southern African Vlei Rat	<i>Otomys irroratus</i>
Chacma Baboon	<i>Papio ursinus</i>	Springbok	<i>Antidorcas marsupialis</i>
Common Duiker / Grey Duiker	<i>Sylvicapra grimmia</i>	Steenbok	<i>Raphicerus campestris</i>
Common Eland	<i>Taurotragus oryx</i>	Striped Polecat	<i>Ictonyx striatus</i>
Four-striped Grass Mouse	<i>Rhodomys pumilio</i>	Suricate / Meerkat	<i>Suricata suricatta</i>
Giraffe	<i>Giraffa camelopardalis</i>	Vervet Monkey	<i>Chlorocebus pygerythrus</i>
Greater Kudu	<i>Tragelaphus strepsiceros</i>	Warthog	<i>Phacochoerus africanus</i>
Honey Badger / Ratel	<i>Mellivora capensis</i>	Water / Marsh Mongoose	<i>Atilax paludinosus</i>
House Rat	<i>Rattus rattus</i>	Waterbuck	<i>Kobus ellipsiprymnus</i>

Most animal species are difficult to spot due to their small size, their nocturnal habits or restriction to the wilderness areas of conservation areas (such as Nyaru Game Reserve, the Gondwana Private Game Reserve, Botlierskop Private Game Reserve and the Swartberg Nature Reserve areas).



**Figure 17: Klipspringer**



**Figure 18: Aardwolf**

#### **4.2.10 Avifauna**

During the field trip (April 2015) the land owners reported that there had been considerable numbers of collisions occurring on the existing trans-mission power lines, particularly where the lines were in close proximity to the dams. Species involved were Blue Crane, Egyptian Geese, Eagle-Owl, Kori and Ludwig's Bustard. The existing transmission power lines crossing the properties were not fitted with Bird Flight Diverters.

Avian species that are most consistently affected by overhead transmission lines are water birds that congregate at wetlands and commute between them in flocks, examples being large and / or fast flying species such as ducks, geese, flamingos, storks, herons and waders, that have a high collision rate. Game birds and rails have less exposure but are still highly susceptible. Canes, storks, bustards korhaans which are large heavy bodied, flocking and low flying are also highly susceptible to collisions with overhead transmission power lines.

The following list was received from the Brandwag Farmers Association (via Pierre Fourie from the Nyaru Game Reserve), regarding bird life that can be found in the remaining natural areas between Mossel Bay and George.

**English Names:**

Apalis, Bar-throated  
 Batis, Cape  
 Bishop, Southern Red  
 Bishop, Yellow  
 Bokmakierie  
 Boubou, Southern  
 Brownbul, Terrestrial  
 Bulbul, Cape  
 Bunting, Cape  
 Bushshrike, Olive  
 Bustard, Denham's  
 Buzzard, Jackal  
 Buzzard, Steppe  
 Canary, Brimstone  
 Canary, Protea  
 Canary, Yellow  
 Chat, Familiar  
 Chat, Karoo  
 Cisticola, Grey-backed  
 Cisticola, Levallant's  
 Coot, Red-knobbed  
 Cormorant, Reed  
 Cormorant, White-breasted  
 Coucal, Burchell's  
 Crane, Black  
 Crane, Blue  
 Crombec, Long-billed  
 Crow, Cape  
 Crow, Pied  
 Cuckoo, Diderick  
 Cuckoo, Jacobin  
 Cuckoo, Klaas's  
 Cuckooshrike, Black  
 Darter, African  
 Dove, Cape Turtle  
 Dove, Laughing  
 Dove, Red-eyed  
 Dove, Tambourine  
 Drongo, Fork-tailed  
 Duck, African Black  
 Duck, White-faced Whistling  
 Duck, Yellow-billed  
 Eagle, African Fish  
 Eagle, Booted  
 Eagle, Martial  
 Eagle-Owl, Spotted  
 Egret, Little  
 Egret, Western Cattle  
 Fiscal, Common  
 Flycatcher, African Paradise  
 Flycatcher, African Dusky

**Scientific Names:**

*Apalis thoracica*  
*Batis capensis*  
*Euplectes orix*  
*Euplectes capensis*  
*Telophorus zeylonus*  
*Laniarius ferrugineus*  
*Phyllastrephus terrestris*  
*Pycnonotus capensis*  
*Emberiza capensis*  
*Telophorus olivaceus*  
*Neotis denhami*  
*Buteo rufofuscus*  
*Buteo vulpinus*  
*Crithagra sulphuratus*  
*Crithagra leucopterus*  
*Crithagra flaviventris*  
*Cercomela familiaris*  
*Cercomela schlegelii*  
*Cisticola subruficapilla*  
*Cisticola tinniens*  
*Fulica cristata*  
*Phalacrocorax africanus*  
*Phalacrocorax lucidus*  
*Centropus burchellii*  
*Amauromis flavirostris*  
*Anthropoides paradiseus*  
*Sylvietta rufescens*  
*Corvus capensis*  
*Corvus albus*  
*Chrysococcyx caprius*  
*Oxylopus jacobinus*  
*Chrysococcyx klaas*  
*Campephaga flava*  
*Anhinga rufa*  
*Streptopelia capicola*  
*Streptopelia senegalensis*  
*Streptopelia semitorquata*  
*Turtur tympanistria*  
*Mikstertbyvanger*  
*Anas sparsa*  
*Dendrocygna viduata*  
*Anas undulata*  
*Haliaeetus vocifer*  
*Aquila pennatus*  
*Polemaetus bellicosus*  
*Bubo africanus*  
*Egretta garzetta*  
*Bubulcus ibis*  
*Lanius collaris*  
*Terpsiphone viridis*  
*Muscicapa adusta*

Flycatcher, Blue-mantled  
 Crested  
 Flycatcher, Fairy  
 Flycatcher, Fiscal  
 Flycatcher, Spotted  
 Goose, Egyptian  
 Goose, Spur-winged  
 Goshawk, African  
 Grassbird, Cape  
 Grebe, Little  
 Greenbul, Sombre  
 Guineafowl, Helmeted  
 Hamerkop  
 Harrier, Black  
 Harrier-Hawk, African  
 Heron, Black-crowned Night  
 Heron, Black-headed  
 Heron, Grey  
 Heron, Purple  
 Hobby, Eurasian  
 Honeyguide, Lesser  
 Hoopoe, African  
 Ibis, Hadedda  
 Kestrel, Rock  
 Kingfisher, Brown-hooded  
 Kingfisher, Giant  
 Kingfisher, Half-collared  
 Kingfisher, Malachite  
 Kingfisher, Pied  
 Lapwing, Blacksmith  
 Lapwing, Crowned  
 Lark, Agulhas Long-billed  
 Lark, Cape Clapper  
 Lark, Large-billed  
 Longclaw, Cape  
 Mallard  
 Martin, Brown-throated  
 Martin, Rock  
 Moorhen, Common  
 Mousebird, Red-faced  
 Mousebird, Speckled  
 Neddicky  
 Nightjar, Fiery-necked  
 Ostrich, Common  
 Owl, Western Barn  
 Penduline-Tit, Cape  
 Pigeon, African Olive  
 Pigeon, Speckled  
 Pipit, African  
 Pipit, Long-billed  
 Plover, Three-banded  
 Prinia, Karoo

*Trochocercus cyanomelas*  
*Stenostira scita*  
*Sigelus silens*  
*Muscicapa striata*  
*Alopochen aegyptiacus*  
*Plectropterus gambensis*  
*Accipiter tachiro*  
*Sphenoaacus afer*  
*Tachybaptus ruficollis*  
*Andropadus importunus*  
*Numida meleagris*  
*Scopus umbretta*  
*Circus maurus*  
*Polyboroides typus*  
*Nycticorax nycticorax*  
*Ardea melanocephala*  
*Ardea cinerea*  
*Ardea purpurea*  
*Falco subbuteo*  
*Indicator minor*  
*Upupa africana*  
*Bostrychia hagedash*  
*Falco rupicolus*  
*Halcyon albiventris*  
*Megaceryle maximus*  
*Alcedo semitorquata*  
*Alcedo cristata*  
*Ceryle rudis*  
*Vanellus armatus*  
*Vanellus coronatus*  
*Certhilauda brevirostris*  
*Mirafra apiata*  
*Galerida magnirostris*  
*Macronyx capensis*  
*Anus platyrhynchos*  
*Riparia paludicola*  
*Hirundo fuligula*  
*Gallinula chloropus*  
*Urocolius indicus*  
*Colius striatus*  
*Cisticola fulvicapilla*  
*Caprimulgus pectoralis*  
*Struthio camelus*  
*Tyto alba*  
*Anthoscopus minutus*  
*Columba arquatrix*  
*Columba guinea*  
*Anthus cinnamomeus*  
*Anthus similis*  
*Charadrius tricollaris*  
*Prinia maculosa*

Quail, Common	<i>Coturnix coturnix</i>	Swallow, Barn	<i>Hirundo rustica</i>
Quelea, Red-billed	<i>Quelea quelea</i>	Swallow, Greater Striped	<i>Hirundo cucullata</i>
Raven, White-necked	<i>Corvus albicollis</i>	Swallow, Pearl-breasted	<i>Hirundo dimidiata</i>
Robin, Karoo Scrub	<i>Cercotrichas coryphoeus</i>	Swallow, White-throated	<i>Hirundo albigularis</i>
Robin-Chat, Cape	<i>Cossypha caffra</i>	Swift, African Black	<i>Apus barbatus</i>
Robin-Chat, Chorister	<i>Cossypha dichroa</i>	Swift, Alpine	<i>Tachymarpis melba</i>
Rock-Thrush, Cape	<i>Monticola rupestris</i>	Swift, Horus	<i>Apus horus</i>
	<i>Psalidoprocne</i>	Swift, Little	<i>Apus affinis</i>
	<i>holomelaena</i>	Swift, White-rumped	<i>Apus caffer</i>
Saw-Wing, Black	<i>Sagittarius serpentarius</i>	Tchagra, Southern	<i>Tchagra tchagra</i>
Secretarybird	<i>Crithagra gularis</i>	Teal, Red-billed	<i>Anas erythrorhyncha</i>
Seedeater, Streaky-headed	<i>Anas smithii</i>	Thick-Knee, Spotted	<i>Burhinus capensis</i>
Shoveler, Cape	<i>Passer melanurus</i>	Thick-Knee, Water	<i>Burhinus vermiculatus</i>
Sparrow, Cape	<i>Passer domesticus</i>	Thrush, Olive	<i>Turdus olivaceus</i>
Sparrow, House	<i>Passer diffusus</i>	Turaco, Knysna	<i>Tauraco corythaix</i>
Sparrow, Southern Grey-headed	<i>Accipiter melanoleucus</i>	Wagtail, Cape	<i>Motacilla capensis</i>
Sparrowhawk, Black	<i>Platalea alba</i>	Warbler, African Reed	<i>Acrocephalus baeticatus</i>
Spoonbill, African	<i>Pternistis capensis</i>	Warbler, Garden	<i>Sylvia borin</i>
Spurfowl, Cape	<i>Pternistis afer</i>	Warbler, Lesser Swamp	<i>Acrocephalus gracilirostris</i>
Spurfowl, Red-necked	<i>Notopholia corruscus</i>	Warbler, Little Rush	<i>Bradypterus baboecala</i>
Starling, Black-bellied	<i>Sturnus vulgaris</i>	Warbler, Victorin's	<i>Cryptillas victorini</i>
Starling, Common	<i>Onychognathus morio</i>	Waxbill, Common	<i>Estrilda astrild</i>
Starling, Red-winged	<i>Saxicola torquatus</i>	Waxbill, Swee	<i>Coccyzygia melanotis</i>
Stonechat, African	<i>Ciconia nigra</i>	Weaver, Cape	<i>Ploceus capensis</i>
Stork, Black	<i>Ciconia ciconia</i>	Weaver, Southern Masked	<i>Ploceus velatus</i>
Stork, White	<i>Promerops cafer</i>	White-Eye, Cape	<i>Zosterops virens</i>
Sugarbird, Cape	<i>Chalcomitra amethystina</i>	Whydah, Pin-tailed	<i>Vidua macroura</i>
Sunbird, Amethyst		Woodpecker, Cardinal	<i>Dendropicus fuscescens</i>
Sunbird, Greater Double-collared	<i>Cinnyris afer</i>	Woodpecker, Knysna	<i>Campethera notata</i>
Sunbird, Malachite	<i>Nectarinia famosa</i>		<i>Dendropicos</i>
Sunbird, Orange-breasted	<i>Anthobaphes violacea</i>		<i>griseocephalus</i>
Sunbird, Southern Double-collared		Woodpecker, Olive	
	<i>Cinnyris chalybeus</i>		



**Figure 19: Denham's Bustard and Ludwig's (Kori) Bustard**

(Photos with permission from Wessel Rossouw)



**Figure 20: Greater Flamingo, White Throated Swallows**  
*(Photos with permission from Wessel Rossouw, Gerrie van Vuuren)*



**Figure 21: Little Bittern**  
*(Photos with permission from Wessel Rossouw)*

During the Public Participation Process, I&APs have expressed their concern about the endangerment of birdlife that is currently occurring in nature reserve areas. Their perception is that the pylons for the line may have a negative impact on the bird life, or if larger birds fly into the power lines. Secretarybirds (*Sagittarius serpentarius*), Denham's Bustard (*Neotis denhami*), the Martial Eagle (*Polemaetus bellicosus*) and the Black Harrier (*Circus maurus*) are species of concern. Smaller passerine birds could also be affected by the construction, and consequential habitat destruction of the pylons. One of the most important of these species is the endangered Agulhas Long-billed Lark (*Certhilauda brevirostris*), which occurs in the Mossel Bay Shale Renosterveld, which is the most prominent vegetation type on the reserve.

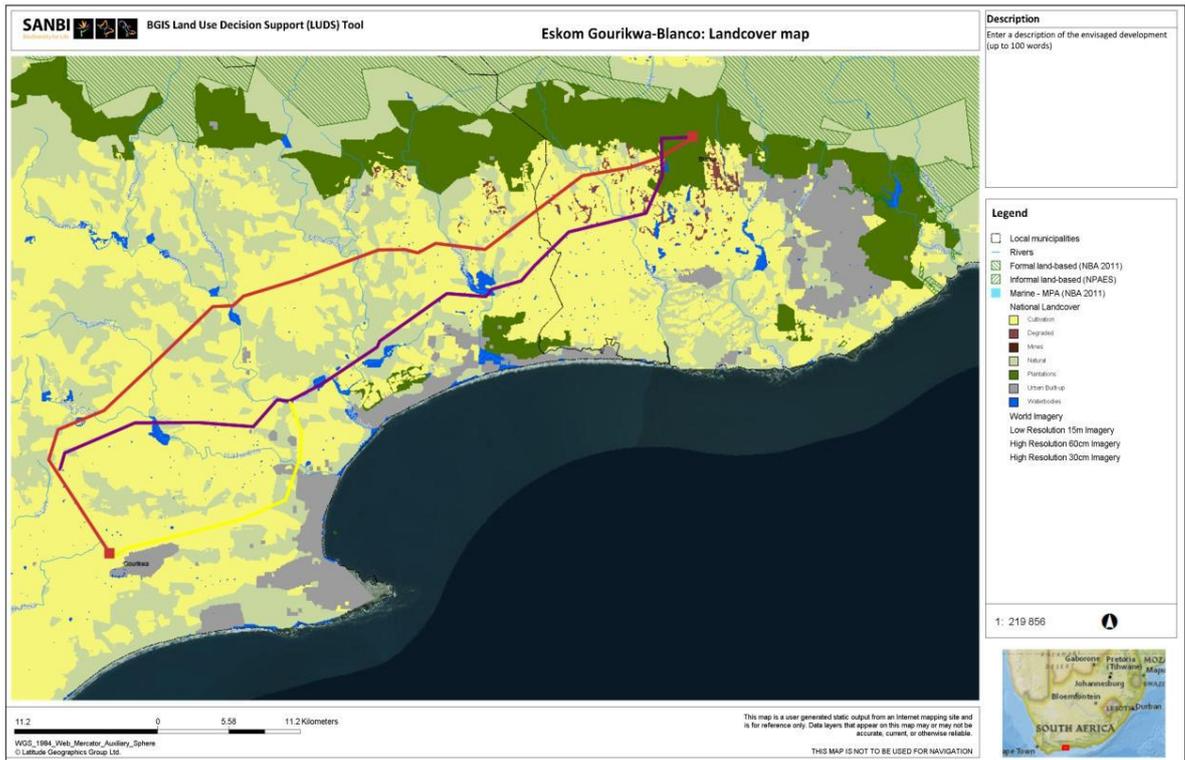


**Figure 22: Dead birds found under existing power lines during site visits**

### **4.3 Land use and Socio-Economical Profile**

The three alternative transmission lines pass through the Eden District Municipality (DC4) (within the Western Cape Province).

Land use within the study area consists largely of cultivated land with some natural areas (pale green areas) along river valleys and on higher lying areas. Mossel Bay and George are larger towns in the immediate area, with the smaller residential areas of Hartenbos, Klein Brak and Groot Brak along the coastline (grey areas). A number of storage dams (blue areas) occur along the rivers, particularly in the Klein Brak River System. Forestry occurs along the foot of the Outeniqua Mountains.



**Figure 23: Landcover Map**

A number of formally protected areas in terms of the National Environmental Management Protected Areas Act (green hatched areas) occur within the Outeniqua Mountains such as Ruitersbos and Witfontein Nature Reserves and the Doringrivier Wilderness Area. The rivers in the area, in particular the Groot and Klein Brak Rivers and their estuaries are also considered to be of a very high ecological importance and sensitivity.

#### **4.3.1 Eden District Municipality (DC4)**

The Eden District Municipality consists of 7 local municipalities and has an estimated population of just over 574 200 according to the 2011 census. The area has a population density of 24.6 people per km<sup>2</sup>. The “Eden District Municipality 2014/2015 First Draft Reviewed IDP” states that agriculture has transformed 18.58% of the natural landscape to cultivated lands, as has afforestation (exotic plantations) by 2.55%. Built-up land only covers 0.62% of the Eden area, but this is presently increasing sharply. Most of the mountainous areas and the Little Karoo, which are under extensive agriculture, game farming and conservation land uses, falls within the category “Shrubland / Fynbos”.

#### **4.3.2 Local municipalities**

The local municipalities that form part of the transmission line study area are the George Local Municipality (WC044 part of Eden), Mossel Bay Local Municipality (WC045 part of Eden). The wards that are affected by the project alternatives are: ward s 4,5,7 and 14 in Mossel Bay and ward 22 in George.

### 4.3.2.1 George Local Municipality

George Local Municipality is one of 7 municipalities in the Eden District Municipality. It has an estimated population of over 193 500 and a population density of 37.3 people per km<sup>2</sup>. George is the major city within the area and has an estimated population of 157 394 according to the 2011 Census. Other towns include Wilderness (population 6 164), Uniondale (population 4 525), Haarlem (population 2 376) and Harolds Bay (population 704). The municipality covers an area of 5 191 km<sup>2</sup> in the Garden Route and Little Karoo. It extends northeast over the Outeniqua Mountains to include the eastern end of the Little Karoo as far as the Swartberg mountains. George is a popular holiday and conference centre and the administrative and commercial hub of the Garden Route.

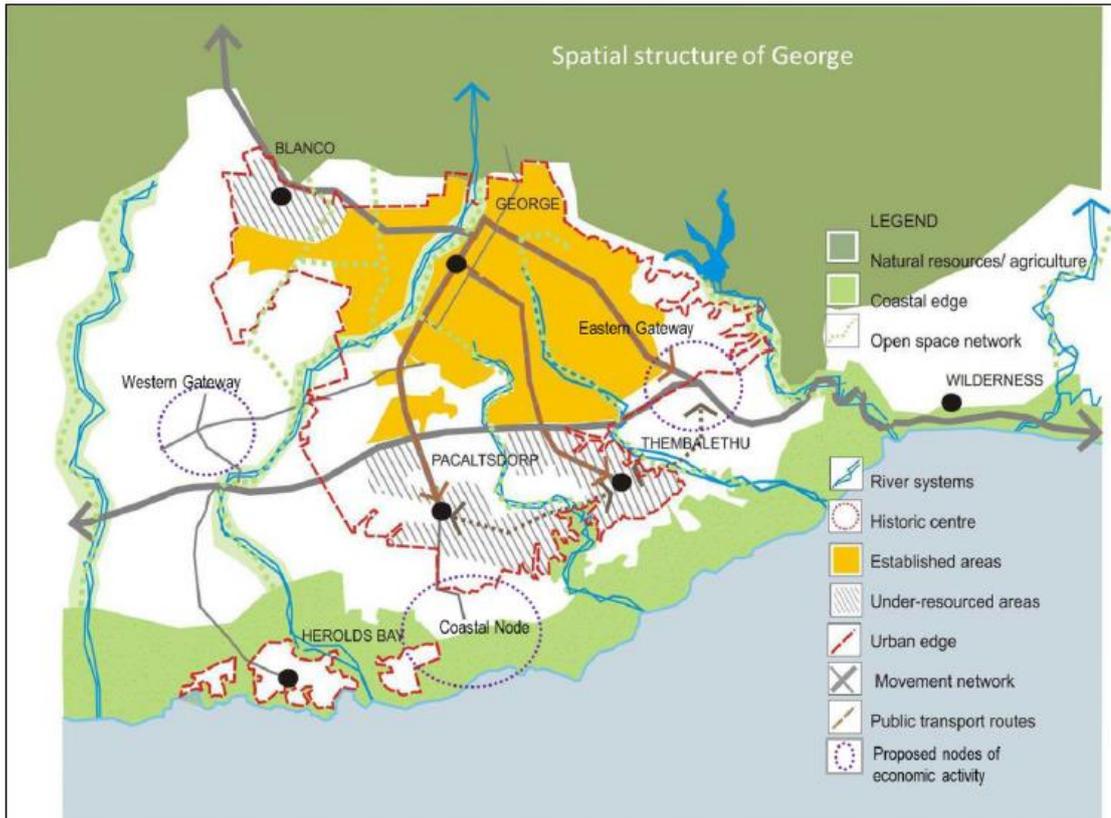


Figure 24: Spatial Structure of George (Source: George IDP, 2014/15)

The GDP of the George Local Municipality is estimated at R3.38 billion with general government (R891 million), wholesale and retail (R489 million) and business services (R399 million) contributing the most.

The municipal area straddles the Southern Cape and Little Karoo regions of the Western Cape Province, and is situated almost halfway between Cape Town and Port Elizabeth. It was stated in the Integrated Development Plan (IDP) for George (2014/15) that the George Municipality now administers a vast and diverse geographic area that extends from the dry and climatically extreme Little Karoo in the north, to the wetter more temperate Garden Route in the south.

The area is rich in natural beauty that includes mountains, forests, lakes and the sea. The utilisation of forest trees led to the establishment of a timber industry in 1776 by the Dutch East India Company.

Three important national roads – N2, N9 and N12 – traverse the area, and George regional airport serves the Southern Cape and Little Karoo, including the neighbouring towns of Mossel Bay, Oudtshoorn, Knysna and Plettenberg Bay. Prior to the incorporation of Wards 24 and 25 the municipal area was 1 068 km<sup>2</sup> in extent, but the DMA has added an additional 4 170 km<sup>2</sup>. Stats SA report that 148 021 people lived in the area in 2007 (including the previous DMA), of which approximately 80% resided in the regional service centre of George, 12% in the towns, villages and coastal enclaves of Wilderness, Herolds Bay, Uniondale, Touwsrante, Haarlem, Hoekwil, and Victoria Bay, and 8% in rural hamlets and on farms. According to the George Economic Development Profile, 2012, the total population for 2011 is estimated at 188188 with a 2.1% growth rate per annum since 2008. The map below depicts the spatial structure of the town of George and hinterland.

The municipal area also includes fertile farmlands and timber plantations along the coastal plain, fruit orchards in the Langkloof and arid grazing areas in the Little Karoo. The George area has an active, high-value **agricultural sector** including produce such as hops, vegetables, flowers and dairy products, and aquaculture. Although these activities may not create many jobs, they contribute significantly to local employment and earnings with steady land-reform efforts helping to reduce inequalities<sup>2</sup>.

Given the rapid population growth and the role of the Southern Cape as retirement haven for many South Africans, the **construction sector** foresees steady growth and at least stable employment. Although George is not a coastal resort, these trends should also apply to the town. In addition, the local climate and a strong forestry sector helps to create a much wider range of building structures than found in other parts of South Africa.

Notwithstanding certain limiting factors (like the rising fuel price) the **tourism sector** of the Southern Cape remains one of the strongest pillars of future LED<sup>3</sup>. This also applies to George, even though it is not located at the coast. Through its central location within the “tourism region” George is able to attract many tourism, accommodation and catering-related specialist services and facilities, which help to stimulate LED. Natural assets include parts of the Garden Route National Park and the Baviaanskloof Wilderness Area.

Due to its location, George attracts much of the region’s more specialised retail and wholesale trade establishments. This further boosts this sector and is not likely to change in the foreseeable future. It is, however, key that the municipal and district managements satisfy the accommodation and other requirements of these enterprises.

sk

<sup>2</sup> *Second Review of the George IDP 2014-15*

<sup>3</sup> *Second Review of the George IDP 2014-15*

Although the relatively small population of the area has prevented the Southern Cape from becoming a major **industrial growth** point, the area has over the years succeeded in attracting some innovative industries (in bio-tech, ICT software and agro-processing). The closure of some factories in the recession years has illustrated the negative impact of sector problems and has stressed the need for proactive municipal policies.

George currently has the widest spectrum of school and tertiary education facilities in the Southern Cape<sup>4</sup>. These include quality private schools as well as university and other tertiary-level facilities. It seems likely that these facilities will enlarge in line with expanding local needs and national trends in educational-supply facilities. Once again, such expansion depends quite crucially on the municipality's policies of facilitation.

George has a wide range of health facilities and services, and it would seem natural for this position to continue in future if facilitated by local, district and provincial authorities.

The town of De Rust is located south of Meiringspoort and is visited by travellers between inland areas and the coast. The Stompdrift Dam Water Resort is located just outside of De Rust and offers educational programmes and excursions (E.g. via a Botanical Interpretation Route) for hikers.

#### **4.3.2.2 Mossel Bay Local Municipality**

Mossel Bay Local Municipality is one of 7 municipalities in the Eden District Municipality. It has an estimated population of over 89 430 and a population density of 44 people per km<sup>2</sup>. Mossel Bay is the major town with an estimated population of 59 031 according to the 2011 Census. Other towns include Hartenbos (population 4 196), Little Brak River (population 2 037), Reebok (population 1 112), Tergniet (population 1264) and Great Brak River (population 10 619). South west of Mossel Bay are a number of smaller coastal villages, including Boggomsbaai and Vleesbaai. Herbersdale (population 666), Brandwacht (population 1 470) and Friemersheim (population 1 235) are situated in the interior of the municipality closer to the mountains. The municipality covers an area of 2 011 km<sup>2</sup>.

The GDP of the Mossel Bay Local Municipality is estimated at R7.2 billion with business services (R1.5 billion), wholesale and retail (R1.3 billion) and general government (R903 million), contributing the most.

### **4.4 Tourism**

According to Domestic Tourism Survey of 2013 from Statistics South Africa, the Western Cape had 2.7 million domestic overnight trips or 9.2% of the total overnight trips (expressed per province as the main destination of overnight trips). More than half (58%) of the overnight trips

sk

<sup>4</sup> *Second Review of the George IDP 2014-15*

to the Western Cape were for leisure/vacation/holiday and according to the mode of transport, 77% of all overnight trips to the Western Cape were with a car.

Visual impacts are arguably one of the most significant impacts that are associated with transmission lines. Therefore, the visual qualities of these attractions need to be preserved as far as is practically possible. This can be done through the careful placement of towers and power lines against the landscape, avoiding mountain tops, using valley bottoms, choosing the option with the shortest distance or placing it in areas that already have visual interference of manmade objects.

From the point of view of receptors, including local residents and tourists, the presence of a transmission line may negatively affect the sense of place of natural areas, potentially negatively affecting eco-tourism attractions such scenic hiking trails, eco-adventures, and the like. This could have negative social and economic consequences, such as loss of revenue for business enterprises, loss of employment and reduced economic contributions to local GDP.

According to Domestic Tourism Survey of 2013 from Statistics South Africa, the Western Cape had 2.7 million domestic overnight trips or 9.2% of the total overnight trips (expressed per province as the main destination of overnight trips). More than half (58%) of the overnight trips to the Western Cape was for leisure/vacation/holiday. According to the mode of transport, 77% of all overnight trips to the Western Cape were with a car. A total of 1.97 million of the overnight trips to Western Cape originated from within the Western Cape while 413 000 came from Gauteng. A total of 112 000 came from the Eastern Cape and 80 000 from Northern Cape.

A number of nature reserves are included in the study area, including Doringrivier Wilderness Area, Witfontein Nature Reserve and Mossel Bay Seal Island Reserve; however, none of the proposed alternatives' corridors crosses any of these nature reserves. There are also a number of tourism beaches in the study area, but none of them will be affected by the transmission lines.

#### **4.4.1 George area**

There are a number of tourism attractions, including the George museum, Outeniqua Mountains, Montagu Pass (that was declared a National Monument in 1972), Fancourt (National Monument and well-known hotel) and Lake system (Wilderness, Swartvlei, Sedgfield and Groenvlei). The area is host to the George Old Car Show, that was first held in 1997, the George Cheese Festival (since 2002) and the George NAM Sevens Premier League. The George airport was built in 1977 and served 560 432 passengers in 2013, up from 154 000 in 2003.

In the 2014/15 IDP, the George Local Municipality highlights the need to promote the municipality as a sports, tourism and business destination. This includes the re-establishment of a Tourism Bureau, and projects like the Apple Express and the Outeniqua Choo-Choo train project are essential for tourism development in the rural areas. Further tourism opportunities include business tourism, agri-tourism, eco-tourism (hiking, birding, etc) and adventure-tourism potential like paragliding, canoeing, absailing, diving and mountain biking. Strengths also include the natural beauty of the area, the national parks, moderate climate, long sandy beaches and good hotels, guesthouses and restaurants.

#### 4.4.2 Mossel Bay area

The Mossel Bay draft IDP (2015) mentions tourism as their first strategic priority 'Grow the economy and create jobs through Tourism'. This is set out in objectives that include: to create an enable environment for economic growth in the tourism industry and uplifting communities, to facilitate development and an investor friendly environment for job creation and an attractive CBD area with a well-developed port/waterfront area.

Specific tourism projects include the development, maintenance and marketing of hiking trails, establishing a flea market alongside the N2 on an open area on the eastern side of De Dekke Restaurant and the establishment of worm farming (and composting) projects in the community. Other projects include the upgrading of Klein Brak River allusion facilities to blue flag standard, presenting annual festivals unique to Great Brak River and upgrade and maintain holiday resorts and caravan parks to increase tourism.

#### 4.4.3 Nature Reserves

A number of Private Game Reserves and Game Farms are located in the study area. **Nature Reserves in the area include the following:**

- The Gamka Nature Reserve covers most of the Gamka Mountain range. The reserve was established in 1974 with the objective to conserve a population of endangered Cape Mountain Zebra and their natural habitat.
- The Goukamma Nature and Marine Reserve is situated in the vicinity of Sedgefield between George and Knysna. The 2 500 ha nature reserve, with a coastline of 14 km, and the adjacent marine reserve extend seawards for 1.8 km. It includes a long beach, an extensive dune field with some of the highest vegetated dunes in South Africa, the Goukamma River and its estuary, and the Groenvlei Lake.
- The Outeniqua Nature Reserve is located near George and is accessible from Mossel Bay, Knysna and Oudtshoorn. The primary function of this nature reserve is the conservation of water resources.
- The Swartberg Nature Reserve is situated in the vicinity of Oudtshoorn in the Swartberg Mountains between the Great and Little Karoo.

Conservation Areas	Size	Managed by
Gamka Mountain Nature Reserve	10 428 ha	WCNCB
Goukamma Nature and Marine Reserve	2 900 ha	WCNCB
Grootvadersbosch Nature Reserve	250 ha	WCNCB
Boosmansbos Wilderness Area	15 202 ha	WCNCB
Keurbooms River Nature Reserve	740 ha	WCNCB
Outeniqua Nature Reserve	38 000 ha	WCNCB
Gamkapoort Nature Reserve	12 176 ha	WCNCB

## 4.5 Heritage

The landscape is characterised by rolling hills, farm and small holdings under agricultural lands. Many of the farms practice agriculture which requires centre pivots. Some of the farms are utilised for game farming. Much of the landscape has been extensively modified by agriculture and very little indigenous vegetation remains. The powerlines must cross rivers, streams and steep sided valleys as well as a number of rural gravel roads.

The application and EIA process has been initiated by engaging **Heritage Western Cape** with a **Notice of Intent to Develop (NID)** to get them on board and request inputs and comments.

### 4.5.1 **Historical Background**

This area was historically referred to as Outeniqualand. Government posts were established at Mossel Bay (1787) and George (1777) to regulate the use of timber. Transportation of the timber by sea began in 1788. Outeniqualand was gradually settled from the west during the 18th century. An outspan developed on the eastern banks of the Groot Brak River and a wooden bridge was built across the river (Franklin 1975). There are a few farms in the area with historic qualities (Fransen 2004; Fransen 2006). They include Patrysvlei (c 1840); Goedemoed (1850's); Brandwacht (c1810); Plaatjieskraal (c1810) and Fancourt (c. 1860s).

The significant Middle Stone Age archaeological sites of Cape St Blaize (excavated by Leith in 1888) and Pinnacle Point (excavations by Curtis Marean ongoing since 2000) are on the coast near Mossel Bay. They are located at least 10 km to the south-east of the proposed powerline across rolling open landscape. The archaeological landscape of Mossel Bay - Pinnacle Point are of outstanding archaeological significance (Grade II) but they will not be impacted.

Hart (2005) has assessed the construction of the Open Cycle Gas Turbine Power Station at the PetroSA facility at Mossel Bay as well as the proposed transmission lines to the Proteus substation. His walk-down of the line revealed isolated Early Stone Age (ESA) and Middle Stone Age (MSA) artefacts but no surface indications of significant archaeological material. Nilssen & Yates monitored earthmoving operations at the OCGT site and recovered a number of ESA artefacts. Nilssen (2009) examined a pipeline route at the Mossdustria plant and noted that ESA artefacts are common but no palaeontological or colonial material remains were observed. Nilssen (2005a) surveyed the farm Vaalevalley 219 between the Hartenbos River and the Klein Brakrivier and recorded a range of archaeological sites including ESA, MSA and Later Stone Age (shell midden) material. Nilssen (2005b) surveyed the area known as the Hartenbos Heuwels and reported on only a few isolated MSA artefacts. Nilssen (2005c) also noted scatters of ESA and MSA material but did not recommend any further work. Kaplan (1996) identified at least six low density scatters of LSA material at Great Brak River, close to the coast.



**Figure 25: Example of ESA artefacts near George, as found by Kaplan (2005)**

It is clear that while ESA and MSA stone artefacts are widely scattered across the landscape, the LSA material (such as shell middens) is in general found close to the coast (Nilssen 2005).

#### **4.5.2 Cemeteries and Graves**

Formal cemeteries are associated with settlements such as Mossel Bay, Great Brak River and George. Smaller farm graveyards are often found on farms. Nilssen (2005a) reported on some graves on the farm Vaalevalley 219 along the coast near Klein Brakrivier. Halkett (2014) reported on cemeteries within the powerline corridors near the proposed Blanco substation but noted that they could be avoided through micro-siting of the pylons.

#### **4.5.3 Palaeontology**

The footprint for the proposed new Blanco (Narina) Substation on the western outskirts of George is underlain at depth by highly metamorphosed, deformed sediments (schists, hornfels) of the Saasveld Formation (Kaaimans Group). These Late Proterozoic metasediments are unfossiliferous. The Precambrian bedrocks are overlain by superficial deposits of low palaeontological sensitivity and, furthermore, are probably highly weathered near-surface. The palaeontological impact significance of the construction of Blanco Substation is therefore assessed as LOW.

The study area for the transmission lines is located on the southern coastal plain, from the Mossel Bay area to George. Sectors of potentially high palaeontological sensitivity are situated to the northwest and north of Mossel Bay and mainly concern outcrop areas of Mesozoic continental rocks of the Uitenhage Group. They include the Early Cretaceous Kirkwood Formation that has yielded important fossil material of dinosaurs and other terrestrial vertebrates, petrified woods and other well-preserved plant material, as well as the Early Cretaceous Hartenbos Formation that is also rich in fossil wood (N.B. These formations are included within an undifferentiated Uitenhage Group, Ke, on the Oudtshoorn 1: 250 000 geology sheet). Small outcrop areas of shell-rich estuarine deposits of the Klein Brak

Formation (Bredasdorp Group) may also be transected by the power-line corridors to the north of Mossel Bay. From the Klein-Brakrivier northeastwards to Blanco the corridors are of low palaeontological sensitivity since they overlie highly deformed and metamorphosed Late Precambrian sediments of the Kaaimans Group and associated intrusions of the Cape Granite Suite.

Pending field assessment (during the EIA phase of the project), there is no preference on palaeontological heritage grounds for any particular power-line route option between Gourikwa and Blanco.

## **4.6 Other Infrastructure**

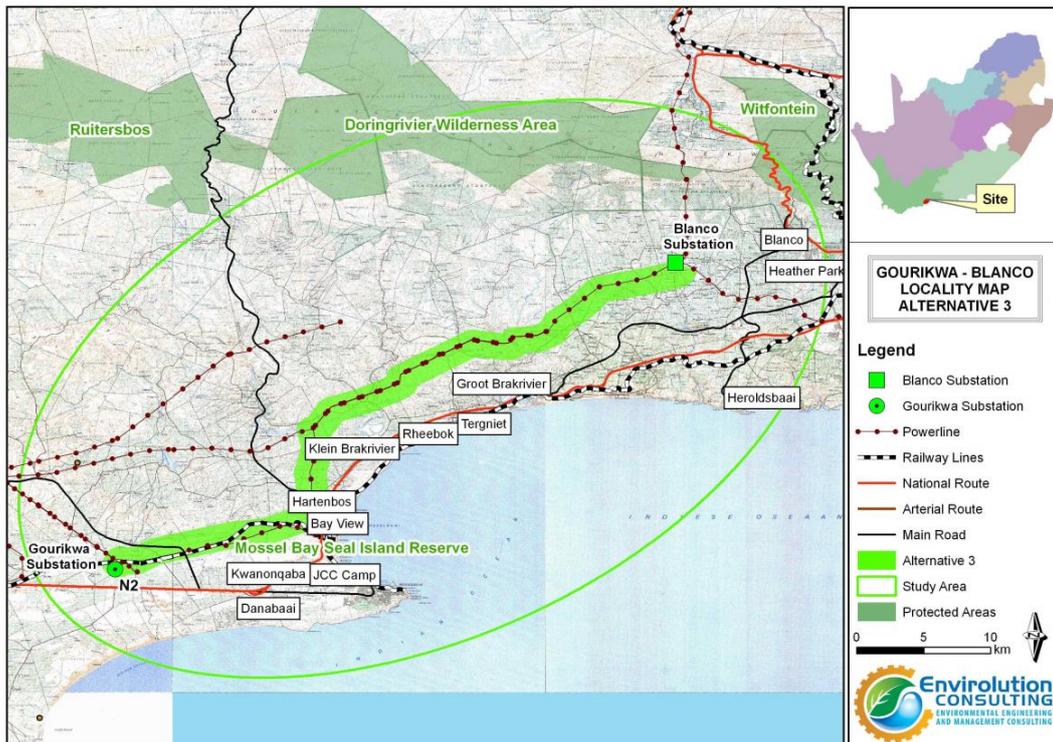
### **4.6.1 Road and Rail**

Proclaimed provincial roads make up the bulk of roads between towns in the Central Karoo. Of these, the N12 links to the N1 at Beaufort West and connects to Oudtshoorn, George, the Southern Cape and the N2. The R61 also connects with the N1 at Beaufort West and provides access to Aberdeen/Graaff-Reinet and the inland areas of the Eastern Cape. The R63 trunk road connects to the N1 in the northeast of the area and passes to the south through Murraysburg and on to Graaff-Reinet, and to the north, to Victoria West in the Northern Cape. The R407 connects Prince Albert with the N1 in the north at Prince Albert Road, and connects with the N12 in the south. The R309 (Vleiland Road) to Seweweekspoort, which connects to Calitzdorp, is a vital link between Laingsburg and the R62, and the R309 requires upgrading.

The roads are maintained on an agency basis by the District Municipality on behalf of the Provincial Government Department and funding is provided for the service provided. Projects are registered and the agency service is delivered in terms of an agreed programme. There is no known road planning that will directly affect the development.

An existing main railway line is located along the N12 and could be utilised to transport equipment to the site. A station is located in the area and it should be possible to use the station (depending on the status of roads serving the station). Although the railway line is active, it must be accepted that all equipment might not be transported via rail, with the result that one or more of the other routes mentioned, will also be utilised. From a roads and traffic point of view, utilisation of the railway line should be considered.

The image below shows the Alternative 3 in relation to existing infrastructure such as power lines, road and rail.



**Figure 26. Existing power lines, main roads and railway lines (Alt 3)**

#### 4.6.2 Renewable Energy

Solar and Wind farm projects are planned for the southern Cape, but only the two below were identified during the Scoping phase of this project. Should any new information be found, that indicates an impact on the project, such details will be added during the EIA Phase of this project.

George Airport will soon run off solar energy. A new multi-million rand photovoltaic plant will convert solar energy into electricity to run some of its operations. George Airport management plans to start using energy from the 200 square meter plant in 2015. The plant will convert solar energy into direct current electricity using solar panels. The first phase of the project will provide the airport with 41% of its power daily. The solar power plan has also received the backing of the local business chamber. A wind farm facility of 1370ha is planned on six property portions on the farm Welbedacht 215 and Bergsig Game Farm (Bergsig Game Farm 356/0, 215/13, 353/0, 365/0 and Welbedacht 215/3, 215/15), approximately 10km west of Mossel Bay and 5km north-east of the PetroSA gas-to-liquid refinery, situated just north of the N2 Highway. The Mossel Bay wind energy facility will consist of 30 to 40 turbines, depending on the model and size of turbine selected. The facility will have a maximum generating output of approximately 80MW. The turbines considered consist of a vertical tower, hub and three blades. They have a hub height of 100m as the maximum, with a maximum rotor diameter of 105m and a total maximum height at blade tip of approximately 153m.

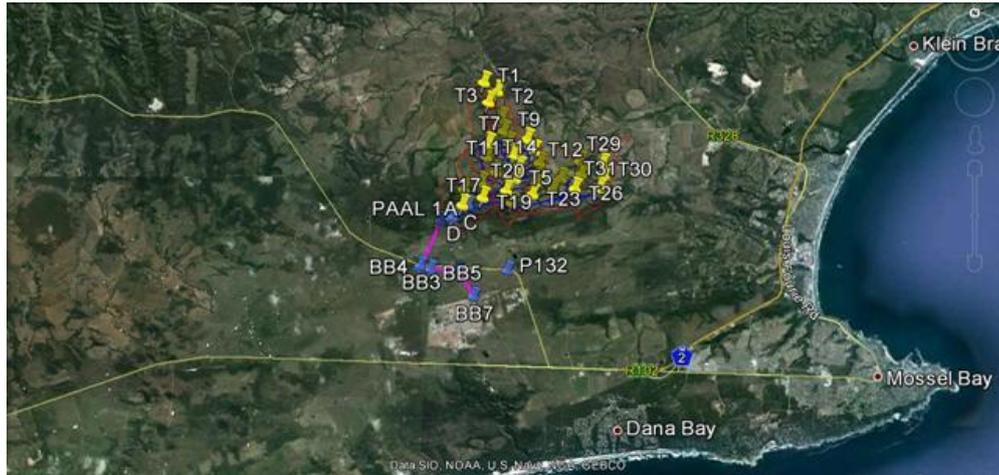


Figure 27. Welbedacht wind farm in the vicinity of Mossel Bay



Figure 28. Wind farm near Gourikwa Power Station, Mossel Bay

## 4.7 Visual Assessment

### 4.7.1 Landscape Type: Mountainous and Wilderness Area

The mountainous and wilderness landscape type will be affected by all three corridors as it nears the Blanco Substation site. The Blanco site is located in this landscape type, on the foothills of the Outeniqua Mountains. It should be mentioned at this stage that the boundaries of the landscape type might change once a thorough site investigation is done.

#### 4.7.1.1 Affected Receptors

The affected landscape features will be small tributaries that originate from the mountains, farm dams and the forested foothills of the mountains. They should be seen as a unit that collectively contribute towards a single visual resource. These features are important as it

contributes to the value of the visual resource and any alternation to it could affect the character of the landscape.

The affected observers are expected to be the farmers that regularly travel on the dirt roads along the foothills of the mountains. Protected wilderness areas exist along the crest of the Outeniqua Mountains and possible hiking trails may look down on the Blanco Substation site and the transmission line. It is unclear at this stage where the hiking trails are, but further investigation will follow.

The very picturesque Outeniqua Pass (N9) passes 3 km east of the Blanco Site. This is a gateway to the Garden Route and considered a scenic route. It is a much-travelled route by tourists visiting the area and is an important transportation connection between the Klein Karoo and George. The visibility analysis and site investigation will reveal if the proposed project will be visible from this route.

The most north western part of George are within 5km from the proposed corridors. The residents in the area may experience views to the power line. Their views of the magnificent Outeniqua Mountains may be affected but further investigation will follow during the fieldwork.

#### **4.7.1.2 Sensitivity Of The Visual Resource**

The sensitivity of the visual resource is considered high as this is a region with very little anthropogenic elements and borders the pristine Outeniqua Mountains. The transmission towers are considered large structures and in contrast with the existing landscape character. Their presence will change the pristine natural character that currently prevails. This will impact on the value of the visual resource.

The residents in the study area are classified as visual receptors of high sensitivity owing to their sustained visual exposure to the proposed development as well as their attentive interest towards their living environment. Tourists, such as hikers, are also regarded as receptors of high sensitivity. Their main reason for visiting the area is to experience and enjoy the picturesque and pristine natural environment. They have high expectations in terms of the scenic quality.

It appears that a couple of farmsteads in the Molen Drift area will be within the Zone of Maximum Visual Exposure, i.e. within 1 km of the proposed corridors. Most other farmsteads are more to the south as the Outeniqua Mountain range is a physical border for any development further north. A couple of dirt roads provide access to this part of the study area but it is unclear who uses the roads. It is presumably the local farmers.

The western outskirts of George and the Outeniqua Pass (N9) are within 3-4km of the corridors. The visibility of the proposed project will be assessed on site to determine if these observers will be impacted, and to what degree.

#### **4.7.2 Natural Landscapes**

Alternative 1 & 2 traverses the central and eastern part of this landscape type. Alternative 3 brushes past the southern part between this landscape type and the town of Hartenbos, before linking up to Alternative 2.

#### **4.7.2.1 Affected Receptors**

The affected landscape receptors will be the undulating hills occupied by natural vegetation, streams, rivers, valleys and other unique topographical features. A concentration of game farms is located in this region and conserves large areas of fauna and flora. The Hartenbos River feeds the Hartebeeskuil Dam, which will be affected by Alternative 2.

Alternative 2&3 will pass close to the smaller Klipheuwel Dam. Some of the other larger rivers in the study area that will be traversed by the corridors are the Brandwag and Moordkuil Rivers. The proposed power line will add anthropogenic structures to a landscape that is predominantly natural. It will impact on the character of the landscape and influence the value of the visual resource. Within this landscape type, many game farms and private reserves are tourist attractions and cater for luxury outdoor activities and experiences. Tourists will be affected because they'll enter the study area through the local road network and visit these tourist attractions. Robinson Pass (R328) connects Oudtshoorn to Mossel Bay and is considered as one of the major transport routes. Other observers in this landscape type will be the local farm residents.

#### **4.7.2.2 Sensitivity Of Receptors**

The sensitivity of the visual resource is considered high as this is a region with very little anthropogenic elements and are generally free of electrical infrastructure of this scale. The transmission towers are considered large and in contrast with the existing landscape character. Their presence will change the pristine natural character that currently prevails. This will impact on the value of the visual resource.

The residents in the study area are classified as visual receptors of high sensitivity owing to their sustained visual exposure to the proposed development as well as their attentive interest towards their living environment. Tourists are also regarded as receptors of high sensitivity. Their main reason for visiting the area is to experience and enjoy the picturesque and pristine natural environment. They have high expectations in terms of the scenic quality.

#### **4.7.2.3 Distance From Source Of Impact**

Alternative 1 will traverse a part of the Gondwana Private Game Reserve. The exact locations of the camps and accommodation will be confirmed during field investigation. Alternative 2 passes over the northern part of the Hartebeeskuil Dam and will also pass in very close proximity to Riverside Holiday Resort and Botlierskop Private Game Reserve. These locations are considered sensitive viewpoints due to the tourism potential. Other nearby tourism locations are Nyaru Game Lodge and Cheetah Lodge near Brandwacht. These lodges are between Alternative 1 & 2, approximately 2km from the corridor. These tourist attractions were identified, using a Google search and Google Earth geographical data. More may be identified during the fieldwork. Farmers residing in the area will also be affected due to the corridor passing close to their farmsteads or over their farms.

#### **4.7.3 Landscape type: Coastal Towns And Cities**

Alternative 3 will affect the town of Hartenbos as this corridor traverses the northern and western side of the town. The north western part of George is approximately 4km from the proposed Blanco Substation site. A couple of guest farms and tourist accommodation are situated in the outskirts of the Blanco Suburb and is considered in the Zone of Visual Influence (ZVI). This will be confirmed during the fieldwork of the EIA phase.

#### 4.7.3.1 Affected Receptors

The western and northern part of the town of Hartenbos will be directly affected due to the close proximity of Alternative 3. The town is expanding in this direction and the transmission line will impact on settlement patterns as well as impact on views towards the mountainous terrain to the north. Residents and motorists are the observers that will be most affected. The town of Hartenbos is also a popular tourist attraction during holiday seasons, adding tourists as a receptor group. The N2 highway is a prominent transport route that carries high volume traffic. Alternative 3 passes very close to the N2 and motorists may experience glimpses of the transmission line. This will be confirmed during the fieldwork of the EIA phase.

#### 4.7.3.2 Sensitivity Of Receptors

The residents in the study area are classified as visual receptors of high sensitivity owing to their sustained visual exposure to the proposed development as well as their attentive interest towards their living environment.

Tourists are also regarded as receptors of high sensitivity. Their main reason for visiting the area is to experience and enjoy the picturesque and pristine natural environment. They have high expectations in terms of the scenic quality. Motorists are often classified as viewers with a low sensitivity due to their momentary view and experience of a potential visual impact. As a motorist's speed increases, the sharpness of lateral vision declines and the motorist tends to focus on the line of travel.<sup>5</sup> This adds weight to the assumption that under normal conditions, motorists will show low levels of sensitivity as their attention is focused on the road and their exposure to roadside objects are brief.

#### 4.7.3.3 Distance from Source of Impact

Alternative 3 is within 1km from the N2 highway and traverses the western and northern parts of Hartenbos.

#### 4.7.4 Agriculture

All three alternative corridors will traverse this landscape type.

##### 4.7.4.1 Affected Receptors

The rural landscape is predominantly agriculturally orientated and consists of large grazing areas as well as cultivated fields. Due to the relatively high rainfall region, it is mostly green and the fields create interesting patterns in the landscape. The ever present Outeniqua Mountains provide a spectacular backdrop and views are enjoyed of the fields in the foreground, and the mountains in the background. The Wolwedans Dam twists and turns between the valleys of the Groot Brak River. It is particularly beautiful with a lookout point near its dam wall. The smaller Klipheuwel Dam appears to be less accessible by the public but is considered a landscape amenity. These landscape features have tourism and recreational value.

Small rural communities and farm residents are scattered across this landscape type. Roads are mostly dirt roads used by the local farmers.

sk

<sup>5</sup> USDOT, 1981

#### **4.7.4.2 Sensitivity Of Receptors**

The residents in the study area are classified as visual receptors of high sensitivity owing to their sustained visual exposure to the proposed development as well as their attentive interest towards their living environment.

#### **4.7.4.3 Distance From Source Of Impact**

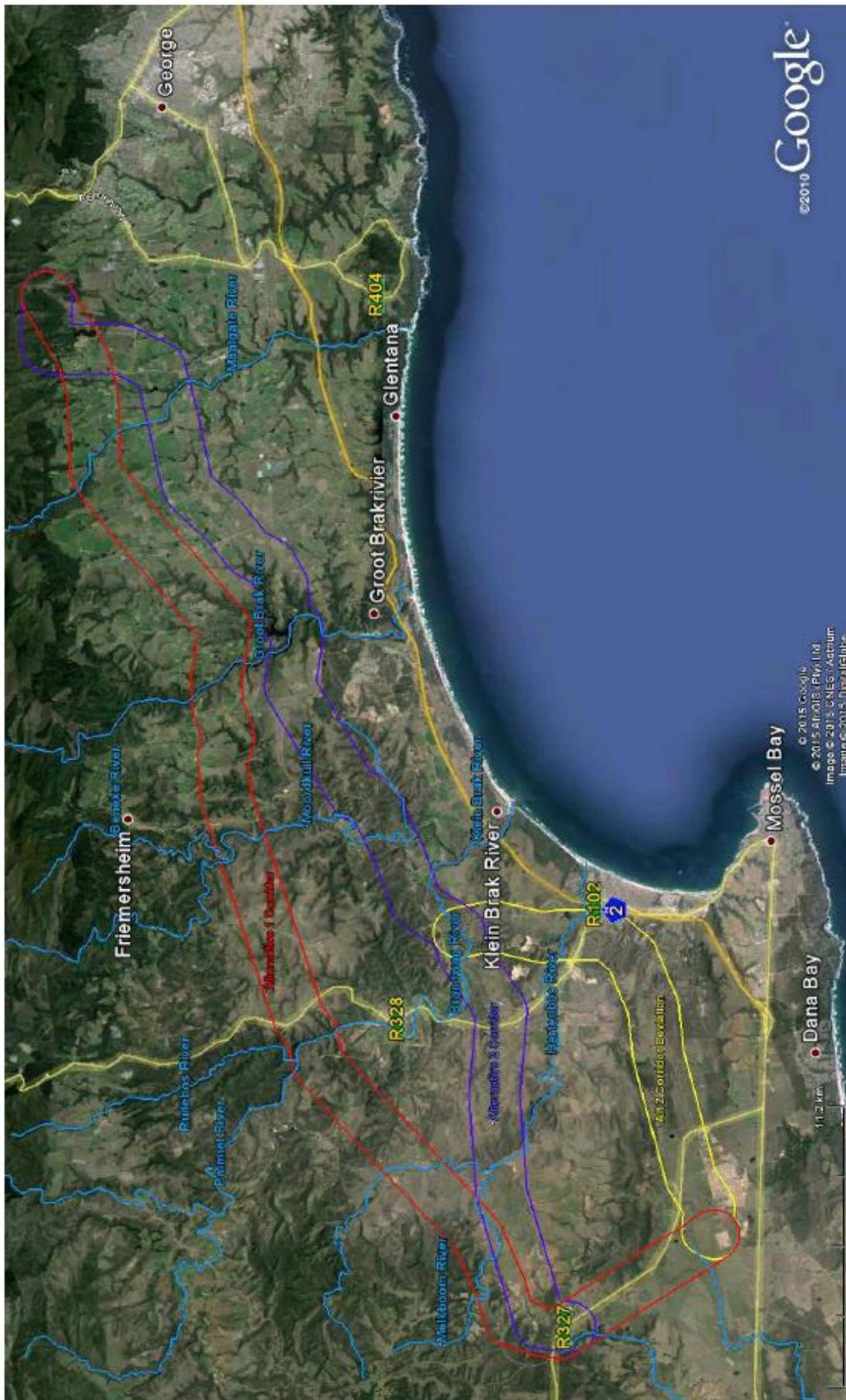
Alternative 2 crosses the Wolwedans Dam that is considered a valuable natural feature. Alternative 1 passes more to the north of the dam, crossing the inlet from the Groot Brak River. Tourism and recreational activities are believed to be practiced on and around the dam. Alternative 2 & 3 are in very close proximity to Klipheuwel Dam, passing just north of it. Numerous farmsteads and farming communities can be found along the corridors. They are within the 1km Zone of Maximum Visual Exposure.

### **4.8 Wetlands and Surface Water Bodies**

A freshwater assessment was done for the proposed Eskom Project between the Gourikwa and Blanco Substations. The study area largely lies within the southern coastal strip between Mossel Bay and George. The rivers within the study area are short rivers with a relatively steep gradient that are fed by numerous small tributaries. Numerous storage dams have been constructed within the rivers. Aquatic features which occur within the study area include the following:

- Lower Gouritz tributaries – Stink and Buffels Rivers;
- Some small coastal streams at Mossel Bay;
- Hartenbos River and its tributaries;
- Klein Brak and its tributaries;
- Groot Brak and its tributaries; and
- Maalgate River.

Wetland areas within the study area consist largely of valley bottom wetlands that are associated with the rivers and are of similar ecological condition and importance. The habitat integrity of the rivers range from being moderately modified (upper reaches of the larger rivers as well as the smaller streams) to being in the seriously modified ecological state (lower reaches of the larger river systems). The riparian habitat of these rivers tends to be more impacted by the direct impact of the surrounding land use activities which has resulted in removal of the natural indigenous vegetation and the subsequent growth of invasive alien plants. Within the instream habitat, water abstraction and flow modification have the most impact, particularly on the lower reaches.



**Figure 29.** Rivers in the study area

G-B Alternative 1	This alternative crosses many rivers, wetlands, and wetlands clusters identified by NFEPA. These areas provide habitats suitable for a variety of amphibian species and are vital to maintain ecosystem functioning. Of the three Gourikwa-Blanco alternatives, this one crosses the most perennial rivers due to its proximity to the escarpment. However, these rivers are likely to be fast flowing and less habitable for amphibian species than the lower reaches of the rivers, which would be crossed by the other alternative routes. Alternative 1 will also cross the most natural/pristine wetlands of the alternative routes.
G-B Alternative 2	Alternative 2 will transect more areas identified as wetland clusters than alternative 1. This route will also cross many perennial rivers. Generally, the wetlands classified outside of wetland clusters are in a less natural condition than the other 2 alternatives. However, this alternative has many habitats suitable for a variety of amphibian species.
G-B Alternative 3	This alternative crosses one NFEPA identified wetland clusters and one perennial river. Many of the wetlands in this area are considered degraded. It is more likely that this alternative can avoid pristine wetlands and perennial rivers than the other two alternatives.

The ecological importance and sensitivity of the rivers within the study area range from being of a moderate (smaller tributaries and streams) to very high ecological importance and sensitivity (larger estuarine systems). This is due to the fact that these relatively small coastal rivers are very sensitive to flow and water quality changes and contain habitats (such as Gouritz Valley Thicket, coastal riparian forests and link to the Hartenbos, Klein Brak and Groot Brak Estuaries) and biota (frog species and fresh and estuarine fish species including the Knysna or Cape seahorse *Hippocampus capensis*) that are unique to the area.

## 5. DESCRIPTION OF ISSUES AND POTENTIAL IMPACTS

### 5.1 Identification of Potential Impacts

An important element of the scoping process is to evaluate the issues that were raised during the Public Participation Process (PPP) and technical processes and ensure that those identified as key issues are included within the scope of the EIA process. In addition, scoping allows for the identification of the anticipated impacts, particularly those that will require detailed specialist investigations.

This section of the report aims to predict the potential impacts likely to occur from the undertaking of the proposed activities. The activities that are associated with the construction, maintenance and operation of the proposed power line and substations, which could potentially have an impact on the environment, are also highlighted in this section.

In addition, the Department of Environmental Affairs guide on assessing cumulative effects<sup>6</sup> describes that it is not practical to analyse the cumulative effects of an action on every environmental receptor. Therefore, for cumulative effects analysis to help the decision-maker and inform interested and affected parties, it must be limited to effects that can be evaluated meaningfully. This chapter will highlight potential impacts and issues that can be evaluated.

Existing Eskom access roads (for the distribution lines) are said to have already create erosion (e.g. animals walking along these tracks creating permanent unwanted paths). At this stage a limited impact on existing infrastructure and services are anticipated during the construction phase. Existing road crossings are limited and are expected to successfully respond to project management and mitigation measures. Care should further be taken to avoid placing towers within the water furrows made by property owners, and to take cognisance of farmer's planning where pivot points are concerned. **The property owners of the farms at Alternative 1 in the vicinity of George have indicated that the centre pivot irrigation system on their farms would be initiated or expanded.** The line alignment should thus take this in consideration and should avoid having any impact on such possible farming activities and infrastructure.

Maintenance activities would be undertaken only when required for the life of the line. It is not anticipated that this would have severe negative intrusions on the landowners, mainly due to the size of the affected properties (lines could be situated far away from homesteads and other dwellings) and the fact that stock farming activities such as grazing could continue underneath the proposed line and within the servitude. However, complaints were received during the PPP process (March-April 2015) regarding the maintenance of power lines. Issues include the following:

- The need for additional access routes which could result in erosion, intrusion, loss of land;
- Maintenance personnel leaving gates open;
- Maintenance personnel driving on private roads without obtaining permission first;
- Maintenance personnel driving through the veld;
- Littering during construction and maintenance;

sk

<sup>6</sup> DEAT (2004) *Cumulative Effects Assessment, Integrated Environmental Management, Information Series 7*, Department of Environmental Affairs and Tourism (DEAT), Pretoria.

- Maintenance personnel accessing properties without prior notification and
- Illegal capturing or poaching of game and other livestock and theft of plants.

The effects of misconduct such as those mentioned above could result in long-term secondary negative impacts with possible negative financial implications for farmers and damage to the environment. For the maintenance activities of the line, proper conduct and mitigation measures could address the possible negative impacts.

Operations at the substation are anticipated to be of a low input and are thus not expected to negatively impact on the daily living and movement patterns of the affected residents. Access to the substation already exists, thus it is anticipated that the existing status quo at the substation would continue.

### 5.1.1 Socio-Economic Impact

The impact of the construction of the transmission lines can be subdivided in two categories. One is the impact of the construction cost, purchasing of servitude and operational expenditure of the transmission lines on the surrounding local municipalities and secondly the impact on the broader economy by strengthening the power availability to a growing economy. No potential average construction cost or potential land value information was available at the time of this study and as such no potential impacts could be quantified.

According to Kevin Leask<sup>7</sup>, “The most economical way to build power transmission infrastructure is in a straight line from the source of the power to those who need it”. However, it is important to “...take account of social, environmental and heritage concerns”.<sup>8</sup>

According to Eskom (2014), it costs about **R2.8 million per km** for a 400 kV transmission line (depending on terrain, types of structures required, etc). As a result a transmission line of 178 km can cost about R498 million compared to a line of 270 km that will be about R756 million. Potential costs categories that are encountered during the construction phase (capital expenditure period) are:

- Civil engineering costs (including access roads);
- Earth works (site clearances, foundations, etc);
- Structures (cement foundations, steelworks, electric cables, substations, electrical equipment, etc);
- Line material (hardware, insulators, conductors, earth wire, etc);
- Transport of material and workers;
- Purchasing of servitude area.

Major upstream categories include:

- Manufacturing of structural steel for pylons and cables;
- Manufacturing of cement.

sk

<sup>7</sup> Eskom chief engineer for transmission planning

<sup>8</sup> CSIR, 2014



Figure 30. During construction of new infrastructure (Gyed V-pylons)<sup>9</sup>

The estimated cost of the proposed Droërivier-Narina-Gourikwa 400 kV Transmission Power Line is R 1 429 743 066<sup>10</sup>. This project for the section between Gourikwa and Blanco (Narina) substations forms approximately 20% of this budget (60km of the total 260km). Some of the capital equipment including steel structures, cables, hardware, insulators, etc. and cement for the foundations will be manufactured outside the study area in places like Gauteng, Western Cape and Coega and this will support economic activity and employment in those areas. Where possible, local suppliers will be invited to tender for the supply materials and plant.

It can be advised that Eskom gives preference to local procurement where possible to enhance the positive impact on the local area, although it needs to be taken into consideration that certain skill or certificate will be required in specialist areas and phases. It could also be considered to provide the necessary training in cases where applicable to share skills and experience with the local committee.

The local economy will also benefit through aspects like accommodation, retail, entertainment, etc. Money can also be injected into the pockets of the landowners by buying the servitude area for the transmission line. This will depend on which alternative transmission line option is used and on the land value per ha for the region. Table 2 shows average farm prices for a

sk

<sup>9</sup> Photo: Eskom Transmission Development Plan 2015-2024

<sup>10</sup> Eskom Transmission Development Plan 2015-2024

selection of properties in the George area. Prices vary vastly depending on factors like infrastructure (including houses, guesthouses, etc.), water and boreholes (and water rights), fencing, game, etc. Results show the average size for farms in the George area, given the selection of 16 farms for sale during the time the study was conducted, is 188 hectares and an average price per hectare is R287 698. However, there is a large difference between the minimum and maximum price per hectare.

**Table 2: Average farm prices for a selection of farm properties<sup>11</sup>**

	Average farm size, ha (> R5 million)	Average price per ha	Min price per ha	Max price per ha	Sample size
<b>George</b>	188	R287 689	R42 474	R857 143	16

All three alternatives cross agricultural land with grazing land, central pivot irrigation, fruit trees and planted dry lands. As is evident from Figure 10, a large percentage of agricultural activities can still continue unhindered, but there will be some economic losses. From aerial photos, it seems as if the crossing of prime agricultural land seems to be the least with Alternative 1. From an economic point of view, Alternative 1 is preferred given that this is the shortest option, with the least number of bends. It also seems to be the option that will have the least impact on prime agricultural land.

### 5.1.2 Impact on Land-Use

Typical agricultural activities undertaken in the study area refer to ostrich, sheep and goat (Angora, Boer Bok) farming, cattle farming, hunting, lucern production and crop production (vegetables & fruit e.g. strawberries). During the construction phase, the possibility of stock losses due to theft and/or poaching, increase in noise and the actual construction activities placing stress on the animals, would remain of concern. Livestock should thus be moved away from the construction activities and/or be fenced off. This could intrude on the implementation of the rotational grazing system used by farmers.

On various properties in the area, the farmers created stock watering dams. Due to the arable land, the farmers' are dependent on these systems, in addition to the groundwater for their subsistence, livestock and irrigation needs. It is important to avoid negatively impacting on the water berms with the tower footprints and/or servitude alignment. The maximum distance between towers for a 400 kV transmission line varies from 350 metres to 400 metres and it might thus be possible to span these berms.

In most instances, the land use will remain the same, therefore it is anticipated that the proposed power lines will not contribute to cumulative impacts, but this will be confirmed during the EIR phase.

## 5.2 Flora and vegetation ecology

sk

<sup>11</sup> Source: Selected farms from safarmtraders.co.za (May 2015)

All three alternative routes intersect vegetation types that are regarded as threatened on a national and regional level and vegetation types that contain threatened plant species. Alternative 3 intersects the most Critical Biodiversity Areas, for which the land use recommendation is not to disturb any remaining natural vegetation and to retain important ecological processes (Pence, 2014). I hence propose that Alternative 3 is rejected at this early stage, with only Alternatives 1 and 2 being subjected to more detailed field studies.

It is not possible to find a route between the two Eskom substations that need to be linked which will not intersect threatened vegetation types or Critical Biodiversity Areas. Alternatives 1 and 2 are reasonable options that should be investigated in further detail to determine the exact extent of their impact on extant natural vegetation and the occurrence of threatened plant species. The impact of the proposed approximately 100 m wide corridor development will mostly be;

1. High negative impact at a limited scale at the points where pylons will be located. Here the occurrence of threatened plant species should be considered.
2. High negative impact along new access routes that will have to be established to establish and service the power line. Here the occurrence of threatened plant species should also be considered.
3. Moderate negative impact along the entire route where it intersects flammable vegetation (mostly Renosterveld and Fynbos) as the vegetation will be slashed periodically to reduce fuel loads under the power line. Here the impact of disturbance of the proposed development on the remaining intact vegetation should be carefully considered.
4. Potential positive impacts of the proposed development are mostly limited to areas where alien vegetation will be cleared along the route.

A detailed field study may find mitigation actions that will limit the negative impacts of the proposed development along either alternative 1 or 2. Such a field study must establish;

- The true ecological condition of the vegetation along the two alternatives, especially within the mapped Critical Biodiversity Areas.
- The occurrence or potential occurrence of threatened plant species along the two alternatives.
- Sound mitigation actions to ensure that the establishment of the power line will have a minimal negative impact on sensitive vegetation and threatened plant populations.

### **5.2.1 Impacts on indigenous natural vegetation**

Potential impacts on vegetation ecology and flora may include:

- negative change in conservation status of habitat;
- increased vulnerability of remaining portions to future disturbance;
- general loss of habitat for sensitive species;
- loss in variation within sensitive habitats due to loss of portions of it;
- general reduction in biodiversity;
- increased fragmentation (depending on location of impact);
- disturbance to processes maintaining biodiversity and ecosystem goods and services; and
- loss of ecosystem goods and services.

A detailed field study may find mitigation actions that will limit the negative impacts of the proposed development along either alternative 1 or 2. Sections of Alternative 3 may render areas that will not be able to mitigate through mitigation, and Critical Biodiversity Areas in particular should be avoided. It is possible that during field investigations, areas are identified for this alternative that could be considered.

### **5.2.2 Establishment and spread of declared weeds and alien invader plants**

Exotic species are often more prominent near infrastructural disturbances than further away. Consequences of this may include:

- loss of indigenous vegetation;
- change in vegetation structure leading to change in various habitat characteristics;
- change in plant species composition;
- change in soil chemical properties;
- loss of sensitive habitats;
- loss or disturbance to individuals of rare, endangered, endemic and/or protected species;
- fragmentation of sensitive habitats;
- change in flammability of vegetation, depending on alien species;
- hydrological impacts due to increased transpiration and runoff; and
- impairment of wetland function.

A detailed field study may find mitigation actions that will limit the negative impacts related to invader plants.

### **5.2.3 Fragmentation of sensitive habitats**

Fragmentation may occur if vegetation is completely cleared below the power line, which does not appear to be the case in the study area where grasslands occur. It is therefore assumed that no clearing will take place and that localized fragmentation may only occur where access roads are required to be constructed.

Cumulative impacts are expected. The specialist studies to be conducted will propose mitigation measures.

### **5.2.4 Fauna and Avifauna**

#### **i. Fauna**

Relatively small, localised areas of fauna will be affected by the development, which will be restricted to the servitude of the power line and access to it. Of significance, are the sites situated closer to ecological habitats such as wetlands and surface water bodies. Impact on these ecologically sensitive areas can be minimised through the correct location of towers and access roads beyond their boundaries.

The status of endangered, vulnerable and scarce species on the study sites should be determined during the EIA phase of the project.

#### **ii. Avifauna**

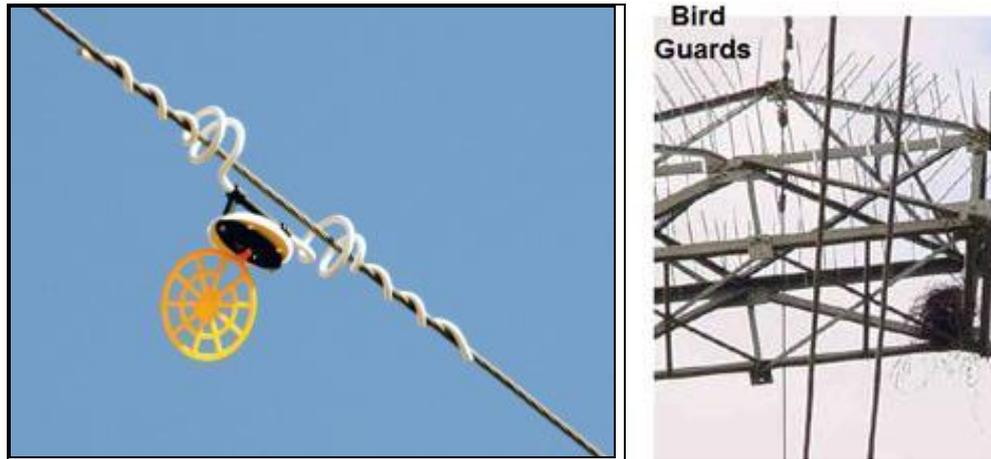
Impacts on birds pose probably the greatest threat for fauna and will also be associated with not just the construction, but also with the operation phase of the project. The impacts will include habitat destruction during access road construction and establishment of temporary camps. During such activities, normal bird behavioural patterns are disrupted. Electrocutions and collisions are amongst the biggest threat posed by overhead power lines in Southern Africa.

The most important avifaunal issue that was assessed during the EIA phase was to find an acceptable alignment that will be both technically feasible and environmentally least damaging. An alignment that avoids as much as possible of the remaining grassland and wetlands (if possible) would be the most acceptable. For this assessment, a walkover of all three alternatives for this project was done by the Avian specialist.

The Specialist Report has listed the following avian impacts associated with transmission power line:

- Collisions with associated power line infrastructure.
- Electrocutation on associated power line infrastructure.
- Nesting on associated power line infrastructure.
- Disturbance through construction and maintenance activities of new power line.
- Direct interaction in which the bird comes into physical contact with the power line infrastructure.
- Indirect interaction includes disturbance or habitat destruction as a direct result of construction and maintenance which could have a negative impact.
- The design of the transmission line and associated pylons also has a bearing on the risks to certain avian species. The earthing conductors are one of the biggest risks as it is thinner than the transmission conductors and therefore not as visible to birds in flight. Bird excreta on the infrastructure can also have a negative impact on the transmission lines causing possible power interruptions.
- Electrocutation of birds on pylons will depend on the particular design of the pylon to be utilized for the project, the risks to the birds is determined by the phase to phase and phase to earth clearances.
- Nesting and roosting of birds on pylon structures can have a positive impact on avifauna, but it could also have a negative affect by causing electrical faults due to added weight, shorts due to excreta and possible fire risks from nesting material.
- Avian species that are most consistently affected by overhead transmission lines are water birds that congregate at wetlands and commute between them in flocks, examples being large and / or fast flying species examples such as ducks, geese, flamingos, storks, herons and waders, which have a high collision rate. Game birds and rails have less exposure but are still highly susceptible. Canes, storks, bustards/korhaans which are large heavy bodied, flocking and low flying are also highly susceptible to collisions with overhead transmission power lines.

Recommendations have been made in the Avian Specialist Report regarding mitigation of impacts.



**Figure 31. Bird flappers and bird guards proposed as mitigation measures**

### **5.3 Wetlands and Surface Water Bodies**

Construction may lead to some direct or indirect loss of or damage to seasonal wetlands or drainage lines. This will lead to localised loss of wetland habitat and may lead to downstream impacts that affect a greater extent of wetlands or impact on wetland function. Where these habitats are already stressed due to degradation and transformation, the loss may lead to increased vulnerability (susceptibility to future damage) of the habitat. Physical alteration to wetlands can have an impact on the functioning of those wetlands. Consequences may include:

- Increased loss of soil;
- Loss of or disturbance to indigenous wetland vegetation;
- Loss of sensitive wetland habitats;
- Loss or disturbance to individuals of rare, endangered, endemic and/or protected species that occur in wetlands;
- Fragmentation of sensitive habitats;
- Impairment of wetland function;
- Change in channel morphology in downstream wetlands, potentially leading to further loss of wetland vegetation;
- Change in runoff and drainage patterns; and
- Reduction in water quality in wetlands downstream of road.

The specialist study that was conducted by Blue Science (June 2015) stated that it is often the access roads associated with the transmission lines that are likely to have a greater impact on the freshwater features than the power lines themselves as the lines can usually span the freshwater features such that the pylons can be constructed outside of the rivers and wetland areas as well as their recommended buffer areas, whereas the roads need to be constructed through the freshwater features. It is thus often best if the new power lines are placed adjacent to existing lines or roads where new roads do not need to be constructed as part of the project.

With the potential impacts of the proposed activities, it is often the access roads associated with the transmission lines that are likely to have a greater impact on the freshwater features than the power lines themselves as the lines can usually span the freshwater features such

that the pylons can be constructed outside of the rivers and wetland areas as well as their recommended buffer areas, whereas the roads need to be constructed through the freshwater features. It is thus often best if the new power lines are placed adjacent to existing lines or roads where new roads do not need to be constructed as part of the project.

In terms of the selection of the route selection for the transmission lines, it is recommended that a buffer of 50m from the top of the river banks and/or approximately 100m from the edge of the wetland areas be allowed for as a development setback for the construction of the pylons. This recommended buffer would also apply to the proposed new Blanco Substation. Although the upper reaches of the rivers in the study are in general in a less modified ecological state, the alternative corridor with the least potential impact on the freshwater features in the area is likely to be the Alternative 1 as it would be more likely to be able to span the river valleys with little to no impact on the rivers and associated wetlands at the valley bottoms, while the southern corridors (Alternative 2 and Alternative 3) will need to cross the wide floodplains of the rivers. The alignment of the route within the corridor could also be determined to minimise the potential impact on the freshwater features within the study area.

A water use authorization will need to be obtained from the Department of Water and Sanitation: Western Cape Regional Office for approval of the water use aspects of the proposed activities where lines cross water courses and where pylons are to be placed within the 32m buffer area of wetlands and rivers. A detailed field study may find mitigation actions that will limit the negative impacts of the proposed development alternatives.

## **5.4 Heritage Impact**

Based on this desktop review of archaeological sites in the general area of the proposed powerline we may anticipate that ESA and MSA material will be found thinly scattered across the landscape. They are generally of low significance and no mitigation will be required. LSA sites are more likely to occur along the coast. There are no anticipated fatal flaws with regard the construction of the powerline. The Heritage desktop review has concluded that there are no archaeological reasons to exclude the use of any of the proposed powerline alternatives.

### **5.4.1 Impact on Pre-Colonial Archaeology**

Since heritage sites, such as archaeological sites, are non-renewable, it is important that they are identified and their significance assessed prior to development. The main cause of impacts to archaeological sites is direct, physical disturbance of the material itself and its context. The significance of an archaeological site is highly dependent on its geological and spatial context. This means that even though, for example a deep excavation may expose buried archaeological sites and artefacts, the artefacts are relatively meaningless once removed from the area in which they were found. The impacts are likely to be most severe during the construction period although indirect impacts may occur during the operational phase of the project. It is possible that the pylon footings may impact directly on surface and below-surface archaeological remains. However, previous surveys, inland of the coast, have not identified any significant archaeological remains. A targeted survey at the walk-down phase can address these issues.

### **5.4.2 Impact on Colonial Period**

The construction of pylons in close proximity to farmsteads may result in the destruction of historic rubbish dumps (middens), old kraals or the ruins of old dwellings. For this reason, a

targeted walk-down of the line will be required after the final powerline route has been decided.

### **5.4.3 Impacts to Graves**

The pylons may be constructed on/or in close proximity to farm graveyards. A survey during the walk-down phase can address these issues.

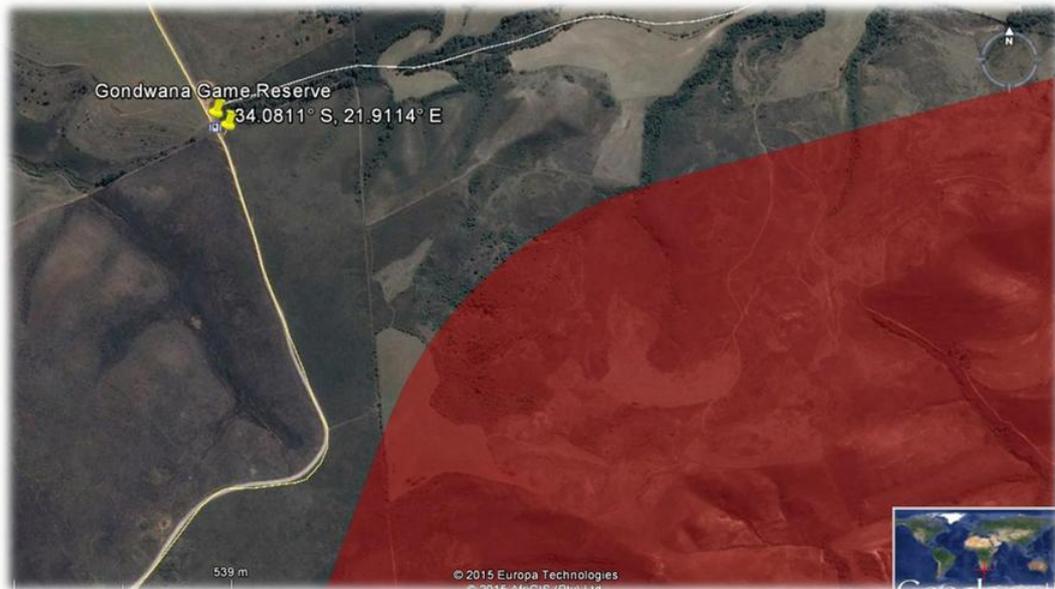
Human remains are the most complicated aspects of heritage to mitigate since they require their own public participation process (See Section 36 of the NHRA) before they can be exhumed. Human remains are protected by a plethora of legislation including the Human Tissues Act (Act No 65 of 1983), the Exhumation Ordinance of 1980 and the National Heritage Resources Act (Act No 25 of 1999). In the event of human bones being found on site, HWC must be informed immediately and the remains removed by an archaeologist under an emergency permit. This process will incur some expense as removal of human remains is at the cost of the developer. Time delays may result while application is made to the authorities and an archaeologist is appointed to do the work.

## **5.5 Visual and landscape Impact**

Visual and aesthetic impacts will result from the construction activities of excavation, erection of towers and transporting of materials. In most areas the construction activities will however be of short duration.

The pristine character of the visual resource will be affected due to the introduction of new anthropogenic elements in an otherwise natural environment. Farmers within 1km of the servitude will experience maximum visual exposure. It is possible to detect the power line over larger areas up to 5km. All farmers in this zone may experience an impact on their views to the mountains. Tourists travelling along the N9 may experience glimpses of the transmission line. (to be confirmed). Hikers hiking through the Outeniqua Mountains may have very clear views of the transmission line when viewed from the crest of the mountains. Hiking trails will be assessed during EIA phase.

The foothills of the Outeniqua Mountains are mostly conserved and protected by privately owned game farms and reserves. Large areas consist of natural vegetation and pristine landscapes. The pristine character of the visual resource will be affected due to the introduction of new anthropogenic elements in an otherwise natural environment. Unique landscape features that will be affected are Hartebeeskuil Dam, Klipheuwel Dam, Brandwacht and Groot Brak Rivers as well as all the smaller ravines and hillcrests. Tourists visiting the game farms such as Botlierskop-, Gondwana Private Game Reserve, Nyaru-, Cheetah Lodge etc, will experience an intrusion on their views. Tourists travelling along the main transport routes such as the R327 and R328 may experience glimpses of the transmission line (to be confirmed)



**Figure 32.** Location of the Gondwana Game Reserve in relation to Alt 1 (borders not shown)

The towns closest to Alternative 3 have transformed the landscape to create a new landscape character that can generally be classified as a coastal town character. Hartenbos is the town that may experience the greatest impact with the implementation of Alternative 3. It will impact on the town's expansion and settlement patterns as it has to maintain a servitude where no development can occur. Residents from the town of Hartenbos will experience the greatest impact due to the proximity of the servitude to their houses. Also during the holiday season large numbers of tourists visit the area and will also be affected due to the presence of the transmission line. Their views of the mountain ranges to the north will be affected. Motorists travelling on the N2 highway will experience a brief exposure to the transmission line.

The rural landscape character is normally sparsely developed and characterised by open fields, bordered by low wire fences or tree avenues leading up to farmsteads or farming communities. The introduction of a 400kV transmission line will contrast with the existing character. Unique landscape features that will be affected are Wolwedans Dam, Groot Brak River and Maalgat River as well as all the smaller ravines and hillcrests. Tourists visiting guest farms and guest houses, especially those on the western outskirts of George will see the lines.

During construction it is expected that most of the impacts will revolve around the damaging of vegetation around the tower footprint. Foundation excavation will expose the underlying soil and will impact on the natural features of the landscape. The presence of a workforce in the servitude will place emphasis on the construction activity and will attract a higher degree of attention.

The construction of towers is considered low intensity construction as the damage to the vegetation is considered localised and easily rehabilitated. One aspect that can cause significant impacts on both the landscape and the visual receptors is the clearing of vegetation in the servitude. This often results in a very distinct linear corridor that is highly visible. This action removes vegetation that often contributes to the quality of the natural landscape. The significance of vegetation clearance will be a function of how long the section of clearance is, how visible it is from sensitive viewpoints and to what degree it will impact on the character of the landscape.

The operational phase will be marked by the commissioning of the power line. The rhythmic spacing of towers/poles across the landscape may cause visual intrusion due to its unfamiliar character, imposing scale and possible servitude clearance that will emphasise the corridor.

Cumulative visual impact from numerous power lines in parallel will also increase its visual dominance in the landscape and may reach a threshold point. The landscape and visual receptors in the study area is considered to be generally highly sensitive. This will be narrowed down during a site investigation to identify the areas of highest to lowest sensitivity.

## **5.6 Tourism and Economic Impact Assessment**

The impact of the proposed transmission lines on the tourism industry will be limited, apart from the visual impact in the context of the “sense of place”. The George municipal area is part of the Garden Route with scenic mountains, farms, forests and valleys. Tourists also visit the Groot and Klein Karoo area to experience the “wide open horizons” and “rural lifestyle” without the visual interference of transmission lines. Results from the visual impact study can be used to limit the impacts of the transmission lines. One of the ways can be to let the major section of the transmission lines run parallel to N12 (Alternative 1). This is also the shortest route.

The impact of the construction of the transmission lines on the economy includes the impact of the construction cost, the operational expenditure and the impact on the broader economy (by allowing the power to be delivered to the existing grid). Capital expenditure data could not be obtained from Eskom to quantify any impacts, but a number of expenditure categories are discussed. A number of components will have to be imported from other provinces into this region, like steel structures, cables, hardware, insulators and cement. This will generate economic activity and employment opportunities in those provinces. A local procurement policy can also be considered by Eskom (where possible and if not already standard practice) on activities like site clearance, road building and assembling to maximize the economic and job creation impact on the local municipalities.

The transmission lines will have some, although a limited impact on the agricultural activity, given the grazing capacity and that grazing can continue under the transmission lines. The operational expenditure will have limited opportunity for employment creation. From an economic point of view, with cost savings in mind, the shortest route, i.e. Alternative 1 can be recommended.

## **5.7 Social Impact Assessment**

The energy infrastructure project can deliver many benefits in the long term for communities in the Western Cape. Potential negative impacts are also anticipated in the short, which can be reduced or avoided with management measures.

It is anticipated that the project has the potential to realise the following positive social impacts:

Improved quality of life, through

- Creation of jobs ;
- Increased procurement opportunities;
- Increased reliability of energy services; and
- Improved community health from the introduction and maintenance of safer sources of energy

The project can possibly also introduce negative social impacts, including:

- Loss of assets and disruption in people's lives because of physical displacement, which can arise if residences are located in the same path as the power infrastructure.
- Loss of livelihood from economic displacement, which can arise when:
- Agricultural or other commercial activities are disrupted in the short or long term;
- Tourist or holiday facilities become less appealing because of visual intrusion from the power infrastructure;
- Loss of economic value of properties such as private residential estates because of visual intrusion.
- Increased community health risks from possible increased exposure to HIV/AIDS; and
- Increased community safety risks from increased direct exposure to electrical hazards, if there is tampering with power infrastructure.
- There is also a perception that the electromagnetic fields from power lines will have a negative impact on health of children. The potential of this impact will also be discussed.

### 5.7.1 Potential Construction Phase Impacts

The anticipated impacts associated with the construction phase of the project are of a short duration, temporary in nature, but could have long term effects on the surrounding environment. The following impacts are anticipated during the construction of the proposed transmission line:

#### 5.7.1.1 Impact on job opportunities

Power line construction does not create large scale job opportunities. Limited opportunities for local labour are expected as the majority of the construction activities would be undertaken by specialist contractors, which are invariably from the larger population centres.. The short term benefits in this regard are thus deemed to be of a low significance.

#### 5.7.1.2 Influx of Workers

An influx of workers from outside the study area could negatively impact on the daily living and quality of life of the property owners whose properties are affected by the transmission line alignment. This would mostly only materialise during the intermittent periods when the construction activities are taking place on those properties.

#### 5.7.1.3 Influx of Jobseekers

An influx of jobseekers is possible, although the rural, remote and sparsely populated study area makes the gathering of large numbers of jobseekers at the construction areas unlikely.

#### 5.7.1.4 Construction camp impacts

Projects of this nature sometimes involve the development of a construction camp(s) where the temporary construction workers are accommodated. This in itself could impact on the daily living and movement patterns of those living in close proximity to such a facility. Cumulative impacts include misbehaviour of construction workers at the construction camp and mismanagement which could result in safety and security concerns, social conflict and environmental problems. The exact location of a construction camp would determine the intensity of the impact.

#### 5.7.1.5 Impacts on daily living and movement patterns

Construction related activities could impact on the daily living and movement patterns of the locals e.g. increased construction vehicle activity on the local roads and possible construction of new access roads. This would especially be evident in the agricultural areas where numerous gravel roads connect to tarred roads. Where construction work has to be undertaken on private properties it could also have a negative impact on those owners' daily living and movement patterns.

Impacts on daily living and movement patterns also refer to the increased noise pollution during construction activities, especially where construction would take place in close proximity to dwellings situated in low ambient noise areas (agricultural land). Right-of-way clearing and construction activities, however, will be short term. Noise will thus only be temporary generated and if construction activities adhere to all relevant legislation in this regard and limit construction activities to normal working hours, the impact is anticipated to be minimal.

#### 5.7.1.6 Disturbance of infrastructure and services

The proposed routes intersect or are not in close proximity to existing infrastructure services such as telecommunication and railway lines. Road crossings are limited. Many rain harvesting features such as berms are evident in the area and great care should be taken to avoid placing towers or construction roads within these structures

#### 5.7.1.7 Impact on Land use

The proposed alternatives traverse agricultural land. Commercial small stock farming is the predominant land use and it is expected that the impact will be limited and small stock farming could continue undisturbed.

#### 5.7.1.8 Health related impacts

Health related impacts during the construction phase of the proposed project refer to the spread of sexually transmitted diseases such as HIV/AIDS between workers (usually outsiders) and the local population. The impact of HIV/AIDS on productivity in the study area is already a source of concern. Specific concerns relate to possible promiscuous activities at construction camps if these are located in close proximity to existing settlements and towns.

#### 5.7.1.9 Safety and Security Impacts

Safety and security impacts include construction related risks and accidents, uncontrolled vehicular access, the perceived increase in crime as a result of outsiders being in the area. Whether real or perceived, these risks would need to be assessed.

### 5.7.2 Potential Operational Phase Impacts

The operational phase of power lines is a long term process. The impacts usually associated with this phase are therefore perceived by affected parties to be more severe, although not necessarily the case as transmission power lines could be referred to as a "dormant operation". Maintenance undertaken during the operational phase is however also expected to have some short-term impacts.

The following impacts are anticipated to occur during the operational stages of the proposed project:

#### 5.7.2.1 Impact on Job Opportunities

It could be expected that existing Eskom Employees will be responsible for the maintenance of the line and servitude, although some temporary maintenance work could be undertaken by locals, such as repairing damaged roads or fences. The management of the substation and wind farm would be also be managed by Eskom, potentially not resulting in additional Employment opportunities.

#### 5.7.2.2 Impacts on daily living and movement patterns

Maintenance activities would be undertaken only when required. The impacts on the daily living and movement patterns of affected residents are thus expected to be limited.

#### 5.7.2.3 Impact on regional and local economy

It is not anticipated that the proposed project would have a significant long term bearing on the affected Local Municipalities, the local communities and/or on the local economy. The electricity generated by the proposed wind farm will feed into the National Electricity grid, managed by Eskom Transmission. The local electricity distribution is managed by Eskom Distribution and the status quo of local electricity service delivery might not change.

#### 5.7.2.4 Property values

Potential devaluation of properties would depend on the exact location of the line on each property, the land-use, visual impact and possible negative impact on the overall sense of place

### 5.7.3 Social issues raised

The public participation process for the project has commenced in April 2015 and public meetings were subsequently held in August 2015. Inputs received from Interested and Affected Parties (I&APs) during the public participation process thus far included comments and concerns about potential social impacts.

**Table 3: Comments and concerns received**

Change in social aspect	Nature of impact
Visual	<ul style="list-style-type: none"> <li>• Visual changes will result in changes in the character of properties. This will have a negative economic impact. Property values and prices will drop. There will be reduced interest in tourism as the nature of the landscape will be affected from a reduction in the quality of the landscape for photography, birding and nature hikes. The planned line will also pass in front of some holiday homes, disrupting the view, and possibly leading to a reduction in property value.</li> <li>• Properties potentially affected: Gondwanda Game Reserve, an equestrian estate outside of Mossel Bay town, an eco-estate in George that has an eco-wilderness camp planned for the area through which the line will pass, Monte Christo eco estate in Mossel Bay, holiday homes and caravan parks</li> <li>• Two Eskom High Voltage power lines pass through the properties, Klipheuwel 143/3 and Rheebofsfontein 140/2. A</li> </ul>

Change in social aspect	Nature of impact
	third power line across the properties would seriously impact upon the property value for recreational and game purposes. One Eskom high voltage power line currently passes through an inland property, Hartebeeskraal 122/8.
Farming activities disturbed	<ul style="list-style-type: none"> <li>• Farming activities will be disturbed. Irrigation farmers are specifically worried about areas under centre pivot irrigation, with many channels, roads and irrigation lines that may be disrupted and cease to function.</li> <li>• The route closest to the sea crosses the Little Brak estuary and is also close to intensive agricultural land</li> </ul>
Development Plans disturbed	<ul style="list-style-type: none"> <li>• Future development planning for, for example, housing estates, roads, helicopter pads, holiday resorts, industries, wind and solar plants planned for the area housing estate will have to be modified</li> </ul>
If No to Eskom project	<ul style="list-style-type: none"> <li>• What are the social impacts if the line is not constructed</li> </ul>
Poor project management for construction, environmental management and compensation	<ul style="list-style-type: none"> <li>• Employees were poorly skilled and management was poor in previous Eskom projects. Eskom has no record of environmental management. No attempt was made to rehabilitate or reimburse owners for damage suffered. We can only hope that the project is given to a suitably qualified and competent private enterprise firm to construct</li> </ul>
Security	<ul style="list-style-type: none"> <li>• Eskom does not remove vegetation from its servitudes. This presents unsightly areas where illegal squatters tend to live, posing a security risk to residents.</li> </ul>
Lifespan of existing power generation plant in Mossel Bay	<ul style="list-style-type: none"> <li>• The gas field is at its end and Petro SA is retrenching staff. How is Eskom going to drive those turbines?</li> </ul>
Noise	<ul style="list-style-type: none"> <li>• Existing power line are noisy</li> </ul>
Radiation	<ul style="list-style-type: none"> <li>• Radiation from lines is a concern.</li> </ul>



**Figure 33.** Two of the farms and guest houses located in the Alternative 1 corridor

## **5.8 Agriculture**

The construction of a transmission line has only isolated impacts on the soil resource, due to the relatively small, separated footprints of the pylons. However, if an access road is constructed, especially in steeper areas or where erodible soils occur, the possibility of accelerated soil erosion is a reality.

Specific soil conservation measures, such as contouring, culverts and diversion channels would need to be considered in susceptible areas. In addition, regular monitoring of such roads would need to be carried out.

Regarding cultivation and agricultural potential, the main susceptible areas would be areas of irrigation, such as where the transmission line crosses rivers. Here, care should be taken to avoid any areas where irrigation is currently being practiced.

During the Public Participation Process, it came to light that many farmers are concerned about the impact of the project on their existing and planned pivot point irrigation systems.

## **5.9 Roads and Traffic**

An increase in traffic can be expected during the construction phase. The movement of machinery and vehicles will constitute an additional source of noise to the study area. However, this will be limited to the period of construction and mitigation can involve the use of equipment fitted with noise abatement technology (where possible) and the restriction of construction to certain days and times.

## 6. PUBLIC PARTICIPATION

The Public Participation Process (PPP) was conducted in accordance with **Chapter 6 of the Environmental Impact Assessment Regulations, Published in Government Notice R982 (2014)**. In addition the PPP was guided by the Integrated Environment Management Guidelines Series 7, Public Participation in the EIA process, published in Government Gazette no. 33308, 18 June 2010. See Appendix 4.1 for Public Participation Report.

### 6.1 Purpose of Public Participation

The engagement of Interested and Affected Parties (I&AP's) and the Stakeholder Engagement Process is an important part of any environmental Impact assessment. The main objectives of the Stakeholder Engagement / Public Participation Process includes amongst others:

- Informing the adjacent landowners, tenants, residents' associations, ward councillors, the local municipality and other organs of state of the proposed project;
- Establishing lines of communication between the stakeholders, I&AP's and the project team;
- Providing all parties with an opportunity to exchange information and to express their views and concerns regarding the proposed project;
- Obtaining comments/input from stakeholders and I&AP's, and ensuring that all views, issues, concerns and queries raised are fully documented; and
- Identifying all the significant issues associated with the proposed project

### 6.2 Steps taken to notify I&AP's

#### 6.2.1.1 Stakeholder and land owner Identification

Potential or registered interested and affected parties, including the competent authority, may be provided with an opportunity to comment on reports and plans contemplated in subregulation (1) prior to submission of an application but must be provided an opportunity to comment on such reports once an application has been submitted to the competent authority.

Comments of interested and affected parties to be recorded in reports and plans

44. (1) The applicant must ensure that the comments of interested and affected parties are recorded in reports and plans and that such written comments, including responses to such comments and records of meetings, are attached to the reports and plans that are submitted to the competent authority in terms of these Regulations.

(8) Any public participation process must be conducted for a period of at least 30 days.

Stakeholder and land owner identification will provide a basic understanding of the social context in which the public participation process will be undertaken in the project. The following methods have been used for Stakeholder and land owner identification:

- Winded searches to identify landowners;
- Consultation with Provincial, District and Local Authorities; and
- Consultation with farmers Association;

#### 6.2.1.2 Project Announcement

Access to all information that could influence interested and affected parties has been initiated by the project announcement, which included the placement of site notices and distribution of Background Information Documents (BID's) in the area between Mossel Bay and George has commenced during March and April 2015. The public participation process (PPP) part in the EIA was announced in March 2015 and was done as described below.

- **Distribution of flyers**  
Flyers were distributed to I&APs accompanied by a Background Information document (BID). A registration form with map was distributed. (Knock and drop) from March 2015 to end May 2015.
- **Newspaper advertisement**  
Newspaper advertisement was placed in *Die Courier* (Western Cape) on 2 April 2015 & Sunday Times (National) on 29 March 2015 requesting Interested and Affected Parties (I&APs) to register, and submit their comments.
- **Newspaper articles**  
Newspaper articles were encouraged and numerous reporters were approached and supplied with information on the project. This resulted in the publication of numerous news articles published, broadening the reach of the public notification process.
- **Site Notices and Flyers**  
Site notices were displayed within the boundaries of the study area from 5 March 2015.
- **Background Information Documents**  
A Background Information Document was produced and distributed during Scoping phase, which included:
  - A “knock and drop” exercise during visits to farms and towns between George and Mossel Bay;
  - Open Day meetings;
  - Information Sharing Sessions with Councillors and officials; and
  - Requests for information after advertisements and articles have appeared in the press.
- **Open Days**  
Open Days which serve as information sessions to introduce the proposed project to the public and to discuss the project aim will be held during the review period of this Draft Scoping Report, and details will be included in the Final Scoping Report.

At the end of the announcement phase, all comments/input from stakeholders and I&AP's, were captured in the Issues and Response Report (IRR) which forms part of this Final Scoping Report.

NB: During the EIA Phase, further focus group meetings were undertaken in the week of the 19-22 September 2016 to discuss progress on the project. However the minutes of the EIA meeting will only be include in the EIA report and not in this scoping report.

### **6.3 I&AP Register**

An I&AP's register was opened and maintained in terms of Regulation 42 and contains the names, contact details and addresses of:

- (a) all persons who, as a consequence of the public participation process conducted in respect of that application, have submitted written comments or attended meetings with the proponent, applicant or EAP;
- (b) all persons who have requested the proponent or applicant, in writing, for their names to be placed on the register; and
- (c) all organs of state which have jurisdiction in respect of the activity to which the application relates.

#### **6.3.1 Registered I&AP entitled to comment on reports and plans**

In terms of regulation 43 and 44 I&AP are entitled to comment on reports and plans and the comments must be recorded in the report. Any responses that have been received during the registration period for I&APs, have also been included in this Final Scoping Report. Issues that were raised up to the drafting of the Draft Scoping Report have been included and new/ other issues and registrations that were received during the review period were added to this Final Scoping Report.

### **6.4 Review of the Draft Environmental Scoping Report**

The EIA process for the proposed construction of the Gourikwa to Blanco 400kV Power line and Substation commenced in early 2015 with the reference number: 14/12/16/3/3/2/921. This application has however lapsed in accordance with Regulation 23 (1) of the EIA Regulations, 2014 and a new EIA process is currently being initiated. This new process entails (1) the resubmission of a new application to DEA and the project will be assigned a new reference number, (2) the release of a Draft Scoping Report (DSR) to be followed by a Draft Environmental Impact Assessment (DEIA) Report for public review and thereafter (3) submission the final reports to DEA for decision-making.

It must be noted that the contents of both the Draft Scoping and the Draft EIA report will not change as the scope of the project and the environment still remains the same. Please advise if your comments have remained the same or if you have additional or new comments.

The new Draft Scoping Report will be made available to all registered I&AP's and Organs of State for review, for a period of 30 days at the following public locations:

- \* The Envirolution website at [www.envirolution.co.za](http://www.envirolution.co.za)
- \* Dropbox link sent to registered I&APs
- \* George Public Library and Mossel Bay Public Library

After the commenting period of 30 days for I&AP's, Envirolution (Pty) Ltd will consider the comments received, and complete the final SR. In terms of regulation 43 and 44 I&AP are entitled to comment on reports and plans and the comments must be recorded in the report. NB: As the new process for the project progresses the PPP report will be updated accordingly and Envirolution will submit the final SR together with any previous comments received in the initial scoping process to the Department of Environmental Affairs.

## **6.5 Authority Review of SR**

Copies of the Draft Scoping report will be sent to:

- Department of Environmental Affairs
- Western Cape Department of Environmental Affairs and Development Planning, George;
- District and Local Municipalities
- Department of Water and Sanitation (DWS)

The Draft Scoping Report will also be made available to other Stakeholders on the Envirolution website at [www.envirolution.co.za](http://www.envirolution.co.za) and/or Dropbox.

## **6.6 Summary of Issues Raised by I&AP's**

Issues and concerns raised by I&AP's have been integrated into the Issues and Responses Report. The issues and concerns were raised by means of:

- issues raised during open day meeting and focus group meetings;
- written submissions in response to advertisements
- telephonic communications with I&AP's;
- issues raised through written correspondence received from I&AP's (fax, email and mail).

The issues raised during the initial Scoping Phase of the project are presented in the PPP report (appendix 4.1). The list below provides a summary of the main issues that were raised.

1. Impact of the project on property prices (holiday homes). The power line will degrade the aesthetic appeal of farms and other properties in terms of beauty and market value.
2. Health risks and impact on radio and tv reception.
3. Concerned about the lifespan of the generation plant as it has "passed its original planned engineering lifespan". The plant is corroding and Petro SA is starting to lay off staff as the gas field have been depleted. Where is the generation plant going to get diesel to drive the turbines?
4. Can the line not go through the industrial area where it does not have a negative visual impact. Can the line go in the forestry area near the slope of the mountain that has not been used?
5. Development is planned in Aalwyndal and Hartenbos hills, Sunshine Valley. Opposition to the route next to Monte Cristo Estate.
6. The Moss Airfield and training centre, requires low level training for helicopters. Impact on Transnet properties.
7. Transnet Railway Reserve is crossed at various sectors, and Transnet Freight Rail Infra, Bellville, should be contacted when finalising the route.
8. Impact on Blue Cranes, Cori Bustards, Owls etc. The line markers have dropped off and are inefficient on existing lines. New permanent markers should be used.
9. Losses in agricultural land and use of farming equipment will also be restricted near power lines. Use of pivot points will be restricted. New Macadamia plantation planned.

10. Swampy areas and valleys should be avoided.
11. Concerns about effect on ecotourism. Klaarstroom Conservancy, game drives, quad rides Hiking, Bicycle rides and bird watching
12. Maintenance and rehabilitation not being done properly.
13. An SMS was sent to I&APs on Wednesday, 22 July 2015 & sent again day before public meeting
14. Wedding Venues and Guest Houses may lose attraction if lines run across the facility grounds. The line will have a financial impact on the international visitors to game lodges as they are attracted there primarily for its unspoilt butty and photographic potential. (photographic tourism venue). Safety aspect during construction was a concern as well, especially during holidays when they do school children holiday programs.
15. There are already two power lines (132kv and 400kv?) across four farming camps.
16. Alternatives 2 and 3 are located on level ground above flood lines and are the only area where workers' housing can be constructed. Existing buildings will be impacted upon.
17. Why does Eskom need these power lines? This project will, once again, contribute to the "industrialisation" of the Mossel Bay. The cumulative effect of Eskom's projects devalued the visual and ecological status of large areas to the West and Northwest of Mossel Bay. As the sustainable development future of Mossel Bay is undoubtedly based on domestic and international tourism the on-going development of electricity supply infrastructure in the area is not acceptable. Whilst these projects clash with the sustainable development priorities of Mossel Bay they provide no benefits to the area. Where is the electricity going to come from? Does this project imply that more power stations and gas import projects will be required in the Mossel Bay area?
18. On the properties Klipheuwel 143/3 and Rheebofsfontein 140/2, Eskom High Voltage powerlines already exist and another one is located on inland properties, Hartebeeskraal 122//8, A third powerline across the aforementioned properties would seriously impact upon their value for recreational and game purposes.
19. Past experience with the last Eskom line was that Eskom caused massive and irreparable damage to natural vegetation , damaged our private internal roads and took approximately 4 years to complete the section of line . This route closest to the sea crosses the Little Brak estuary and is also close to intensive agricultural land. These areas support a large population of large birds such as blue cranes and flamingos which are both very susceptible to death from powerlines . Along the route are also extremely rare populations of plants such as *Haworthia Kingania*. Eskom activities will destroy this last remaining population of a very rare plant.
20. Project construction must be given to a suitably qualified and competent private enterprise firm to construct to ensure minimum damage to properties.
21. Eskom to negotiate a location where no irrigation takes place or on land which is not suitable for irrigation purposes. Avoid placing power line across existing irrigation.
22. Plan tower positions. River crossings, maintenance roads, new bridges or existing, water

use licences etc, ecosystem analysis, How much water will be needed for construction and which sources will it be derived from

- 23.** When McCain Foods closed down in George almost 2 years ago, local people lost their only source of income as the farmers didn't have a market for their products and most of them are now dairy farmers. Farmers have procured new markets but it would be absolutely devastating if farmers have to close down business.  
Mining of sand, gravel (conglomerate) sometimes requires blasting. How close to lines can we blast?
- 24.** This line will be traversing a renowned Gondwana Game reserve with predators such as lions. The visual impact on the reserve will be extensive. Concerned that the initial study for socio economic and tourism impact has come to a preconceived notion without any form of site visits. Impact that the power pylons will have on tourism at Nyaru Game Lodge's reserve. Aesthetic views will be degraded influencing tourist experience at the lodge and thus the value of the safaris on the reserve. This is a very important point since Nyaru Game Lodge's main income is derived from tourism.
- 25.** The Outeniqualand/Geelhoutboom area is a high potential, intensive agricultural area and provides a living to thousands of people. The heritage and culture, together with the natural beauty of the landscape serve as attraction for visitors to the area and the foundation of the entire tourism industry. Ensure that our serious objection is recorded and properly studied by the relevant experts.  
Yellow wood trees, Knysna Loeries and Fungi in the area should be protected. Rare and critically endangered plant species (e.g.: *Haworthia kingiana* and *Haworthia chloracantha* var. *subglauca*) grow on the slopes where the pylons will be constructed. *Haworthia kingiana*, which is one of the last few populations left in the wild of this critically endangered plant species.
- 26.** Larger birds could be affected by the power cables since they could fly into them. Smaller passerine birds could also be affected by the construction, and consequential habitat destruction of the pylons. One of the most important of these species is the endangered Agulhas Long-billed Lark (*Certhilauda brevirostris*), which occurs in the Mossel Bay Shale Renosterveld, which is the most prominent vegetation type on the reserve. Currently the reserve boasts with a strong population of this species (166), and we do certainly not want that fact to change due to the construction of the power pylons.
- 27.** The Honey Badger (*Mellivora capensis*) and Grysbok (*Raphicerus melanotis*) are two of the many other mammal species. The Spotted Eagle – Owl (*Bubo africanus*) and Jackal Buzzard (*Buteo rufufuscus*) are a common sight in the area. Dead Jackal Buzzards and Spotted Eagle-Owls are frequently found under existing power lines. Therefore what will the new proposed power line entail for these species? The farm is also home to the Secretary bird (*Sagittarius serpentarius*) and a breeding pair of endangered Blue cranes (*Anthropoides paradiseus*). Many other Blue cranes have been seen flying across the farm to their breeding and nesting sites. Blue cranes regularly collide with power lines, as they fail to see lines. The power line will degrade the aesthetic appeal of the farm in terms of beauty and market value. It will also cause a loss in valuable agricultural land, as no crop or pasture may be planted underneath the power line. The use of farming equipment will also be restricted near power lines. The proposed power lines might pose a health risk for the people living near it. These pivots are used for the irrigation of the pastures and are essential for the functioning of the farm. The five pivots are spread out over the whole

farm, therefore preventing any possible alley way for the proposed power line.

**A summary of the comments that were received during the review period for the Draft Scoping Report:**

COMMENT/CONCERN	AREA
<ul style="list-style-type: none"> <li>The power line (Alt 1 and 2) will run through the game reserve.</li> <li>Cape Nature acknowledges our special conditions and contribution to conservation.</li> <li>Nyaru Game Lodge Borders our reserve on the Eastern boundary and we have very similar conditions as they do. I therefore attach our objections to option 1 &amp; 2 <b>and we agree to your Alternative 4</b></li> </ul>	Alternative 1 & 2 - Mossel Bay Hartenbos Private Game Lodge, situated on Goedemoed 166 portion 13 and Hartebeestkuil 213, portion 17 (Eric Teixeira)
<ul style="list-style-type: none"> <li>Berry farm is located on the Alt 1 alignment, and shade netting is used at about R1million per hectare.</li> </ul>	Alternative 1 George Chrisleo Botha

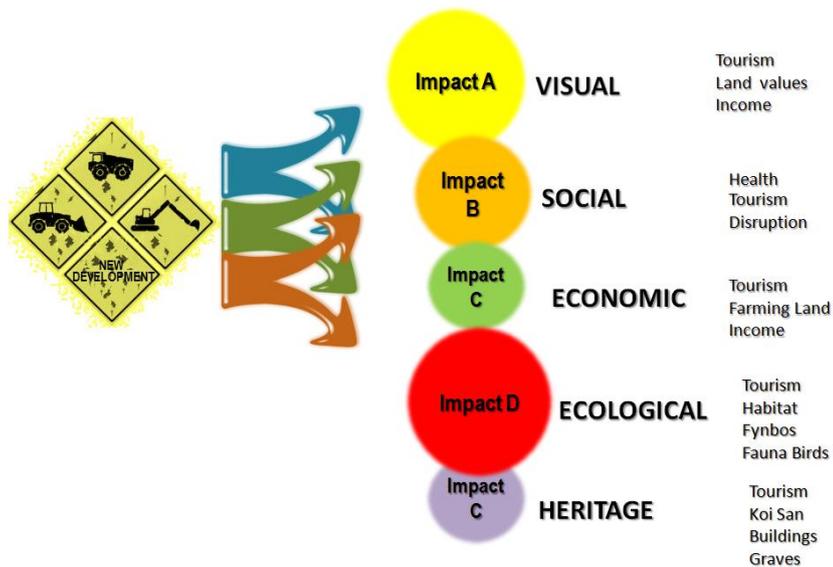
[Addition Issues and comments raised during the public review period of this Draft Scoping Report \(together with previous comments for the Scoping\) will be submitted to DEA and carried over to the EIA Phase for further consideration where applicable](#)

The most important issues can be categorised into the following:

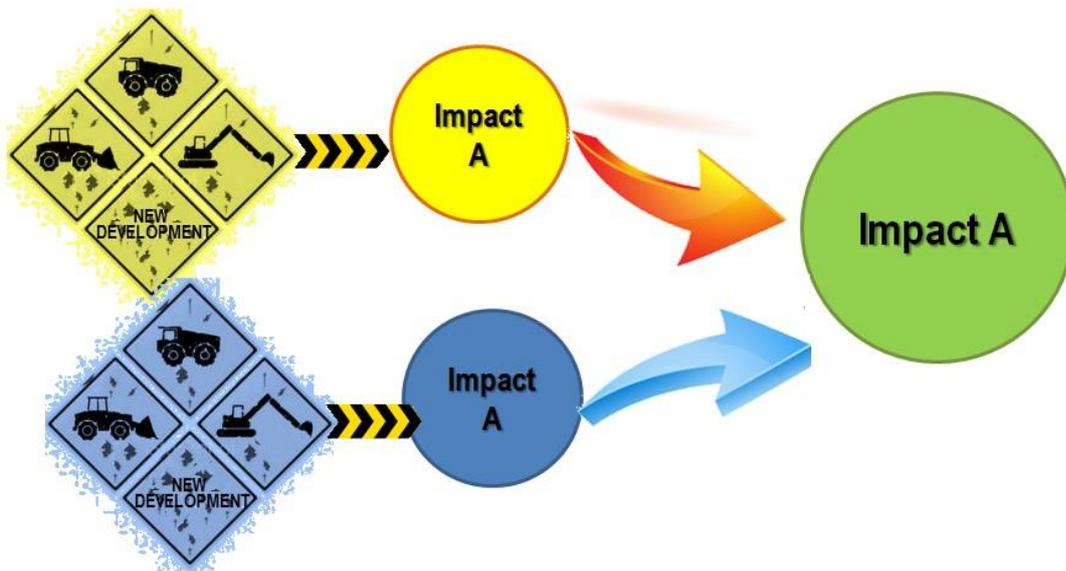
<b>Visual</b> impact – Tourism, Game Lodges, Wedding Venues, Eco estates
<b>Ecological</b> -Impact on birds and wetland areas Disturbance of natural areas - impact on rare plants (Yellow wood trees, fungi, aloe) and animals
<b>Economic issues</b> - loss of farming infrastructure (e.g. pivot point, shade net & storage) and land, disturbance of current activities (e.g. pivot points), loss of tourism resulting in lower income
<b>Social</b> impact – Maintenance and rehabilitation
Cumulative? Need a Master Plan for lines, “too many lines on some farms already”

These particular issues will be investigated in more detail during the EIA Phase. Specialist studies will include reference to the issues that have been raised by the public and stakeholders during this Scoping Phase.

The diagram below shows the schematic representation of the major impacts that were identified.



The project has a combined effect when assessed in conjunction with other activities. The individual insignificant impacts of several developments might have a significant **cumulative** adverse impact on the environment when viewed together, as illustrated in the graph below



The following **cumulative** impacts have been identified in terms of the proposed development and warrant further investigation during the assessment phase:

- Impact on Tourism
- Potential loss of scarce fauna and flora due to developments in the area
- a potential loss of viable and high potential agricultural/ grazing land
- potential increase in visual impacts associated with additional power lines in the area.
- the demand for additional electrical infrastructure to serve the area

## 7. ASSESSMENT

### 7.1 Description of the Need and Desirability

The Guideline On Need And Desirability published by the Western Cape Department of Environmental Affairs & Development Planning<sup>12</sup> (DEA&DP), lists 14 questions to determine the need and desirability. **Error! Reference source not found.** (below) includes answers relevant to the proposed project.

**Table 4. Need and Desirability**

NEED ('Timing'):
<p><b>Question 1:</b> Is the land use (associated with the activity being applied for) considered within the timeframe intended by the existing approved Spatial Development Framework (SDF) agreed to by the relevant environmental authority? (i.e. is the proposed development in line with the projects and programmes identified as priorities within the credible IDP).</p> <p><b>Answer: Yes</b></p> <p>The IDP documents for George and Mossel Bay make mention of further job creation (Local Economic Development) in the region. The project will provide jobs to local communities.</p>
<p><b>Question 2:</b> Should development, or if applicable, expansion of the town/area concerned in terms of this land use (associated with the activity being applied for) occur here at this point in time?</p> <p><b>Answer: No</b>, the infrastructure is mostly located outside of the town areas.</p>
<p><b>Question 3:</b> Does the community/area need the activity and the associated land use concerned (is it a societal priority)? This refers to the strategic as well as local level (e.g. development is a national priority, but within a specific local context it could be inappropriate)</p> <p><b>Answer: Yes</b></p> <p>On local level, the project has potential socio-economic benefits, such as jobs. On a national level the project will contribute to strengthen the transmission network of the Western and a Southern Cape areas.</p>
<p><b>Question 4:</b> Are the necessary services with adequate capacity currently available (at the time of application), or must additional capacity be created to cater for the development?</p> <p><b>Answer: Yes</b></p> <p>The existing infrastructure will be used by the proponent for the proposed project. This Scoping &amp; EIR will determine if additional infrastructure such as roads will be require for the development.</p>
<p><b>Question 5:</b> Is this development provided for in the infrastructure planning of the municipality, and if not what will the implication be on the infrastructure planning of the municipality (priority and placement of services and opportunity costs)?</p> <p><b>Answer: No</b></p>

sk

### NEED ('Timing'):

No negative impact is anticipated on municipal infrastructure planning. The infrastructure of the proposed activity would be provided and maintained by the proponent of the project (Eskom).

**Question 6:** Is this project part of a national programme to address an issue of national concern or importance?

**Answer: Yes**

The project will enable the transmission of generated electricity to the national grid.

### DESIRABILITY ('placing'):

**Question 7:** Is the development the best practicable environmental option for this land/site?

**Answer: To be determined by EIR**

The specialist studies to be conducted during the EIR phase of the project will give a clear indication of environmental options.

**Question 8:** Would the approval of this application compromise the integrity of the existing approved and credible municipal IDP and SDF as agreed to by the relevant authorities.

**Answer: No**

The project will enable the transmission of generated electricity to the national grid, which will support the IDPs<sup>13</sup> and SDFs in terms of surety (reliability) of supply.

**Question 9:** Would the approval of this application compromise the integrity of the existing environmental management priorities for the area (e.g. as defined in EMFs), and if so, can it be justified in terms of sustainability considerations?

**Answer: No**

The proposed project will require mitigation of potential negative environmental impacts during the construction phase of the project. During the operational phase of the project, livestock and game grazing and wild animals will continue in the power line servitude.

**Question 10:** Do location factors favour this land use (associated with the activity applied for) at this place? (this relates to the contextualisation of the proposed land use on the footprint area within its broader context).

**Answer: Yes**

The objective of this project is to connect the Gourikwa Transmission Substation to the proposed Blanco (Narina) Transmission Substation and the National electricity grid. Specialist studies, such as a Visual Impact Assessment to be conducted during the EIR phase, will determine the most practical and environmentally preferable placement of the lines.

**Question 11:** How will the activity or the land use associated with the activity applied for,

sk

ew of the George IDP 2014-15

<sup>13</sup> Second Review of the George IDP 2014-15

<sup>13</sup> Second Review of the George IDP 2014-15

<sup>13</sup> USDOT, 1981

<sup>13</sup> DEAT (2004) Cumulative Effects Assessment, Integrated Environmental Management, Information Series 7, Department of Environmental Affairs and Tourism (DEAT), Pretoria.

<sup>13</sup> Eskom chief engineer for transmission planning

<sup>13</sup> CSIR, 20

## DESIRABILITY ('placing'):

impact on sensitive natural and cultural areas (built and rural/natural environment)?

**Answer:**

This EIR process will determine the potential impact on the environment and if negative impacts are identified, mitigation measures will be proposed.

**Question 12:** How will the development impact on people's health and wellbeing (e.g. in terms of noise, odours, visual character and sense of place, etc)?

**Answer:**

No negative impacts are anticipated regarding noise or odours during the operational phase of the project. Visual character and sense of place impacts are anticipated and the EIAR will determine the extent of impacts and propose mitigation measures if required.

Socio-economic benefits are likely to result from the proposed project and might include job creation. Impact on tourism facilities is an issue that has been raised during the PP process and will be investigated during the EIA phase of the project.

**Question 13:** Will the proposed activity or the land use associated with the activity applied for, result in unacceptable opportunity costs?

**Answer: No**

The project area is of linear nature and the primary land use will continue as is.

**Question 14:** Will the proposed land use result in unacceptable cumulative impacts?

**Answer:**

The EIAR will determine the full extent of impacts and propose mitigation measures if required.

At the end of the review period of the draft Scoping Report, all comments/input from stakeholders and I&AP's will be captured in the Issues and Response Report (IRR) which will form part of the final Scoping Report.

## 7.2 Route Alternative Evaluation

Alternative 1, Alternative 2 and Alternative 3 will create impacts that might be negative to the receiving environment. The magnitude of the impacts and the type of environment that will be influenced must be comparatively evaluated in order to recommend an option and focus the specialist studies. The specialist studies focus was to assist the EAP to understand the nature of the impacts and develop mitigation options for the recommended route.

A comparative table has been drawn up where the various environments as well as the impact of the activity on those environments where classified in a simplistic way in order to establish an option with

- a) the least possible impacts
- b) avoidance of impacts
- c) manageable impacts
- d) mitigation possibility

The Public Participation has indicated that the three routes present aesthetic and practical impacts that are unacceptable to land owners and inhabitants of various properties.

However, as impacts are unavoidable with all three alternatives, unpopular choices need to be established in order for the national energy supply grid to function in a developmental society. These choices need to be influenced by empirical evaluation and not emotional or singular individual objections. The choices need also be influenced by the mitigation hierarchy that applies to environmental impact assessments methodology. The rationale behind the scoring method for the Table is that avoidance takes precedent followed by minimisation, management and mitigation.

A further empirical evaluation must be influenced by the type of environment that is being impacted upon e.g. wetlands are heavier weighted environments with more sensitive elements than some other land uses. However if avoidance can be implemented in a wetland then the impact value is zero. Similarly avoidance of high density residential areas or agricultural lands are weighted as zero but crossing of the sites will have an impact that is heavier weighted apart from the impacts that will occur on the bio-physical environment. Visual impacts in a touristic area will also have heavier consideration so the option should be located on the route less travelled or near conservation areas such as Game Ranches and holiday homes.

### 7.3 **Impact Evaluation methodology**

Direct, indirect and cumulative impacts of the issues identified through the scoping study, as well as all other issues identified in the EIA phase must be assessed in terms of the following criteria:

- The **nature**, which shall include a description of what causes the effect, what will be affected and how it will be affected.
- The **extent**, wherein it will be indicated whether the impact will be local (limited to the immediate area or site of development) or regional, and a value between 1 and 5 will be assigned as appropriate (with 1 being low and 5 being high):
- The **duration**, wherein it will be indicated whether:
  - very short duration (0–1 years) – assigned a score of 1;
  - short duration (2-5 years) - assigned a score of 2;
  - medium-term (5–15 years) – assigned a score of 3;
  - long term (> 15 years) - assigned a score of 4; or
  - permanent - assigned a score of 5
- The **consequences (magnitude)**, quantified on a scale from 0-10, where 0 is small and will have no effect on the environment, 2 is minor and will not result in an impact on processes, 4 is low and will cause a slight impact on processes, 6 is moderate and will result in processes continuing but in a modified way, 8 is high (processes are altered to the extent that they temporarily cease), and 10 is very high and results in complete destruction of patterns and permanent cessation of processes.
- The **probability of occurrence**, which shall describe the likelihood of the impact actually occurring. Probability will be estimated on a scale of 1–5, where:
  - 1 is very improbable (probably will not happen),
  - 2 is improbable (some possibility, but low likelihood),
  - 3 is probable (distinct possibility),
  - 4 is highly probable (most likely) and
  - 5 is definite (impact will occur regardless of any prevention measures).

- the **significance**, which shall be determined through a synthesis of the characteristics described above and can be assessed as low, medium or high; and
- the **status**, which will be described as either positive, negative or neutral.
- the degree to which the impact can be **reversed** (low, moderate, high).
- Whether the impact may cause **irreplaceable loss of resources** (Yes/No).
- Whether the impact can be **mitigated**.

The **significance** is calculated by combining the criteria in the following formula:

$$S=(E+D+M) \times P$$

S = Significance weighting  
 E = Extent  
 D = Duration  
 M = Magnitude  
 P = Probability

The **significance weightings** for each potential impact are as follows:

< 30 points: Low (i.e. where this impact would not have a direct influence on the decision to develop in the area),  
 30-60 points: Medium (i.e. where the impact could influence the decision to develop in the area unless it is effectively mitigated),  
 > 60 points: High (i.e. where the impact must have an influence on the decision process to develop in the area).

#### 7.4 **Assessment Tables**

The most important issues below can be categorised into the following:

• Visual impact – Tourism, Game Lodges, Wedding Venues, Eco estates
• Disturbance of natural areas - impact on rare plants (Yellow wood trees, fungi, aloe) and animals
• Maintenance and rehabilitation
• Impact on birds
• Economic issues - loss of farming infrastructure and land, disturbance of current activities (e.g. pivot points)
• Need and Master Plan for lines, “too many on farms already”

These particular issues will be investigated in more detail during the EIA Phase. Specialist studies will include reference to the issues that have been raised by the public and stakeholders during this Scoping Phase.

### 7.4.1 Ecological Impact Assessment:

#### Loss & disturbance of indigenous vegetation due to clearing of the footprint area

**Nature:** The area for the proposed substation and power line will be cleared of vegetation. This will result in the loss of indigenous species, disturbance of species of conservation concern and the fragmentation of vegetation communities. The removal of vegetation will also expose soil increasing the risk of erosion.

Alternative route 1 intersects the least number of known locations and potential habitat of threatened plant species. Haworthia (Tulista) kingiana and Ruellia pilosa occurs in a small section along the route. Gladiolus engysiphon may occur after a fire along this route, but if so, they would occur in small populations. Alternative 2 intersects a high number of intact examples of a fynbos/renosterveld which are mostly located within a well-run private nature reserve with inter alia spread of alien vegetation well controlled. It is highly likely that several threatened species will occur in the post-fire environment within this remnant fynbos/renosterveld areas. Areas that protect tree species such as Milk wood (Sapotaceae), Yellow wood (Podoarpaceae), Afrian Olive (Olea Europaea) and where rare species of fungi have been identified during the PP Process, may be impacted upon in some sections of Alternative 2 and 3. Alternative 3 intersects critical biodiversity areas most. (Botanical Specialist Report, Jan Vlok, 2015).

CONSTRUCTION PHASE		
Rating of Impacts	Without mitigation	With mitigation
<b>Probability</b>	Definite (5)	Definite (5)
<b>Duration</b>	Medium-term (3)	Short Duration (2)
<b>Extent</b>	Limited to Site (1)	Limited to Site (1)
<b>Magnitude</b>	Moderate (6)	Low (4)
<b>Significance</b>	<b>50 (medium)</b>	<b>35 (medium)</b>
<b>Status (positive or negative)</b>	Negative	Negative
OPERATIONAL PHASE		
<b>Probability</b>	Definite (5)	Highly probable (4)
<b>Duration</b>	Medium-term (3)	Short Duration (2)
<b>Extent</b>	Limited to Site (1)	Limited to Site (1)
<b>Magnitude</b>	Moderate (6)	Low (4)
<b>Significance</b>	<b>50 (medium)</b>	<b>28 (low)</b>
<i>Alternative 1</i>	39 (medium)	20 (low)
<i>Alternative 2</i>	50 (medium)	28 (medium)
<i>Alternative 3</i>	52 (medium)	28 (medium)
<b>Status (positive or negative)</b>	Negative	Negative
<b>Reversibility</b>	Low	High
<b>Irreplaceable loss of resources?</b>	Moderate	Low
<b>Can impacts be mitigated?</b>	Yes	
<b>No Go Alternative</b>	The no-go option implies the consequences of not construction of the 400KV Transmission Power Line and the implications on sustainable development. A No GO Alternative would prevent loss and disturbance of indigenous vegetation due to clearing of the footprint area	

**Mitigation:**

- All pylons and access routes should be located outside remnant natural vegetation along the entire route.
  - Once exact pylon and access routes have been established, prepare a construction and maintenance management plan for all the sites where natural vegetation will be affected. Once pegged, the site must be inspected during the summer season by a botanist to identify all species of conservation concern along the power line route. These species must be trans-located prior to any construction activities;
  - ensure that the establishment of pylons and of access route within the sections indicated as sensitive will not have a negative impact on the populations of threatened species.
- vegetation should not be slashed periodically in sensitive botanical areas. The clearing of vegetation must be kept to a minimum and within the power line servitude.
  - Disturbed areas must be rehabilitated immediately after construction has been completed in that area by planting appropriate indigenous plant species;
  - During the construction phase workers must be limited to areas under construction and access to the undeveloped areas must be strictly controlled;
  - Rehabilitated areas must be monitored to ensure the establishment of re-vegetated areas.  
Demarcate indigenous trees and plants and other conservation worthy features such as fungi.

**Cumulative impacts:** Impact on highly sensitive habitat should be avoided to prevented. If avoidance is impossible, the re-planting (or replacement) of large trees will be required.

**Residual Risks:** Low risk anticipated if the mitigation measures are implemented correctly and rehabilitation of the site is undertaken.

### Proliferation of Alien plant species

**Nature:** Alien invasive species will quickly encroach into disturbed areas, particularly adjacent to drainage areas. Alternative 1,2, and 3 will have the potential to disturb areas and result in the spread of alien invasive species. Alternative route 1 intersects the least number of known locations and potential habitat of threatened plant species. Alternative 3 intersects critical biodiversity areas most. (Botanical Specialist Report, Jan Vlok, 2015). Disturbance in the latter area would thus be more likely to proliferate alien plant species.

#### CONSTRUCTION PHASE

Rating of Impacts	Without mitigation	With mitigation
<b>Probability</b>	Definite (5)	Highly probable (4)
<b>Duration</b>	Medium-term (3)	Medium-term (3)
<b>Extent</b>	Limited to Local Area (2)	Limited to Local Area (2)
<b>Magnitude</b>	High (8)	Moderate (6)
<b>Significance</b>	<b>65 (high)</b>	<b>44 (medium)</b>
Alternative 1	50 (high)	36 (medium)
Alternative 2	55 (high)	36 (medium)
Alternative 3	65 (high)	44 (medium)
<b>Status (positive or negative)</b>	Negative	Negative

#### OPERATIONAL PHASE

<b>Probability</b>	Highly probable (4)	Probable (3)
<b>Duration</b>	Permanent (5)	Permanent (5)
<b>Extent</b>	Limited to Local Area (2)	Limited to Site (1)
<b>Magnitude</b>	High (8)	Low (4)
<b>Significance</b>	<b>60 (high)</b>	<b>30 (medium)</b>
Alternative 1	39 (medium)	20 (low)
Alternative 2	50 (medium)	30 (medium)

Alternative 3	60 (medium)	30 (medium)
<b>Status (positive or negative)</b>	Negative	Negative
<b>Reversibility</b>	Low	Moderate
<b>Irreplaceable loss of resources?</b>	Moderate	Low
<b>Can impacts be mitigated?</b>	Yes	
<b>No Go Alternative</b>	A No Go Alternative would prevent encroachment of more alien invader plant species	
<b>Mitigation:</b>		
<ul style="list-style-type: none"> <li>• An alien invasive management programme must be incorporated into the Environmental Management Programme;</li> <li>• Ongoing alien plant control must be undertaken along the power line servitude route;</li> <li>• Monitor all sites disturbed by construction activities for colonisation by exotics or invasive plants and control these as they emerge.</li> <li>• Ensure that the establishment of a pylon and access route will not have a negative impact on the populations of threatened species.</li> <li>• Vegetation should not be slashed periodically.</li> <li>• Try to locate all pylons and access routes outside remnant natural vegetation along the entire route.</li> <li>• Once exact pylon and access routes have been established, prepare a construction and maintenance management plan for all the sites where natural vegetation will be affected.</li> </ul>		
<b>Cumulative impacts:</b> Expected to be moderate, should mitigation measure not be implemented. Alien invader plant species pose an ecological threat as they alter habitat structure, lower biodiversity (both number and “quality” of species), change nutrient cycling and productivity, and modify food webs.		
<b>Residual Risks:</b> None anticipated provided that the mitigation measures are implemented correctly and rehabilitation of the site is undertaken.		

### Loss of faunal habitat and ecological structure

**Nature:** The construction phase and operational phase of the power line development will result in the loss of faunal habitats within the area. This impact relates to the complete removal or partial destruction/disturbance of existing vegetation by machinery and workers, impacting directly on the ecological condition of natural vegetation and habitat availability. These activities will have an impact on foraging and breeding ecology of faunal species. Loss of vegetation generally affects nutrient cycles, removes the organic litter layer and results in habitat fragmentation and destruction of wildlife corridors. Alternatives 1,2 and 3 intersect vegetation types that are regarded as sensitive, or that influence the breeding and feeding of fauna. Private Game and other Natural Reserve areas (e.g. Gondwana and Nyaru along Alternative 1) should be avoided if possible, and if avoidance is not possible, careful placement of towers will be required.

#### CONSTRUCTION PHASE

Rating of Impacts	Without mitigation	With mitigation
<b>Probability</b>	Definite (5)	Definite (5)
<b>Duration</b>	Short Duration (2)	Short Duration (2)
<b>Extent</b>	Limited to Local Area (2)	Limited to Local Area (2)
<b>Magnitude</b>	High (8)	Moderate (5)
<b>Significance</b>	<b>60 (high)</b>	<b>45 (medium)</b>
Alternative 1	60 (high)	40 (medium)
Alternative 2	55 (high)	36 (medium)
Alternative 3	60 (high)	45 (medium)
<b>Status (positive or negative)</b>	Negative	Negative
OPERATIONAL PHASE		
<b>Probability</b>	Probable (3)	Improbable (2)

<b>Duration</b>	Permanent (5)	Permanent (5)
<b>Extent</b>	Limited to Site (1)	Limited to Site (1)
<b>Magnitude</b>	Moderate (6)	Low (4)
<b>Significance</b>	<b>36 (medium)</b>	<b>20 (low)</b>
<b>Status (positive or negative)</b>	Negative	Negative
<b>Reversibility</b>	Moderate	High
<b>Irreplaceable loss of resources?</b>	Low	Low
<b>Can impacts be mitigated?</b>	Yes	
<b>No Go Alternative</b>	The no-go option would prevent Loss of faunal habitat and ecological structure	
<b>Mitigation:</b>		
<ul style="list-style-type: none"> <li>All construction and maintenance activities must be carried out according to the generally accepted environmental best practice and the temporal and spatial footprint of the development must be kept to a minimum.</li> <li>The boundaries of the development footprint areas are to be clearly demarcated and it must be ensured that all activities remain within the demarcated footprint area.</li> <li>Edge effects of all construction and operational activities, such as erosion and alien plant species proliferation, which will affect faunal habitats adjacent to the development area, need to be strictly managed.</li> <li>Any natural areas beyond the development footprint, which have been affected by the construction activities, must be rehabilitated using indigenous plant species.</li> <li>Education and awareness campaigns on faunal species and their habitat are recommended to help increase awareness, respect and responsibility towards the environment for all staff and contractors.</li> </ul>		
<b>Cumulative impacts:</b> Expected to be minimal. The habitat is however already largely transformed and fragmented due to the adjacent mining activities and the site is not a unique habitat within the landscape. It is not envisaged that any Red Data species will be displaced by the habitat transformation that will take place as a result of the construction and operation of the proposed development. The impact on smaller, non-Red Data species that are potentially breeding in the area will be local in extent, in that it will not have a significant effect on regional or national populations.		
<b>Residual Risks:</b> None anticipated provided that the mitigation measures are implemented correctly and rehabilitation of the site is undertaken.		

### Direct impact on faunal communities

**Nature:** Activities involving the clearing/harvesting of natural vegetation will result in the loss of faunal species. Faunal diversity within the study area has been negatively impacted as a result of historic and on-going disturbances associated with agriculture and housing developments. The impact is similar for all alternatives, but due to the occurrence of natural protection areas (Game Reserves) in the vicinity of Alternative 1, the impact will be more significant in sections of this alternative than for instance the first 20km of Alternative 3 that is proposed along existing roads and railway line and adjacent to an industrial area.

CONSTRUCTION PHASE		
Rating of Impacts	Without mitigation	With mitigation
<b>Probability</b>	Definite (5)	Probable (3)
<b>Duration</b>	Short Duration (2)	Short Duration (2)
<b>Extent</b>	Limited to the Local Area (2)	Limited to the Local Area (2)
<b>Magnitude</b>	High (8)	Moderate (6)
<b>Significance</b>	<b>60 (high)</b>	<b>30 (medium)</b>
Alternative 1	60 (medium)	30 (medium)
Alternative 2	33 (medium)	20 (low)
Alternative 3	50 (medium)	20 (low)
<b>Status (positive or negative)</b>	Negative	Negative

OPERATIONAL PHASE		
<b>Probability</b>	Highly Probable (4)	Probable (3)
<b>Duration</b>	Permanent (5)	Permanent (5)
<b>Extent</b>	Limited to the Local Area (2)	Limited to Site (1)
<b>Magnitude</b>	Moderate (6)	Low (4)
<b>Significance</b>	<b>52 (medium)</b>	<b>30 (medium)</b>
<b>Status (positive or negative)</b>	Negative	Negative
<b>Reversibility</b>	Low	Moderate
<b>Irreplaceable loss of resources?</b>	Moderate	Low
<b>Can impacts be mitigated?</b>	Yes	
<b>No Go Alternative</b>	The no-go option would prevent impact on faunal species and habitat	
<b>Mitigation:</b>		
<ul style="list-style-type: none"> <li>It is recommended that a speed limit of 30km/h is implemented on all roads running through the study area during all phases in order to minimise risk to fauna from vehicles.</li> <li>No trapping or hunting of fauna is to take place. Access control must be implemented to ensure that no illegal trapping or poaching takes place.</li> <li>Should any Red Data faunal species be noted within the development footprint areas, these species must be relocated to similar habitat within the vacant land to the west of the development area with the assistance of a suitably qualified ecologist</li> <li>Any fauna directly threatened by the construction activities must be removed to a safe location by the ECO or qualified Ecologist.</li> <li>All staff and contractors must undergo an environmental induction course held by the ECO as well as faunal education and awareness programmes.</li> </ul>		
<b>Cumulative impacts:</b> Expected to be moderate to minimal, should the recommended mitigation measures not be adequately implemented. The habitat is however already largely transformed and fragmented due to the adjacent mining activities and the site is not a unique habitat within the landscape. It is not envisaged that any Red data species will be present on the site and thus directly impacted as a result of the development. During the operational phase, a further loss of faunal diversity and ecological integrity will occur due to the increase in human activity and potential poaching.		
<b>Residual Risks:</b> None anticipated provided that the mitigation measures are implemented correctly and rehabilitation of the site is undertaken.		

Impact of disturbance and noise pollution on fauna		
<b>Nature:</b> Disturbance created by noise-pollution associated with workers and construction activities can affect local wildlife utilising adjacent habitats, particularly mammalian species. This is likely to be short-lived during the construction phase but will continue to have an impact during the operational life span of the development. The disturbance and noise impact is similar for all three the alternatives, and valid during construction and maintenance of the line. Noise impact is measured in terms of ambient noise, for instance if the habitat is located close to industries, roads or noisy activities it will be less significant.		
CONSTRUCTION PHASE		
Rating of Impacts	Without mitigation	With mitigation
<b>Probability</b>	Definite (5)	Highly Probable (4)
<b>Duration</b>	Permanent (5)	Permanent (5)
<b>Extent</b>	Limited to Site (1)	Limited to Site (1)
<b>Magnitude</b>	Moderate (6)	Low (4)
<b>Significance</b>	<b>60 (high)</b>	<b>40 (medium)</b>

Alternative 1	60 (high)	36 (medium)
Alternative 2	55 (high)	36 (medium)
Alternative 3	60 (high)	40 (medium)
<b>Status (positive or negative)</b>	Negative	Negative
<b>OPERATIONAL PHASE</b>		
<b>Probability</b>	Probable (3)	Improbable (2)
<b>Duration</b>	Permanent (5)	Permanent (5)
<b>Extent</b>	Limited to Site (1)	Limited to Site (1)
<b>Magnitude</b>	Moderate (6)	Low (4)
<b>Significance</b>	<b>36 (medium)</b>	<b>20 (low)</b>
<b>Status (positive or negative)</b>	Negative	Negative
<b>Reversibility</b>	Low	Moderate
<b>Irreplaceable loss of resources?</b>	Moderate	Low
<b>Can impacts be mitigated?</b>	Yes	
<b>No Go Alternative</b>	The no-go option would prevent disturbance of fauna due to dust and noise pollution	
<b>Mitigation:</b>		
<ul style="list-style-type: none"> <li>• Strict control must be maintained over all activities during construction, in line with an approved Construction EMP.</li> <li>• Any Red Data species identified in this report observed to be roosting and/or breeding in the vicinity, the ECO must be notified.</li> </ul>		
<b>Cumulative impacts:</b> Species at Nature Reserves and mountainous areas along the power line development route may experience high levels of disturbance. Species are particularly sensitive to disturbance during the breeding season and this must be borne in mind during both the construction and operational phases.		
<b>Residual Risks:</b> None anticipated provided that the mitigation measures are implemented correctly and rehabilitation of the site is undertaken.		

### Avifaunal Impact Assessment: Habitat Destruction

**Nature:** During the construction phase and maintenance of substations and power lines, some habitat destruction and alteration will occur due to the clearing of servitudes and vegetation at the substation site. Servitudes have to be cleared of excess vegetation at regular intervals in order to allow access to the line for maintenance, to prevent vegetation intrusion and to minimise the risk of fire under the lines. These activities have an impact on foraging, breeding and roosting ecology of avian species within the area through modification of habitat.

Avian species that are most consistently affected by over head transmission lines are water birds that congregate at wetlands and commute between them in flocks, examples being large and / or fast flying species examples such as ducks, geese, flamingos, storks, herons and waders that have a high collision rate. Game birds and rails have less exposure but are still highly susceptible. Canes, storks, bustards which are large heavy bodied, flocking and low flying are also highly susceptible to collisions with over head transmission power lines.

From an avian impact perspective Alternative 1 would pose the least threat as it is farther away from the coastal belt were there are more likely to be larger flocks of birds near and around the river estuaries. Alternative 2 would not be recommended due to the number of water features on the route and the possible affect it would have on the flight paths that are used by the local and migratory species that make use of the habitat on this route. Alternative 3 would not be recommended due to sensitivity of the wetland habitat and the flight paths of both the resident species and the numerous migratory species that make use of the habitats of this proposed route. (Avifauna Report, Rodney Chrisford, 2015)

CONSTRUCTION PHASE		
Rating of Impacts	Without mitigation	With mitigation
<b>Probability</b>	Definite (5)	Highly Probable (4)
<b>Duration</b>	Permanent (5)	Permanent (5)

<b>Extent</b>	Limited to Site (1)	Limited to Site (1)
<b>Magnitude</b>	Moderate (6)	Low (4)
<b>Significance</b>	<b>60 (high)</b>	<b>40 (medium)</b>
Alternative 1	50 (high)	30 (medium)
Alternative 2	55 (high)	36 (medium)
Alternative 3	60 (high)	45 (medium)
<b>Status (positive or negative)</b>	Negative	Negative
<b>OPERATIONAL PHASE</b>		
<b>Probability</b>	Probable (3)	Improbable (2)
<b>Duration</b>	Permanent (5)	Permanent (5)
<b>Extent</b>	Limited to Site (1)	Limited to Site (1)
<b>Magnitude</b>	Moderate (6)	Low (4)
<b>Significance</b>	<b>36 (medium)</b>	<b>20 (low)</b>
<b>Status (positive or negative)</b>	Negative	Negative
<b>Reversibility</b>	Moderate	High
<b>Irreplaceable loss of resources?</b>	Low	Low
<b>Can impacts be mitigated?</b>	Yes	
<b>No Go Alternative</b>	The no-go option would prevent loss of faunal habitat that is important to Avifauna	

**Mitigation:**

- Owners of Nature and Game Reserves to be consulted to estimate if and where there is a need for bird flight diverters being attached to the transmission power lines that cross their properties (Avifauna Report, Rodney Chrisford, 2015).
- All construction and maintenance activities must be carried out according to the generally accepted environmental best practice and the temporal and spatial footprint of the development should be kept to a minimum. In particular, care must be taken in the vicinity of the drainage lines and existing roads must be used as much as possible for access during construction.
- The boundaries of the development footprint areas are to be clearly demarcated and it must be ensured that all activities remain within the demarcated footprint area.
- Wetland areas where water birds frequent to be treated as sensitive areas, best to be avoided.
- Bird markers to be placed every 50m on the line where it occurs in the vicinity of water bodies (Avifauna Report, Rodney Chrisford, 2015).
- Provide adequate briefing for site personnel.
- Any bird nests that are found during the construction period must be reported to the Environmental Control Officer (ECO).
- The above measures must be covered in a site specific EMP and controlled by an ECO.

**Cumulative impacts:** Expected to be moderate. Portions of the habitat are relatively unique within the landscape. Some Red Data species could be displaced temporarily by the habitat transformation that will take place as a result of the construction and operation of the proposed development.

**Residual Risks:** None anticipated provided that the mitigation measures are implemented correctly and rehabilitation of the site is undertaken.

### Avifaunal Impact Assessment: Disturbance of birds

**Nature:** In terms of disturbance of birds, Alternative 1 would pose the least threat as it is farther away from the coastal belt where there are more likely to be larger flocks of birds near and around the river estuaries. Disturbance at Alternative 2 and 3 would be more significant due to the number of water features and the flight paths of resident species and migratory species. (Avifauna Report, Rodney Chrisford, 2015)

Species residing within this landscape often experience varying degrees of disturbance. As a result, disturbance of birds by the proposed substation and power line is anticipated to be of low significance as birds will move away from the area temporarily. Species sensitive to disturbance and ground-nesting species resident within the development footprint will be particularly susceptible. Game reserves and game lodges attract a large amount of visitors and foreign currency to the area. Taking this into consideration it would be advisable to consult the owners in regard to the installation of bird flight diverters being attached to the transmission power lines that cross their property to ascertain if the avian impact risks are greater than the aesthetic impact, this would be dependent on the route that is taken and the requirements of the owners.

<b>CONSTRUCTION PHASE</b>		
<b>Rating of Impacts</b>	<b>Without mitigation</b>	<b>With mitigation</b>
<b>Probability</b>	Definite (5)	Highly Probable (4)
<b>Duration</b>	Short Duration (2)	Short Duration (2)
<b>Extent</b>	Limited to Local Area (2)	Limited to Site (1)
<b>Magnitude</b>	Moderate (6)	Low (4)
<b>Significance</b>	<b>50 (medium)</b>	<b>28 (low)</b>
<i>Alternative 1</i>	50 (medium)	30 (medium)
<i>Alternative 2</i>	55 (high)	36 (medium)
<i>Alternative 3</i>	60 (high)	45 (medium)
<b>Status (positive or negative)</b>	Negative	Negative
<b>OPERATIONAL PHASE</b>		
<b>Probability</b>	Probable (3)	Improbable (2)
<b>Duration</b>	Permanent (5)	Permanent (5)
<b>Extent</b>	Limited to Site (1)	Limited to Site (1)
<b>Magnitude</b>	Moderate (6)	Low (4)
<b>Significance</b>	<b>36 (medium)</b>	<b>20 (low)</b>
<b>Status (positive or negative)</b>	Negative	Negative
<b>Reversibility</b>	Moderate	High
<b>Irreplaceable loss of resources?</b>	Low	Low
<b>Can impacts be mitigated?</b>	Yes	
<b>No Go Alternative</b>	The no-go option would prevent disturbance of birds	

Mitigation:

- Owners of Game Reserves and eco-estates to be consulted to estimate if and where there is a need for bird flight diverters being attached to the transmission power lines that cross their properties (Avifauna Report, Rodney Chrisford, 2015).
- All construction and maintenance activities must be carried out according to the generally accepted environmental best practice and the temporal and spatial footprint of the development should be kept to a minimum. In particular, care must be taken in the vicinity of the drainage lines and existing roads must be used as much as possible for access during construction.
- The boundaries of the development footprint areas are to be clearly demarcated and it must be ensured that all activities remain within the demarcated footprint area.
- Wetland areas where water birds frequent to be treated as sensitive areas, best to be avoided.
- Bird markers to be placed every 50m on the line where it occurs in the vicinity of water bodies (Avifauna Report, Rodney Chrisford, 2015).
- Strict control must be maintained over all activities during construction, in line with an approved Construction EMP.
- During Construction, if any of the Red Data species identified in this report are observed to be roosting and/or breeding in the vicinity, the ECO must be notified.
- Contractors and working staff should stay within the development footprint and movement outside these areas including avian micro-habitats must be restricted. Water bodies are of particular importance and best avoided by personnel.
- Driving must take place on existing roads and a speed limit of 30km/h must be implemented on all roads running

through the study area during all phases.

**Cumulative impacts:** Impact on birds is expected to be of moderate significance. Species are particularly sensitive to disturbance during the breeding season and this must be borne in mind during both the construction and operational (maintenance) phases.

**Residual Risks:** None anticipated provided that the mitigation measures are implemented correctly and rehabilitation of the site is undertaken.

### Avifaunal Impact Assessment: Electrocuting of birds on power line

**Nature:** Electrocuting of birds on associated overhead power lines is an important cause of mortality for a variety of bird species particularly storks, cranes and raptors in South Africa. The design of the transmission line and associated pylons also has a bearing on the risks to certain avian species. The earthing conductors create one of the biggest risks as it is thinner than the transmission conductors and therefore not as visible to birds in flight. Bird excreta on the infrastructure can also have a negative impact on the transmission lines causing possible power interruptions. Electrocuting of birds on pylons will depend on the particular design of the pylon to be utilized for the project, the risks to the birds is determined by the phase to phase and phase to earth clearances (Avifauna Report, Rodney Chrisford, 2015).

Nesting and roosting of birds on pylon structures can have a positive impact on avifauna, but it could also have a negative affect by causing electrical faults due to added weight, shorts due to excreta and possible fire risks from nesting material. Avian species that are most consistently affected by over head transmission lines are water birds that congregate at wetlands and commute between them in flocks, examples being large and / or fast flying species examples such as ducks, geese, flamingos, storks, herons and waders that have a high collision rate. Game birds and rails have less exposure but are still highly susceptible. Canes, storks, bustards korhaans which are large heavy bodied, flocking and low flying are also highly susceptible to collisions with over head transmission power lines (Avifauna Report, Rodney Chrisford, 2015). The potential for this impact is similar for all three the alternatives, but due to the presence of more water bodies along Alternative 2 and 3, the impact may be more for these routes than for Alternative 1.

#### CONSTRUCTION PHASE

During construction the lines will not carry voltage and thus no electrocuting is possible.

#### OPERATIONAL PHASE

Rating of Impacts	Without mitigation	With mitigation
<b>Probability</b>	Probable (3)	Improbable (2)
<b>Duration</b>	Long term (4)	Long term (4)
<b>Extent</b>	Limited to Local Area (2)	Limited to Local Area (2)
<b>Magnitude</b>	Moderate (6)	Low (4)
<b>Significance</b>	<b>36 (medium)</b>	<b>20 (low)</b>
Alternative 1	39 (medium)	20 (low)
Alternative 2	52 (medium)	30 (medium)
Alternative 3	52 (medium)	30 (medium)
<b>Status (positive or negative)</b>	Negative	Negative
<b>Reversibility</b>	Moderate	High

<b>Irreplaceable loss of resources?</b>	Low	Low
<b>Can impacts be mitigated?</b>	Yes	
<b>No Go Alternative</b>	The no-go option would not add to the situation regarding electrocution of birds	
<b>Mitigation:</b>		
<ul style="list-style-type: none"> <li>All relevant perching surfaces should be fitted with bird guards and perch guards as deterrents.</li> <li>Installation of artificial bird space perches and nesting platforms, at a safe distance from energised.</li> <li>Bird markers to be installed in areas of water bodies and where property owners have indicated the occurrence of breeding pairs or bird colonies (Avifauna Report, Rodney Chrisford, 2015).</li> </ul>		
<b>Cumulative impacts:</b> The impact assessment found the impact of electrocution to be of moderate significance after the mitigation in the form of bird friendly structures.		
<b>Residual Risks:</b> None anticipated provided that the mitigation measures are implemented correctly and rehabilitation of the site is undertaken.		

### Avifaunal Impact Assessment : Summary of collisions of birds with the power line Alternative 1,2, and 3

**Nature:** Collisions are the biggest single threat posed by transmission power lines to birds in Southern Africa. The Red Data species that are vulnerable to power line collisions are generally long living, slow reproducing species under natural conditions. The potential of collisions of birds exists equally for both alternatives, but due to the additional length of Alternative 2, the impact may be more than for Alternative 1.

#### CONSTRUCTION PHASE

During construction, lines will not be erected at operational height and will thus not have a risk of collisions.

#### OPERATIONAL PHASE

Significance	Without mitigation	With mitigation
<b>Collisions with Route 1</b>	39 (medium)	20 (low)
<b>Collisions with Route 2</b>	52 (medium)	30 (medium)
<b>Collisions with Route 3</b>	52 (medium)	30 (medium)
<b>Status (positive or negative)</b>	Negative	Negative
<b>Reversibility</b>	Moderate	High
<b>Irreplaceable loss of resources?</b>	Moderate	Low
<b>Can impacts be mitigated?</b>	Yes	
<b>No Go Alternative</b>	The no-go option would prevent an increase in bird collisions	

#### Mitigation:

- Mark sections of line in high sensitivity areas with anti-collision marking devices (diurnal and nocturnal diverters) to increase the visibility of the power line and reduce likelihood of collisions.
- Marking devices should be spaced 10 m apart in areas where the line is located in close proximity of water bodies, and where large winged birds are known to breed.
- Marking devices include spiral vibration dampers, strips, Firefly Bird Flight Diverters, bird flappers, aerial marker spheres, ribbons, tapes, flags and aviation balls.
- Construction of the power line in close proximity to other existing lines will reduce the cumulative impacts and collision risk.

**Cumulative impacts:** Various species require specific conditions for breeding, resulting in very few successful breeding attempts, or breeding might be restricted to very small areas. These species have not evolved to cope with high adult mortality. Therefore, consistent high adult mortality over an extensive period could have a serious effect on a population's ability to sustain itself in the medium to long term.

**Residual Risks:** Low risk anticipated provided that the mitigation measures are implemented correctly and rehabilitation of the site is undertaken.

#### 7.4.2 Impact on Wetlands and River courses:

Degradation of wetlands areas & drainage systems		
<p><b>Nature:</b> Activities during the construction phase of the project could be expected to result in some shorter term disturbance of stream/riverine and wetland associated vegetation cover and to the bed and banks of the freshwater features where access for the construction works associated with the line may need to cross freshwater features. As a whole <u>Alternative 1</u> has the potential to impact on fewer of the freshwater features within the study area. Should this alignment be selected, a localized shorter term impact of moderate to low intensity (depending on the distance between the construction activities and the freshwater features) with a low overall significance in terms of its impact on the identified aquatic ecosystems in the area could be expected. (Wetlands Report, Blue Science, 2015).</p>		
CONSTRUCTION PHASE		
Rating of Impacts	Without mitigation	With mitigation
<b>Probability</b>	Definite (5)	Highly probable (4)
<b>Duration</b>	Medium-term (3)	Medium-term (3)
<b>Extent</b>	Limited to Local Area (2)	Limited to Local Area (2)
<b>Magnitude</b>	High (8)	Moderate (6)
<b>Significance</b>	<b>65 (high)</b>	<b>44 (medium)</b>
Alternative 1	39 (medium)	20 (low)
Alternative 2	50 (medium)	30 (medium)
Alternative 3	52 (medium)	44 (medium)
<b>Status (positive or negative)</b>	Negative	Negative
OPERATIONAL PHASE		
<b>Probability</b>	Probable (3)	Probable (3)
<b>Duration</b>	Permanent (5)	Permanent (5)
<b>Extent</b>	Limited to Local Area (2)	Limited to the Site (1)
<b>Magnitude</b>	High (8)	Low (4)
<b>Significance</b>	<b>45 (high)</b>	<b>20 (low)</b>
Alternative 1	38 (medium)	20 (low)
Alternative 2	40 (medium)	20 (low)
Alternative 3	45 (medium)	20 (low)
<b>Status (positive or negative)</b>	Negative	Negative
<b>Reversibility</b>	Low	Moderate
<b>Irreplaceable loss of resources?</b>	Moderate	Low
<b>Can impacts be mitigated?</b>	Yes	
<b>No Go Alternative</b>	The no-go option would prevent negative impact on wetlands and rivers	
<p><b>Mitigation:</b></p> <ul style="list-style-type: none"> <li>• Construction activities should as far as possible be limited to the area outside the proposed buffer zones.</li> <li>• In general a buffer of 50 from the top of banks of the rivers and approximately 100m from the edge of the wetland areas should be allowed for. Neither the pylons nor the anchors should be constructed within the proposed buffer zones. The power lines may cross over the buffer zones for the wetlands and drainage lines as the limitations are not applicable to overhead infrastructure.</li> <li>• With regards to the temporary crossings over the watercourses required for the construction phase, existing access should be used as far as possible. Where this is unavoidable, the disturbance to the watercourse should be minimised as far as possible and wetland areas should be avoided. The disturbed areas should be rehabilitated as soon as possible after construction is complete by reshaping and revegetating the disturbed areas with suitable indigenous vegetation (replace indigenous riparian and instream vegetation where possible). Any invasive alien plants that currently exist within the</li> </ul>		

immediate area of the construction activities should also be removed. To reduce the risk of erosion, run-off over the exposed areas should be mitigated to reduce the rate and volume of run-off and prevent erosion occurring within the freshwater features.

- Contaminated runoff from the construction sites should be prevented from entering the rivers/streams and wetland areas. All materials on the construction sites should be properly stored and contained. Disposal of waste from the sites should also be properly managed. Construction
- A water use authorization may need to be obtained from the Department of Water and Sanitation: Western Cape Regional Office for approval of the water use aspects of the proposed activities. (Wetlands Report, Blue Science, 2015).
- Where possible the pylons must be constructed outside of drainage channels or at their narrowest point
- Use existing tracks and roads to gain access to the work servitude as much as possible
- workers should be given ablution facilities at the construction sites that are located at least 50m away from the river/stream systems and regularly serviced.
- Maintenance of the power lines should only take place via the designated access routes. The establishment of alien vegetation in the riparian zones along the transmission line route should specifically be prevented, and controlled if it does occur.

**Cumulative impacts:** The freshwater features within the proposed corridors are already in a moderately to seriously modified ecological state as a result of the existing land use activities. The proposed lines are in general proposed along routes where there are already power lines in place. Provided the new lines are constructed close to these lines such that the associated access roads can be shared, the cumulative impacts are likely to be low. Erosion and sedimentation from the project activities, together with invasive alien plant growth and the possible modification of surface water runoff and water quality may lead to additional impacts on the freshwater habitats within the study area. In general, by selecting the route with the least impact, one can prevent any unacceptable impacts, particularly over the longer term, from taking place within the freshwater features within the study area. These impacts are likely to be of a low significance and can be monitored and easily mitigated. The proposed mitigation measures are largely intended to minimise the impacts that may occur within the construction phase when the potential impact is the greatest. (Wetlands Report, Blue Science, 2015).

**Residual Risks:** None anticipated provided that the mitigation measures are implemented correctly and rehabilitation of the site is undertaken. A localized, short-term impact will still occur during the construction phase; however, the overall significance of the impact on the aquatic ecosystems is expected to be very low. A localized, long-term impact of a very low overall significance could be expected to occur during operation.

### Pollution of water courses and soil

**Nature:** Mismanagement of waste and pollutants like hydrocarbons, construction waste and other hazardous chemicals will result in these substances entering and polluting sensitive natural environments either directly through surface runoff during rainfall events, or subsurface water movement. As a whole Alternative 1 has the potential to impact on fewer of the freshwater features within the study area and thus the potential for pollution of water courses and soil would be less. For Alternative 1, a localized shorter term impact of moderate to low intensity (depending on the distance between the construction activities and water courses) with a low overall significance in terms of its impact on the identified aquatic ecosystems in the area could be expected. (Wetlands Report, Blue Science, 2015).

#### CONSTRUCTION PHASE

Rating of Impacts	Without mitigation	With mitigation
<b>Probability</b>	Highly probable (4)	Probable (30)
<b>Duration</b>	Permanent (5)	Permanent (5)
<b>Extent</b>	Limited to Local Area (2)	Limited to the Site (1)
<b>Magnitude</b>	High (8)	Low (4)
<b>Significance</b>	<b>60 (high)</b>	<b>30 (medium)</b>

Alternative 1	39 (medium)	20 (low)
Alternative 2	50 (medium)	30 (medium)
Alternative 3	52 (medium)	44 (medium)
<b>Status (positive or negative)</b>	Yes	Negative
<b>OPERATIONAL PHASE</b>		
<b>Probability</b>	Probable (3)	Probable (3)
<b>Duration</b>	Permanent (5)	Permanent (5)
<b>Extent</b>	Limited to Local Area (2)	Limited to Site (1)
<b>Magnitude</b>	High (8)	Low (4)
<b>Significance</b>	<b>45 (medium)</b>	<b>30 (medium)</b>
Alternative 1	38 (medium)	20 (low)
Alternative 2	40 (medium)	30 (medium)
Alternative 3	45 (medium)	44 (medium)
<b>Status (positive or negative)</b>	Negative	Negative
<b>Reversibility</b>	Low	Moderate
<b>Irreplaceable loss of resources?</b>	Moderate	Low
<b>Can impacts be mitigated?</b>	Yes	
<b>No Go Alternative</b>	The no-go option would prevent further erosion and pollution of soil and water	
<b>Mitigation:</b>		
<ul style="list-style-type: none"> <li>All waste generated during construction is to be disposed of as per the Environmental Management Programme and no washing of paint brushes, containers, wheelbarrows, spades, picks or any other equipment adjacent or in drainage channel is permitted.</li> <li>Proper management and disposal of construction waste must occur during the lifespan of the project, including during maintenance of the power lines and substations.</li> <li>No release of any substance i.e. cement, oil, that could be toxic to fauna or faunal habitats within the watercourses.</li> <li>Portable toilets must be placed 30m away from the edge of the channels.</li> <li>Do not locate the construction camp or any depot for any substance which causes or is likely to cause pollution within a distance of 50m from a channel.</li> <li>Spillages of fuels, oils and other potentially harmful chemicals must be cleaned up immediately and contaminants properly drained and disposed of using proper solid/hazardous waste facilities (not to be disposed of within the natural environment). Any contaminated soil must be removed and the affected area rehabilitated immediately – consult with a wetland/aquatic specialist if spills occur.</li> </ul>		
<b>Cumulative impacts:</b> Expected to be moderate, should mitigation measures not be implemented. The impacts would be the similar for Alternatives 1,2 and 3 when mitigation is implemented effectively.		
<b>Residual Risks:</b> None anticipated provided that the mitigation measures are implemented correctly and rehabilitation of the site is undertaken.		

### 7.4.3 Heritage Impacts

<b>Destruction/Alteration of Heritage artefacts or features</b>
<p><b>Nature:</b> It has been determined that a few sites, features or objects of cultural significance dating to the historic period occur sporadically all over the region. As these features are all visible, <b>it would be easy to avoid them</b> in the unlikely change that some would occur near the power line route or within the proposed substation site. Rock shelters with rock art and stone age archaeological deposits may occur in the mountains. Potential impacts to Pre-colonial Archaeology: The tower footings for the 400 kV line (all Alternatives) are relatively small and they are unlikely to result in significant damage to underlying archaeological material. Early, Middle and Later Stone Age scatters near water sources and in proximity to rocky outcrops, etc.</p>

Historical archaeological remains may be located around farmsteads. Remnants of historic roads and passes are located in the area. Cemeteries and isolated graves are located in the area, as associated with settlements and farms. Negative impacts to archaeological material which may include caves with archaeological deposit and scatters of archaeological material. (HIA Report, ACO Associates, 2015) The impacts would be the similar for Alternative 1 and Alternative 2 and for Alternative 3, thus no preference was given by the HIA Specialists to either alternative.

CONSTRUCTION PHASE		
Rating of Impacts	Without mitigation	With mitigation
<b>Probability</b>	Improbable (2)	Highly improbable (1)
<b>Duration</b>	Short Duration (2)	Short Duration (2)
<b>Extent</b>	Limited to the region (3)	Limited to the Local Area (2)
<b>Magnitude</b>	Minor (2)	Minor (1)
<b>Significance</b>	<b>14 (low)</b>	<b>5 (low)</b>
Alternative 1	14 (low)	5 (low)
Alternative 2	14 (low)	5 (low)
Alternative 3	14 (low)	5 (low)
<b>Status (positive or negative)</b>	Negative	Neutral
OPERATIONAL PHASE		
<b>Probability</b>	Improbable (2)	Highly improbable (1)
<b>Duration</b>	Short Duration (2)	Short Duration (2)
<b>Extent</b>	Limited to the region (3)	Limited to the region (2)
<b>Magnitude</b>	Minor (2)	Minor (1)
<b>Significance</b>	<b>14 (low)</b>	<b>5 (low)</b>
Alternative 1	14 (low)	5 (low)
Alternative 2	14 (low)	5 (low)
Alternative 3	14 (low)	5 (low)
<b>Status (positive or negative)</b>	Negative	Neutral
<b>Reversibility</b>	Moderate	High
<b>Irreplaceable loss of resources?</b>	Low	Low
<b>Can impacts be mitigated?</b>	Yes	
<b>No Go Alternative</b>	The no-go option would not change the status of heritage artefacts, buildings and features	
<b>Mitigation:</b> As per the study, no heritage features or artefacts are expected in the study area that cannot be avoided, however should any archaeological sites or graves be exposed during construction work, it must immediately be reported to a heritage practitioner so that an investigation and evaluation of the finds can be made.		
<b>Cumulative impacts:</b> Low. There are no anticipated fatal flaws with regard the construction of the powerline. This desktop review concludes that there are no archaeological reasons to exclude the use of any of the proposed powerline alternatives. (HIA Report, ACO Associates, 2015)		
<b>Residual Risks:</b> None anticipated provided that the mitigation measures are implemented.		

#### 7.4.4 Visual Impacts

Visual impacts
ature: A medium visual sensitivity prevails in the region where natural vegetation is the principle land cover. These areas are regarded as having a natural landscape character. The proposed project will be exposed and clearly visible and it is expected to be in contrast with the existing characteristics of the landscape. The rural landscape character of agricultural areas is normally sparsely developed and characterised by open fields, bordered by low wire fences or tree avenues leading up to farmsteads or farming communities. The introduction of a 400kV transmission line will contrast with the existing character.

Tourists visiting the game farms such as Botlierskop-, Gondwana Private Game Reserve, Nyaru-, Cheetah Lodge will experience an intrusion on their views. Tourists travelling along the main transport routes such as the R327 and R328 may see the transmission line. The towns have transformed the landscape to create a new landscape character that can generally be classified as a coastal town character. Hartenbos is the town that may experience the greatest impact with the implementation of Alternative 3. It will impact on the town's expansion and settlement patterns as it has to maintain a servitude where no development can occur. Residents from the town of Hartebos will experience the greatest impact due to the proximity of the servitude to their houses. Also during the holiday season large numbers of tourists visit the area and will also be affected due to the presence of the transmission line. Their views of the mountain ranges to the north will be affected. Motorists travelling on the N2 highway will experience a brief exposure to the transmission line. Unique landscape features that will be affected are Wolwedans Dam, Groot Brak River and Maalgat River as well as all the smaller ravines and hillcrests. Farmers within 1km of the servitude will experience maximum visual exposure. It is possible to detect the power line over larger areas up to 5km. All farmers in this zone may experience an impact on their views to the mountains or other landscape amenities. Tourists visiting guest farms and guest houses, especially those on the western outskirts of George.

Servitude widths between new and existing lines must be taken into consideration. During construction it is expected that most of the impacts will revolve around the damaging of vegetation surrounding the tower footprint. Foundation excavation will expose the underlying soil and will impact on the natural features of the landscape. The presence of a workforce in the servitude will place emphasis on the construction activity and will attract a higher level of attention. The construction of towers is considered low intensity construction as the damage to the vegetation is considered localised and easily rehabilitated. One aspect that can cause significant impacts on both the landscape and the visual receptors is the clearing of vegetation in the servitude. This often results in a very distinct linear corridor that is highly visible. This action removes vegetation that often contributes to the quality of the natural landscape. The significance of vegetation clearance will be a function of how long the section of clearance is, how visible it is from sensitive viewpoints and to what degree it will impact on the character of the landscape. The operational phase will be marked by the commissioning of the power line. The rhythmic spacing of towers/poles across the landscape may cause visual intrusion due to its unfamiliar character, imposing scale and possible servitude clearance that will emphasise the corridor. (VIA Report, i-scape May 2015)

The potential for a negative visual impact exists for all alternatives, but due to the importance of tourism along the coastal areas the impact would be more significant along Alternative 3 (excluding the section close to the Industrial area). The impact will be more pronounced in terms of Eco-tourism at Alternative 1 and more significant for Alternative 2 in terms of the farming community.

<b>CONSTRUCTION PHASE</b>		
<b>Rating of Impacts</b>	<b>Without mitigation</b>	<b>With mitigation</b>
<b>Probability</b>	Definite (5)	Highly probable (4)
<b>Duration</b>	Permanent (5)	Permanent (5)
<b>Extent</b>	Minor (2)	Minor (2)
<b>Magnitude</b>	High (8)	Moderate (6)
<b>Significance</b>	<b>75 (high)</b>	<b>52 (medium)</b>
<i>Alternative 1</i>	52 (medium)	20 (low)
<i>Alternative 2</i>	50 (medium)	30 (medium)
<i>Alternative 3</i>	72 (high)	44 (medium)
<b>Status (positive or negative)</b>	Negative	Negative
<b>OPERATIONAL PHASE</b>		
<b>Probability</b>	Highly probable (4)	Highly probable (4)
<b>Duration</b>	Permanent (5)	Permanent (5)
<b>Extent</b>	Limited to the Local Area (2)	Minor (2)
<b>Magnitude</b>	High (8)	Low (4)
<b>Significance</b>	<b>60 (high)</b>	<b>44 (medium)</b>
<i>Alternative 1</i>	50 (medium)	20 (low)

Alternative 2	44 (medium)	30 (medium)
Alternative 3	60 (high)	44 (medium)
<b>Status (positive or negative)</b>	Negative	Negative
<b>Reversibility</b>	Low	Moderate
<b>Irreplaceable loss of resources?</b>	Low	Low
<b>Can impacts be mitigated?</b>	Yes, to some extent	
<b>No Go Alternative</b>	The no-go option would avoid the negative visual impacts of the project.	
<b>Mitigation:</b>		
<ul style="list-style-type: none"> <li>• Screen planting along the perimeter of the substation will greatly assist in the concealment of the substation.</li> <li>• Locate construction camps and stockyards in areas that are already disturbed instead of stripping more vegetation to allow for these facilities. It will be most preferred to locate the construction camps away from farm houses, tourist attractions and pristine areas.</li> <li>• Establish limits of disturbances during construction through demarcating of the tower footprints in order to prevent unnecessary damage to vegetation;</li> <li>• Keep to existing road infrastructure as far as possible to minimise the physical damage to vegetation in the power line servitude;</li> <li>• Implement rehabilitation of disturbed areas as soon as possible to limit the duration of exposed surfaces and the risk of erosion; and</li> <li>• Previously rehabilitated areas must be monitored to prevent the infestation of weeds that may become an unsightly feature.</li> <li>• Servitude widths between new and existing lines must be taken into consideration</li> </ul>		
<b>Cumulative impacts:</b> Expected to be moderate to high, should the recommended mitigation measures <u>not</u> be adequately implemented. The landscape character is such that it generally has a very low screening capacity and that major electrical infrastructure will be easily visible, in particular in the Karoo. Cumulative visual impact from numerous power lines in parallel will increase its visual dominance in the landscape and may reach a threshold point. The landscape and visual receptors in the study area is considered to be generally highly sensitive. This will be narrowed down during a site investigation to identify the areas of highest to lowest sensitivity. (VIA Report, i-scape May 2015)		
<b>Residual Risks:</b> None anticipated provided that the mitigation measures are implemented correctly and rehabilitation of the site is undertaken.		

#### 7.4.5 Impacts on traffic and local roads

Roads and transport		
<b>Nature:</b> Traffic will be congested as a result of construction activities. In addition, traffic increase can lead to road damage, erosion, accidents and even traffic delays. Construction machinery and heavy vehicles are likely to generate dust which is likely to be perceptible by adjacent residents. Trucks may potentially distribute dust along internal access roads. Congestion would be a problem for all sections (during construction when heavy load trucks transport materials), mostly due to large numbers of traffic on the main roads and due to lower order (narrower) roads in farming communities. During maintenance, localised impacts may occur.		
CONSTRUCTION PHASE		
Rating of Impacts	Without mitigation	With mitigation
<b>Probability</b>	Probable (3)	Improbable (2)
<b>Duration</b>	Limited to Local Area (2)	Limited to Site (1)
<b>Extent</b>	Low (4)	Minor (2)
<b>Magnitude</b>	Moderate (6)	Low (4)
<b>Significance</b>	<b>36 (medium)</b>	<b>14 (low)</b>
Alternative 1	36 (medium)	14 (low)
Alternative 2	30 (medium)	20 (low)
Alternative 3	30 (medium)	20 (low)
<b>Status (positive or negative)</b>	Negative	Negative
OPERATIONAL PHASE		

<b>Probability</b>	Probable (3)	Improbable (2)
<b>Duration</b>	Limited to Local Area (2)	Limited to Site (1)
<b>Extent</b>	Minor (2)	Minor (2)
<b>Magnitude</b>	Moderate (6)	Low (4)
<b>Significance</b>	<b>30 (medium)</b>	<b>14 (low)</b>
Alternative 1	20 (low)	14 (low)
Alternative 2	20 (low)	14 (low)
Alternative 3	20 (low)	14 (low)
<b>Status (positive or negative)</b>	Negative	Negative
<b>Reversibility</b>	Low	Moderate
<b>Irreplaceable loss of resources?</b>	Moderate	Low
<b>Can impacts be mitigated?</b>	Yes	
<b>No Go Alternative</b>	The no-go option would prevent additional traffic congestion and burden on roads	
<b>Mitigation:</b>		
<ul style="list-style-type: none"> <li>• Vehicular movement of construction vehicles beyond the property boundaries of the site should be outside the am and pm peak hours.</li> <li>• Where new access roads are required, they should disturb as limited an area as possible</li> <li>• Farm roads in particular should be used responsibly, with communication between Eskom's contractors and land owners.</li> <li>• Areas demarcated as being out of bounds for construction personnel must be sign posted and must be regarded strictly as "no-go" areas. No contractor's personnel, vehicles or machinery may access these areas. Very strict control must be exercised over this aspect of construction activities</li> <li>• Ensure that the necessary signage and traffic measures are implemented for safe and convenient access to the site from. Measures must also be put in place to ensure that these access points do not get built up with mud or sand.</li> </ul>		
<b>Cumulative impacts:</b> Expected to be moderate to high, should the recommended mitigation measures not be adequately implemented. Residents within close vicinity to the substation are expected to be affected.		
<b>Residual Risks:</b> None anticipated provided that the mitigation measures are implemented correctly and rehabilitation of the site is undertaken.		

#### 7.4.6 Social and Socio-economic Impacts

Impact on Property values
<p><b>Nature:</b></p> <p>Property values may be impacted upon negatively due to the visual impact. The impact is of concern where land owners already have power line infrastructure on their properties. The rhythmic spacing of towers/poles across the landscape may cause visual intrusion due to its unfamiliar character, imposing scale and possible servitude clearance that will emphasise the corridor. (VIA Report, i-scape May 2015)</p> <p>Property values may be impacted upon along all three alternatives, but in particular where power lines already cross the properties. Some of these properties were identified during the Public Participation Process. Farmers have also expressed their concerns about the practical use of their properties when portions of their land are "lost" for use as servitudes. Due to the denser residential areas (such as holiday estates) close to Alternative 3 the impact could be slightly more for this alternative, but this would depend on the characteristics of the specific property and the surrounding land uses. The actual distance of the line from houses and the backdrop against which the line will impact upon, would play a role in determining the actual effect on property values. Distances between servitudes (where other lines occur on the same property) also plays a role. (Land Use Report, 2015)</p> <p>Negotiations will be undertaken by Eskom's Land &amp; Rights Department, after the environmental authorisation of the EIA is obtained. The securing the servitude or title of the portions of land required for the proposed project will be undertaken with the following activities(SIA Report, Amina Ismail, April 2015):</p>

- The legal boundaries are identified for each property affected by the project;
- The legal ownership of each property is identified;
- An independent property evaluator is appointed; and
- Negotiations are conducted by Transmission negotiators with each legal landowner, statutory bodies and mineral right holders.

Rating of Impacts	Without mitigation	With mitigation
	Without mitigation	With mitigation
<b>CONSTRUCTION PHASE</b>		
Rating of Impacts	Without mitigation	With mitigation
<b>Probability</b>	Improbable (2)	Improbable (2)
<b>Duration</b>	Short-term (3)	Very short-term (3)
<b>Extent</b>	Limited to the Local Area (2)	Limited to Local Area (2)
<b>Magnitude</b>	Moderate (6)	Low (4)
<b>Significance</b>	<b>22 (low)</b>	<b>18 (low)</b>
Alternative 1	20 (low)	14 (low)
Alternative 2	20 (low)	14 (low)
Alternative 3	22 (low)	18 (low)
<b>Status (positive or negative)</b>	Negative	Negative
<b>OPERATIONAL PHASE</b>		
<b>Probability</b>	Improbable (2)	Probable (3)
<b>Duration</b>	Very short-term (1)	Very short-term (1)
<b>Extent</b>	Limited to Site (1)	Limited to Site (1)
<b>Magnitude</b>	Low (4)	Low (4)
<b>Significance</b>	<b>12 (low)</b>	<b>18 (low)</b>
Alternative 1	20 (low)	14 (low)
Alternative 2	20 (low)	14 (low)
Alternative 3	22 (low)	18 (low)
<b>Status (positive or negative)</b>	Negative	Negative
<b>Reversibility</b>	Low	Low
<b>Irreplaceable loss of resources?</b>	No	No
<b>Can impacts be mitigated?</b>	Yes	
<b>No Go Alternative</b>	The no-go option would leave the status quo of property values unchanged.	
<b>Mitigation:</b>		
After the environmental authorisation of the EIA is obtained, negotiations must be undertaken by Eskom's Land & Rights Department		
<ul style="list-style-type: none"> <li>• All adjacent landowners must be informed of the construction processes prior to commencement of construction activities.</li> <li>• An independent property valuer must be appointed during negotiations.</li> </ul>		
<b>Cumulative impacts:</b> Possible negative low impact.		
<b>Residual Risks:</b> Low risk anticipated, provided that the mitigation measures are implemented correctly.		

### Impact on Job opportunities

**Nature:** The municipalities' residents and businesses therefore can potentially benefit from work opportunities and expenditure. However, contractors appointed by Eskom may not necessarily come from these areas. Contractors usually have skilled personnel to work on the project. It is possible that where labour may be sourced from local communities, it will be to perform unskilled work such as land clearing and erecting fences. (SIA Report, Amina Ismail, April 2015)

The number of job opportunities would be comparable for all Alternatives, as the difference in length of the proposed alternatives is not significant.

Rating of Impacts	Without mitigation	With mitigation
	Without mitigation	With mitigation
<b>CONSTRUCTION PHASE</b>		
Rating of Impacts	Without mitigation	With mitigation
<b>Probability</b>	Improbable (2)	Improbable (2)
<b>Duration</b>	Medium-term (3)	Very short-term (3)
<b>Extent</b>	Limited to the Local Area (2)	Limited to Local Area (2)
<b>Magnitude</b>	Moderate (6)	Moderate (6)
<b>Significance</b>	<b>22 (low)</b>	<b>22 (low)</b>
Alternative 1	20 (low)	22 (low)
Alternative 2	20 (low)	22 (low)
Alternative 3	22 (low)	22 (low)
<b>Status (positive or negative)</b>	<b>Positive</b>	<b>Positive</b>
<b>OPERATIONAL PHASE</b>		
<b>Probability</b>	Improbable (2)	Probable (3)
<b>Duration</b>	Very short-term (1)	Very short-term (1)
<b>Extent</b>	Limited to Site (1)	Limited to Site (1)
<b>Magnitude</b>	Low (4)	Low (4)
<b>Significance</b>	<b>12 (low)</b>	<b>18 (low)</b>
Alternative 1	12 (low)	18 (low)
Alternative 2	12 (low)	18 (low)
Alternative 3	12 (low)	18 (low)
<b>Status (positive or negative)</b>	<b>Positive</b>	<b>Positive</b>
<b>Reversibility</b>	Low	Low
<b>Irreplaceable loss of resources?</b>	No	No
<b>Can impacts be mitigated?</b>	Yes	
<b>No Go Alternative</b>	A No GO Alternative would prevent any socio-economic benefits that are likely to result from the proposed project and might include job creation. New employment in this industry cannot be achieved with a No Go Alternative.	
<b>Mitigation:</b>		
<ul style="list-style-type: none"> <li>• Eskom to provide numbers and skills of jobs in the three phases, locally and nationally by contractors. Also procurement targets for locals and nationally.</li> <li>• All adjacent landowners must be informed of the construction processes prior to commencement of construction activities.</li> <li>• Adjacent land owners must be informed timeously of any service stoppages in their areas.</li> <li>• Notification must include possible timeframes for stoppages.</li> <li>• Consequences of such stoppages must be clearly indicated to all surrounding/affected land owners.</li> <li>• Affected land owners must be timeously informed of any/all maintenance of the bulk water services supply which may result in service stoppages to their properties. Again this must include possible timeframes so alternatives</li> </ul>		
<b>Cumulative impacts:</b> Expected positive impact to be low.		
<b>Residual Risks:</b> None anticipated provided that the mitigation measures are implemented correctly and local labour and suppliers be given the opportunity to participate.		

### Health issues Impact of Electro-magnetic fields

**Nature:** The infrastructure may have a health impacts from electric and magnetic fields. According to Eskom (Eskom, 2015a), the electric field at the boundary of the servitude for its highest voltage transmission line (of 765 kV) is 3kV/m, which is lower than the maximum limit of 5kV/m continuous general public exposure recommended by the International Radiation Protection Association (IRPA) of the World Health Organisation (WHO).

The power line in this project therefore is not expected to cause any health effects where communities are located at the boundary or outside the Eskom servitude. From the information obtained from the IRPA and Eskom there is insufficient evidence that electric or magnetic fields are detrimental to communities living outside the servitudes of the 400kV Transmission lines. (SIA Report, Amina Ismail, April 2015). This is valid for all 3 Alternatives.

CONSTRUCTION PHASE		
Rating of Impacts	Without mitigation	With mitigation
<b>Probability</b>	Improbable (2)	Improbable (2)
<b>Duration</b>	Very short-term (1)	Very short-term (1)
<b>Extent</b>	Limited to Site (1)	Limited to Site (1)
<b>Magnitude</b>	Minor (2)	Minor (2)
<b>Significance</b>	<b>8 (low)</b>	<b>8 (low)</b>
Alternative 1	8 (low)	8 (low)
Alternative 2	8 (low)	8 (low)
Alternative 3	8 (low)	8 (low)
<b>Status (positive or negative)</b>	Negative	Negative (Negligible)
OPERATIONAL PHASE		
<b>Probability</b>	Improbable (2)	Improbable (2)
<b>Duration</b>	Medium-term (5)	Very short-term (1)
<b>Extent</b>	Limited to the Site (1)	Limited to Site (1)
<b>Magnitude</b>	Low (4)	Low (4)
<b>Significance</b>	<b>20 (medium)</b>	<b>12 (low)</b>
Alternative 1	20 (medium)	12 (low)
Alternative 2	20 (medium)	12 (low)
Alternative 3	20 (medium)	12 (low)
<b>Status (positive or negative)</b>	Negative	Negative (Negligible)
<b>Reversibility</b>	Low	Moderate
<b>Irreplaceable loss of resources?</b>	Low	Low
<b>Can impacts be mitigated?</b>	Yes	
<b>No Go Alternative</b>	The no-go option would not add to any perceived risk of electro-magnetic fields in the area.	
<b>Mitigation:</b>		
<ul style="list-style-type: none"> <li>Eskom Standards and Specifications to be followed during construction, maintenance and operation</li> </ul>		
<b>Cumulative impacts:</b> The power line in this project therefore is not expected to cause any health effects where communities are located at the boundary or outside the Eskom servitude. From the information obtained from the IRPA and Eskom there is insufficient evidence that electric or magnetic fields are detrimental to communities living outside the servitudes of the 400kV Transmission lines.		
<b>Residual Risks:</b> None anticipated		

Impact on Tourism
<b>Nature:</b>
Tourism may be impacted upon negatively mostly due to the <u>visual impact</u> . From the point of view of receptors, including local residents and tourists, the presence of a transmission line may negatively affect the sense of place of natural areas, potentially negatively affecting eco-tourism attractions such scenic hiking trails, eco-adventures, and the like. This could have negative social and economic consequences, such as loss of revenue for business enterprises, loss of employment and reduced economic contributions to local GDP (Socio-Economic Report, EMS, 2015) The potential for a negative impact would be comparable for all 3 the Alternatives, but the number of <u>known</u> and prominent tourist facilities/features are more than along the

Alternative 3 route. A direct impact can be avoided through mitigation and careful placement of towers, to ensure that access to facilities is not hindered and to avoid spoiling the views from rooms at B&Bs and lodges.

Rating of Impacts	Without mitigation	With mitigation
	Without mitigation	With mitigation
<b>CONSTRUCTION PHASE</b>		
Rating of Impacts	Without mitigation	With mitigation
<b>Probability</b>	Improbable (2)	Improbable (2)
<b>Duration</b>	Short-term (3)	Very short-term (3)
<b>Extent</b>	Limited to the Local Area (2)	Limited to Local Area (2)
<b>Magnitude</b>	Moderate (6)	Moderate (6)
<b>Significance</b>	<b>22 (low)</b>	<b>20 (low)</b>
Alternative 1	20 (low)	20 (low)
Alternative 2	20 (low)	20 (low)
Alternative 3	22 (low)	22 (low)
<b>Status (positive or negative)</b>	Negative	Negative
<b>OPERATIONAL PHASE</b>		
<b>Probability</b>	Improbable (2)	Probable (3)
<b>Duration</b>	Very short-term (1)	Very short-term (1)
<b>Extent</b>	Limited to Site (1)	Limited to Site (1)
<b>Magnitude</b>	Low (4)	Low (4)
<b>Significance</b>	<b>12 (low)</b>	<b>18 (low)</b>
Alternative 1	20 (low)	18 (low)
Alternative 2	20 (low)	18 (low)
Alternative 3	22 (low)	22 (low)
<b>Status (positive or negative)</b>	Negative	Negative
<b>Reversibility</b>	Low	Low
<b>Irreplaceable loss of resources?</b>	No	No
<b>Can impacts be mitigated?</b>	Yes	
<b>No Go Alternative</b>	A No GO Alternative would leave the status quo unaltered.	
<b>Mitigation:</b>		
<ul style="list-style-type: none"> <li>Visual impacts that may influence the tourism industry should be mitigated as per the recommendations of the VIA Specialist Report.</li> <li>Benefits from construction period to be maximised by employing local labour and service providers, including accommodation, transportation and entertainment.</li> </ul>		
<b>Cumulative impacts:</b> Possible negative low impact, and moderate positive impact.		
<b>Residual Risks:</b> Low risk anticipated, provided that the mitigation measures are implemented correctly.		

### Impact on the Local Economy

**Nature:**

During construction, the line could have negative social and economic consequences, such as loss of revenue for business enterprises, loss of employment and reduced economic contributions to local GDP (Socio-Economic Report, EMS, 2015) The potential for a negative impact would be comparable for all 3 the Alternatives, but the number of businesses (including tourist attractions and accommodation) are more than along the Alternative 3 route. A direct impact can be avoided through mitigation and careful placement of towers, limiting of disruptions and responsible use of access roads.

The impact of the construction of the transmission lines can be subdivided in two categories. One is the impact of the construction cost, purchasing of servitude and operational expenditure of the transmission lines on the surrounding local municipalities and secondly the impact on the broader economy by strengthening the power availability to a growing economy. The local economy will also benefit through aspects like accommodation, retail, entertainment, etc. Money can also be injected into the pockets of the landowners by buying the servitude area for the transmission line. (Socio-Economic Report, EMS, 2015)

Potential economic losses will be limited in the sections where animals can still graze the land under the transmission lines and as such no real loss in farming activity and production is expected<sup>6</sup>. There are sections where some economic losses could occur. The boost of the economy during construction phase would be to a comparable benefit for all 3 Alternatives, but more visible in particular rural areas that are located further away from the most travelled routes. (Socio-Economic Report, EMS, 2015)

CONSTRUCTION PHASE		
Rating of Impacts	Without mitigation	With mitigation
<b>Probability</b>	Improbable (2)	Probable (3)
<b>Duration</b>	Short-term (3)	Very short-term (3)
<b>Extent</b>	Limited to the Local Area (2)	Limited to Local Area (2)
<b>Magnitude</b>	Moderate (6)	Moderate (6)
<b>Significance</b>	<b>22 (low)</b>	<b>32 (medium)</b>
Alternative 1	20 (low)	30 (medium)
Alternative 2	20 (low)	30 (medium)
Alternative 3	22 (low)	32 (medium)
<b>Status (positive or negative)</b>	Negative	Positive
OPERATIONAL PHASE		
<b>Probability</b>	Improbable (2)	Probable (3)
<b>Duration</b>	Very short-term (1)	Very short-term (1)
<b>Extent</b>	Limited to Site (1)	Limited to Site (1)
<b>Magnitude</b>	Low (4)	Low (4)
<b>Significance</b>	<b>12 (low)</b>	<b>18 (low)</b>
Alternative 1	20 (low)	18 (low)
Alternative 2	20 (low)	22 (low)
Alternative 3	22 (low)	22 (low)
<b>Status (positive or negative)</b>	Positive	Positive
<b>Reversibility</b>	Low	Low
<b>Irreplaceable loss of resources?</b>	No	No
<b>Can impacts be mitigated?</b>	Yes	
<b>No Go Alternative</b>	A No GO Alternative would bring about socio-economic benefits and might include job creation, which cannot be achieved with a No Go Alternative.	
<b>Mitigation:</b>		
<ul style="list-style-type: none"> <li>• Visual impacts should be mitigated as per the recommendations of the VIA Specialist Report.</li> <li>• Benefits from construction period to be maximised by employing local labour and service providers, including accommodation, transportation and entertainment.</li> <li>• An independent property valuer must be appointed during negotiations with property owners.</li> </ul>		
<b>Cumulative impacts:</b> Possible negative low impact, and moderate positive impact.		
<b>Residual Risks:</b> Low risk anticipated, provided that the mitigation measures are implemented correctly.		

## 7.4.7 Agricultural Impacts

### Agricultural impacts

**Nature:** The construction of a transmission line has isolated impacts on the soil resource, due to the relatively small, separated footprints of the pylons. However, if an access road is constructed, especially in steeper areas or where erodible soils occur, the possibility of accelerated soil erosion is a reality. Regarding cultivation and agricultural potential, the main susceptible areas would be areas of irrigation, such as where the transmission line crosses rivers. (D.G. Paterson Report Number GW/A/2015/20 March 2015)

The transmission lines will have some, although a limited, impact on the agricultural activity. The majority of current farming activities can continue under the transmission lines. All three alternatives cross agricultural land with grazing land, central pivot irrigation, fruit trees and planted dry lands. A large percentage of agricultural activities can still continue unhindered, but there will be some economic losses. The areas with the highest proportions occur in the western half of the study area, along the Hartenbos and Little Brak Rivers.

Alternative 1 crosses a smaller proportion of such zones, while Alternatives 2 and the Alternative 3 cross more high potential soils.

#### CONSTRUCTION PHASE

Rating of Impacts	Without mitigation	With mitigation
<b>Probability</b>	Definite (5)	Highly probable (4)
<b>Duration</b>	Permanent (5)	Permanent (5)
<b>Extent</b>	Minor (2)	Minor (2)
<b>Magnitude</b>	High (8)	Moderate (6)
<b>Significance</b>	<b>75 (high)</b>	<b>52 (medium)</b>
<i>Alternative 1</i>	52 (medium)	40 (medium)
<i>Alternative 2</i>	75 (medium)	44 (medium)
<i>Alternative 3</i>	75 (high)	52 (medium)
<b>Status (positive or negative)</b>	Negative	Negative

#### OPERATIONAL PHASE

<b>Probability</b>	Highly probable (4)	Highly probable (4)
<b>Duration</b>	Permanent (5)	Permanent (5)
<b>Extent</b>	Limited to the Local Area (2)	Minor (2)
<b>Magnitude</b>	High (8)	Low (4)
<b>Significance</b>	<b>60 (high)</b>	<b>44 (medium)</b>
<i>Alternative 1</i>	40 (medium)	36 (medium)
<i>Alternative 2</i>	55 (medium)	40 (medium)
<i>Alternative 3</i>	60 (high)	44 (medium)
<b>Status (positive or negative)</b>	Negative	Negative
<b>Reversibility</b>	Low	Moderate
<b>Irreplaceable loss of resources?</b>	Medium	Low
<b>Can impacts be mitigated?</b>	Yes (close consultation with farmers recommended)	
<b>No Go Alternative</b>	The no-go option would leave the status quo of agriculture unchanged.	

#### Mitigation:

- Specific soil conservation measures, such as contouring, culverts and diversion channels would need to be considered in susceptible areas. In addition, regular monitoring of such roads would need to be carried out.
- Care should be taken to avoid any areas where irrigation is currently being practiced.
- Keep to existing road infrastructure as far as possible to minimise the physical damage to crops and grazing areas in and around the power line servitude;
- Implement rehabilitation of disturbed areas as soon as possible to limit the duration of exposed surfaces and the risk of erosion; and

- Previously rehabilitated areas must be monitored to prevent the infestation of weeds that may become an unsightly feature and impact on stock feeding behaviour.
- Discuss existing and future planning with farmers, in particular regarding placement of pivot points, crop fields and grazing camps

**Cumulative impacts:** Expected to be moderate to high, should the recommended mitigation measures not be adequately implemented.

**Residual Risks:** None anticipated provided that the mitigation measures are implemented correctly and rehabilitation of the site is undertaken.

## 7.5 Additional evaluation

As many of the impacts are also subjectively weighted with impacts being visual of nature or perceived to be of a quality of life diminishing nature, consideration must be given to priority of impacts. It will be impossible to continue with any project if every individual's needs are separately considered and the "diminishing background" and cumulative effect is not mentioned.

Projects of this nature (that are part of the modern landscape) tend to disappear into the "background" of the environment, whether physically or perceptually and are furthest away from creating impacts once operational. However the support structures or access routes for maintenance will remain a bio-physical impact. Therefore the choice and alignment of the power line route should be done in such a way that tar roads are followed as far as possible to preserve grazing and irrigation areas, and that maintenance is done responsibly.

Most power lines that traverse large tracks of rural land will impact to a certain degree on the production potential of the land. However, to evaluate this loss a perspective on the production capability of the specific farm/vegetation area must be done in order to establish magnitude of loss the farmer. **For the particular study area of Gourikwa to Blanco, agricultural impacts were identified by I&APs as a very prominent concern. For this reason this additional evaluation has been included in this Scoping Assessment.** The table below presents the grazing capacity of the affected land areas.

Table 5. Grazing potential

Region	Grazing Potential Large Stock (q)	Grazing Potential Small Stock (q)
Coastal Belt	5-10 ha/lసు	1.5 – 3 ha/ssu

The actual area of the grazing land/irrigation land that is affected in the case of a service road can thus be calculated with the known factors inserted in an equation.

Length of access road = a  
 Breadth of access road = b  
 Total ha of access road =  $a \times b / 10\,000 = c$

Total ha of specific farm = p  
 Grazing Potential = q  
 Stocking potential of farm =  $p/q = r$  animal units

Loss of production area = c

**Example:**

Farm Bittersweet 1111 GL

Extent: 6 400ha (p)

(q) Grazing potential small stock = 10ha/ssu

Thus:

Stocking potential:  $p/q = r$   
6 400ha/10 h per ssu = 640 ssu

*Production Loss expected:*

Length of service road crossing farm (a) = 8 000 metres

Breadth of service road (b) = 6 metres

Potential productive area lost:  $a \times b = c$   
8 000m x 6m = 48 00m<sup>2</sup>

Expressed as hectares =  $a \times b/10\ 000 = 48\ 00/10\ 000$   
= 4.8 ha (c)

Production lost:  $c/p \times r$   
= 4.8/6 400 x 640  
= 0.48 ssu

This calculation will change for every farm and carrying capacity. However the example serves to illustrate that production losses for grazing are negligible. An argument can be raised that irrigation potential lost will be bigger than that of grazing. However the off-set to this argument is that the availability of electricity to drive irrigation pumps and pivots for expansion and the stability of the electrical network exceeds the potential production loss and will be made up by the consistency of electrical supply.

Choices affecting the route were thus based on evaluations that are quantifiable and explicable in terms of sustainability and productivity. The social and cultural impacts can thus be addressed by empirical studies and mitigation strategies, without undue economic and bio-physical constraints.

The purpose of the comparison between the three routes can thus been justified to inform the Relevant Reviewing Authorities of the rationale and the conclusions of the Scoping Report as a Tool in the Environmental Impact Assessment process.

The “No-Go” option was considered in the tables above (Section 7.2). The no-go option implies the consequences of not construction of the 400KV Transmission Power Line and the implications on sustainable development. The project will enable the transmission of generated electricity to the national grid, which will support the IDPs and SDFs in terms of surety (reliability) of supply. A No GO Alternative would Socio-economic benefits are likely to result from the proposed project and might include job creation, which cannot be achieved with a No Go Alternative.



**Table 6. Impact Rating Score**

Receiving Environment	Score before mitigation			Explanation	Score after mitigation		
	Alternative 1 (Preferred)	Alternative 2	Alternative 3		Alternative 1 (Preferred)	Alternative 2	Alternative 3
Topography							
Soils and erosion	-1	-1	-1	Mitigation measures and new access routes needed for Alt 2 and 3. Less disturbance to existing access routes by Alt3 will have less erosion potential. The terrain of Alt 3 is flatter thus avoiding erosion potential.	-1	-1	1
Geology	0	0	0		0	0	0
Agriculture/Stock farming	-1	-1	0	Alt 1 will intersect larger areas of dryland farming which is difficult to re-align to avoid crop areas in the first 1/3 of the route. Ditto Alternative 2. Alternative 3 can be positioned on the edge of the route or aligned along the railway line, crossing only one dryland section before joining Alternative 2.	0	0	1
Settlements/Small towns	0	0	0		0	0	0
Agriculture Dryland	-1	-1	1	Following on Alternative 2 from alternative 3 avoids irrigation areas for `13 km	-1	1	1
Agriculture/Irrigation	-1	-1	0	Moving across from alternative Two to Alt 1 at Crossing Points 1 and 2 avoids the Wolwedans Dam	1	-1	0
<b><u>Influence on Nature Reserves:</u></b>							
Gondwana	-1	-1	-1		-1	-1	1
Nyaru	-1	-1	1		-1	-1	1

Receiving Environment	Score before mitigation			Explanation	Score after mitigation		
	Alternative 1 (Preferred)	Alternative 2	Alternative 3		Alternative 1 (Preferred)	Alternative 2	Alternative 3
Botlierskop	0	-1	-1		1	-1	-1
<b>Mountain Ranges</b>							
Outeniqua	0	0	0		0	0	0
<b>Bio Physical Environment</b>							
Endangered Fauna	-1	-1	0	The proximity of Alternatives 1 and 2 to game reserves places them in the flight paths and foraging areas of avian species. Although both Alternatives are outside these reserves they are however within their first 1/3 in easy distance of the sphere of influence over the game reserves. Alternative 3 does not pose a threat in this area thus avoiding many bird impacts.	-1	-1	1
Protected							
CBA	-1	-1	-1	Alt 1 will follow an existing route, removing the necessity for new access that will further threaten endangered species. New access routes will need to be developed for Alt 2 and 3	0	1	1
Threatened Plant Species	-1	-1	1	Alternative 1 may intersect 3 known populations of threatened plant species whereas Alt 2 may encroach on 7 known populations. With mitigation and monitoring will be less complex in Alt 1	0	-1	1
Vegetation Types threatened	-1	-1	-1	Alternatives 1 and 2 do not differ much in terms of intersection of CBA's. Both Alternatives 1 and 2 intersect areas that contain known populations of threatened plant species Alt 1 will follow an existing route, removing the necessity for new access that will further threaten endangered species.	0	-1	-1

Receiving Environment	Score before mitigation			Explanation	Score after mitigation		
	Alternative 1 (Preferred)	Alternative 2	Alternative 3		Alternative 1 (Preferred)	Alternative 2	Alternative 3
FEPA Fish Points	-1	-1	0		0	0	1
Wetlands/Amphibians	-1	-1	0	Alt 1 crosses 6 waterbodies. Alt 2 crosses 8 waterbodies inclusive of 5 prominent wetland areas, 2 large dams and a floodplain. Combining elements of Alt 1, 2 and 3 diminishes crossing of water bodies two three events. Alternative 3, middle 1/3 of Alternative 2 and the last 1/3 distance of Alternative 1 will have the ideal alignment with least wetland impacts.	-1	1	1
<b>Heritage Sites</b>							
World Heritage Sites	0	0	0		0	0	0
Rock Art	0	0	0		0	0	0
Palaeontological impacts							
<b>Visual Impacts</b>							
Wilderness Areas	-1	-1	0	Alternative 3 has no visual impacts on Wilderness areas. By utilising Alternative 3, the first 1/3 of Alt 2 avoids Nyaru game lodge. Thus avoidance of impact.	-1	1	1
Riverine areas	-1						
Farming Areas	-1			Utilising the contours Alternative 3 avoids visual impacts on 3 estates and suburbs. Following the last 1/3 of Alternative 1 from Crossing point 2 will diminish visual impacts on farmsteads as the current line will be followed and a slight deviation will avoid direct visual impacts on farm houses.	1	0	1
Natural Landscapes	-1	-1	-1				
Urban areas	1	0	-1		0	0	1

Receiving Environment	Score before mitigation			Explanation	Score after mitigation		
	Alternative 1 (Preferred)	Alternative 2	Alternative 3		Alternative 1 (Preferred)	Alternative 2	Alternative 3
<b>Total before mitigation hierarchy</b>	-15	-15	-5		-4	-5	10

As illustrated by the table above, there are negative impacts for all three alternatives. The table shows that Scores of (-1) (0) and (1) have been allocated to the weighted effect of a route alternative on the receiving environment. When a route has an impact of (-1) it creates a negative impact. A score of (0) indicates no or negligible impact and a score of (1) indicate if an impact can be managed according to the mitigation hierarchy. Thus comparisons between the three routes have indicated that Alternative 3 will have less impacts than Alt 1 and Alt 2 and more manageable impacts.

However Alternative 3 only comprises the first 1/3 of the proposed distance. In utilising Alternative three the second 2/3 will run along Alternative 2. Comparisons between Alternative 2 as a whole and Alternative 1 as a whole, indicate that there is little or no choice between the two routes. If the mitigation hierarchy is applied Alternative 1 has a slightly better route than Alternative 2 but cannot practically join up with Alternative 3.

Careful study of all three routes potential impacts was undertaken on a sectoral basis of each route. This desktop evaluation combined with the specialist reports' findings led to the conclusion that Alternatives 1 and 2 did have differing impacts on complimentary sections of the individual routes. An Alternative to all three the routes is suggested that combines Alternative 3 (first 1/3) to avoid game lodges and pristine tourist areas with the middle 1/3 of Alternative 2 (also avoids game lodges, pristine areas and large water bodies) and the crosses over to the last 1/3 of Alternative 1 and follows the existing power line path.

The negative impacts that are identified in are to be earmarked for further in depth studies during the EIA Phase. At this stage a combination of Alternative 1, 2 and 3 is preferred due to avoidance and minimisation of impacts carrying more weight than management and mitigation.

The Scoping level assessment has indicated that this route may impact negatively on certain sensitive vegetation and intensive farming activities. Loss of vegetation along the Alternative 1, 2 and 3 route will result in a minimal loss of farming land and income. The latter situation needs to be evaluated in specialist agricultural, visual and ecological studies. During the Public Participation Process, resistance has been given to all three alternatives.

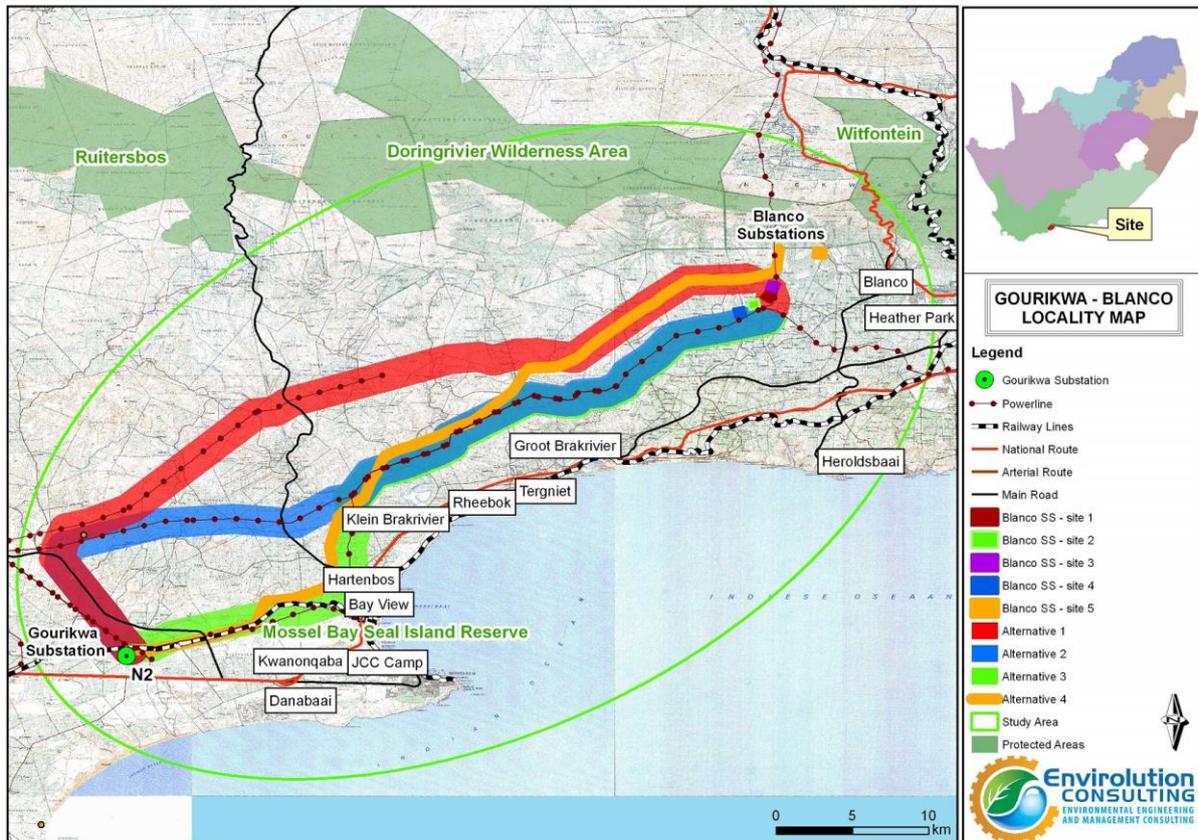
It is the duty of the Environmental Assessment Practitioner to utilise information, studies, public participation and experience when assessing any project, in order to eliminate uncertainty and avoid impacts as far as possible.

When the Proponent approached the EAPs for this project, alternatives where identified to be evaluated individually and routes compared that would inform the Proponent on the best Alternative. However, it was during evaluation of specialist studies, comments received from Public Meetings and ground-truthing, that a holistic approach to this specific study became apparent and that refinement of the most practical and environmentally responsible route would be of utmost importance.

Each of the three routes has a specific section that would make the choice of that route the preferred alternative. However, none of the routes have an entirely acceptable alignment and would entail extreme management and mitigation measures to be taken on a specific section.

During the assessment it became apparent that utilising individual sections of the three routes would be the ideal option (fourth alternative) which enables the EAP to apply the mitigation hierarchy of avoidance, minimisation, management and mitigation to maximum affect. In such a way, the private game reserves are avoided or the potential impact minimised, irrigation and farmland impacts avoided or minimised and most importantly, wetland impacts minimised to shorter crossings, which would have

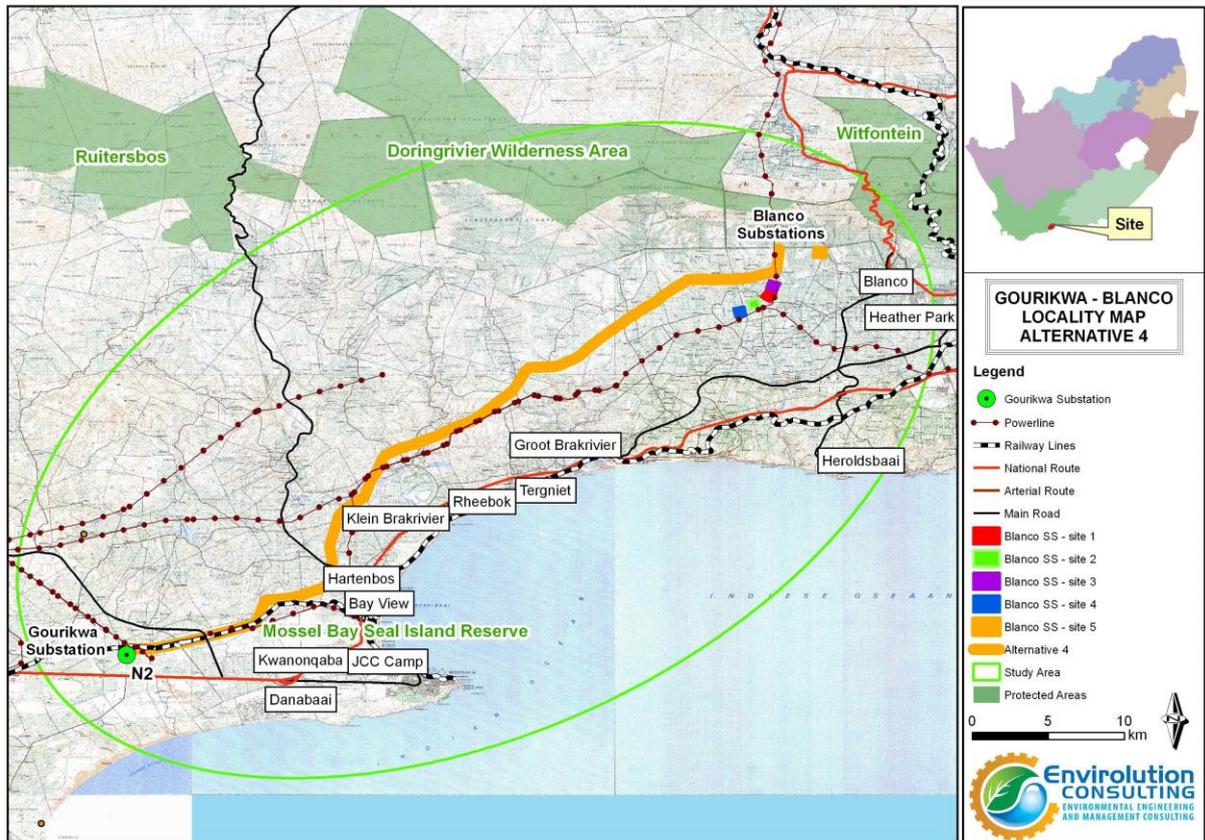
a temporary and short term effect only. The proposed Alternative 4 is shown as a yellow line in the image below:



By using the Alternative 4, most of the identified negative impacts of the last third of the Alternative 1 route can then still be negotiated with land owners to minimise the direct (mostly visual) impacts by investigating slight deviations in the route as well as either avoiding impacts on production land or only causing temporary disturbance (during construction). The one factor that the combination of the elements of the three routes avoids the most is the necessity of creating new access routes as well as minimal bush cutting and clearance required. Maintenance on the suggested preferred route will be easier and create fewer impacts of significance, particularly on those features that have been identified during the Public Participation Process. Some of the main features that have been taken into consideration for the additional proposal are:

- It will follow the alignment of an existing railway line (Alt 3 section)
- It will follow the alignment of an existing power line (Alt 3 section)
- It passes the industrial area (thus visual impact will not be significant)
- It will avoid the Gondwana Game Reserve and Nyara Game Reserve on Alt 2
- It will avoid the Hartebeeskuil Dam that is located on Alt 2
- It is proposed north of Klipheweldam to avoid the impact thereon and mitigate the potential for water birds that concentrate around water bodies from flying into the lines
- Alt 3 will be located between the mine areas (Maandagskop) and avoiding the Seeumeepark, Hartenbos housing/holiday developments, Outeniquapark and Monte Christo Estates
- The Alt 2 and Alt3 alignment will impact on the Wolwedansdam, thus Alt 4 is proposed to depart from that alignment and join the Alt 1 alignment before the dam
- It will be located north of Georgeheim farm

- It will avoid Willem Meyer farms and Grace Guesthouse, and the kloof where yellow wood trees and fungi are located.
- It will avoid Sinksabrug, Die Draai (Brandwag) and Claasensrus, Molendrift farm
- It will connect to the preferred Alternative Narina substation at Blanco



It is recommended by the EAP that the Alternative 4 that is proposed also be considered and investigated in the EIA phase to follow.

## 8. PLAN OF STUDY FOR ENVIRONMENTAL IMPACT ASSESSMENT

A "plan of study for environmental impact assessment" means a study contemplated in Regulation 2 which forms part of a scoping report and sets out how an environmental impact assessment will be conducted. As per Appendix 2, (2)(i) to the EIA Regulations the plan of Study for Environmental Impact Assessment is a document which forms part of a scoping report and sets out how an environmental impact assessment must be conducted and must include:

- i) a description of the **alternatives to be considered** and assessed within the preferred site, including the option of not proceeding with the activity;*
- (ii) a description of the **aspects to be assessed** as part of the environmental impact assessment process;*
- (iii) aspects to be assessed by **specialists**;*
- (iv) a description of the **proposed method of assessing** the environmental aspects, including a description of the proposed method of assessing the environmental aspects including aspects to be assessed by specialists;*
- (v) a description of the proposed **method of assessing duration and significance**;*
- (vi) an indication of **the stages** at which the competent authority will be consulted;*
- (vii) particulars of the **public participation process** that will be conducted during the environmental impact assessment process; and*
- (viii) a description of the **tasks** that will be undertaken as part of the environmental impact assessment process;*
- (ix) **identify suitable measures** to avoid, reverse, mitigate or manage identified impacts and to determine the extent of the residual risks that need to be managed and monitored.*

### 8.1 Description of Tasks

The following tasks will be completed during the EIAR phase:

- i. Environmental Impact Assessment Report;
- ii. Specialist Studies; and
- iii. Public Participation Process.

#### 8.1.1 Environmental Impact Assessment Report;

After the review period of the draft Scoping Report, recommendations will be made regarding the two alignment alternatives.

The EIAR will contain all information that is necessary for the competent authority to consider the application and to reach a decision. It will detail the process followed during the EIA Phase including details of the PPP and an assessment of each identified potentially significant impact. A draft Environmental Management Programme (EMPr) for the mitigation of impacts will be provided within the EIAR. The EMPr will attempt to mitigate the potential construction related impacts of the power line development.

Cumulative impacts will be assessed within the entire study area. It will include the assessment of electricity generation, transmission and distribution activities of Eskom and Independent Power Producers.

Preliminary investigations of all potential impacts associated with this proposed project have been undertaken by the project specialists during this Scoping phase. Some specialist studies, such as the

Avi-Faunal study have included a site- walkdown of the three alternatives, and collection of on-site and project specific data.

### 8.1.2 Specialist studies in EIA phase

The following detailed specialist studies will be undertaken during the EIAR Phase. These specialist studies will be documented and recommendations formulated by the specialists for the proposed development. The full impact of construction activities will be described in the EIAR after the integration of the specialist study findings has occurred. Assumptions made and the specialist will explicitly state any uncertainties and gaps in knowledge. An indication will be provided by the specialist of the methodology used in determining the significance of potential environmental impacts. Envirolution Consulting will ensure that the methodology is consistent across all specialist studies in order to facilitate informed integrated decision making.

- Delineation of the wetland and river boundaries using the requisite techniques based upon the latest Wetland Classification systems (SANBI, 2009);
- Indicate suitable buffer zones as prescribed by the relevant legislation, policies, conservation plans; and
- Assess the status of the observed faunal and floral populations observed.
- Assess the possible impacts on the Heritage resources of the are, inclusive of

**Data collected during the EIAR phase will determine the preferred transmission line route alternative. This will guide the required Water Act registration/licensing process.**

A comprehensive literature review and analysis would be undertaken during the EIA phase of the project. This would assist the consultants to acquire further demographic and socio-economic information with regards to the receiving environment and to build on the initial profiling of the local population's socio-economic characteristics.

### 8.1.3 Public Participation Process of the EIA phase

During the EIA Phase, additional primary data would be gathered by means of consultation with the stakeholders and affected parties, and linkages with the public participation process.

The social impact assessment team will study and analyse the information gathered by the biophysical studies (e.g. information related to technical, environmental, economic and demographic aspects and land-use changes, impact on other facilities, services, and so forth) done in parallel with the public participation process and social studies. This would assist the social team to assess the impact of the proposed development on the direct (surrounding communities) and indirect (regional) environment.

### 8.1.4 Proposed Methodology of Assessing Issues and Alternatives

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

#### a) Status Quo

The site as it currently stands taking cognisance of the disturbance and the impacts remaining,

#### b) Construction phase

All the construction and construction related activities on site, until the contractor leaves the site.

### **c) Operational phase**

All activities, including the operation and maintenance of the proposed development.

The activities arising from each of the relevant phases have been included in the tables. The assessment endeavours to identify activities, which require certain environmental management actions to mitigate the impacts arising from them. The criteria against which the activities were assessed are given in the next section.

#### **8.1.4.1 Assessment Criteria**

In accordance with Appendix 3 of the 2014 Regulations, Envirovolution Consulting will assess each identified potential significant impact and report the findings in the Environmental Impact Assessment Report (EIAR) and will include:

- (j) an assessment of each identified potentially significant impact and risk, including-
  - (i) cumulative impacts;
  - (ii) the nature, significance and consequences of the impact and risk;
  - (iii) the extent and duration of the impact and risk;
  - (iv) the probability of the impact and risk occurring;
  - (v) the degree to which the impact and risk can be reversed;
  - (vi) the degree to which the impact and risk may cause irreplaceable loss of resources; and
  - (vii) the degree to which the impact and risk can be mitigated;
- (k) where applicable, a summary of the findings and recommendations of any specialist report complying with Appendix 6 to these Regulations and an indication as to how these findings and recommendations have been included in the final assessment report;
- (l) an environmental impact statement which contains-
  - (i) a summary of the key findings of the environmental impact assessment;
  - (ii) a map at an appropriate scale which superimposes the proposed activity and its associated structures and infrastructure on the environmental sensitivities of the preferred site indicating any areas that should be avoided, including buffers; and
  - (iii) a summary of the positive and negative impacts and risks of the proposed activity and identified alternatives;
- (m) based on the assessment, and where applicable, recommendations from specialist reports, the recording of proposed impact management objectives, and the impact management outcomes for the development for inclusion in the EMPr as well as for inclusion as conditions of authorisation;
- (n) the final proposed alternatives which respond to the impact management measures, avoidance, and mitigation measures identified through the assessment;
- (o) any aspects which were conditional to the findings of the assessment either by the EAP or specialist which are to be included as conditions of authorisation
- (p) a description of any assumptions, uncertainties and gaps in knowledge which relate to the assessment and mitigation measures proposed;
- (q) a reasoned opinion as to whether the proposed activity should or should not be authorised, and if the opinion is that it should be authorised, any conditions that should be made in respect of that authorisation;
- (r) where the proposed activity does not include operational aspects, the period for which the environmental authorisation is required and the date on which the activity will be concluded and the post construction monitoring requirements finalised;
- (s) an undertaking under oath or affirmation by the EAP in relation to:
  - (i) the correctness of the information provided in the reports;

- (ii) the inclusion of comments and inputs from stakeholders and I&APs;
- (iii) the inclusion of inputs and recommendations from the specialist reports where relevant; and
- (iv) any information provided by the EAP to interested and affected parties and any responses by the EAP to comments or inputs made by interested or affected parties;
- (t) where applicable, details of any financial provisions for the rehabilitation, closure, and ongoing post decommissioning management of negative environmental impacts;
- (u) an indication of any deviation from the approved scoping report, including the plan of study, including-
  - (i) any deviation from the methodology used in determining the significance of potential environmental impacts and risks; and
  - (ii) a motivation for the deviation;
- (v) any specific information that may be required by the competent authority; and
- (w) any other matters required in terms of section 24(4)(a) and (b) of the Act.

The assessment of the impacts will be conducted according to a synthesis of criteria required by the Integrated Environmental Management procedure.

**Table 7. Assessment Criteria**

Criteria	Assessment Rating Scales
<b>Cumulative Impacts</b>	<ul style="list-style-type: none"> <li>• Low – Environmental resources still have significant capacity to respond to change and withstand additional stress;</li> <li>• Medium - Environmental resources have a reduced capacity respond to change and withstand additional stress; and</li> <li>• High - Environmental resources have no capacity respond to change or withstand additional stress</li> </ul>
<b>Nature</b>	<ul style="list-style-type: none"> <li>• Positive;</li> <li>• Neutral; and</li> <li>• Negative</li> </ul>
<b>Extent</b> (Physical and spatial size of the impact)	<ul style="list-style-type: none"> <li>• Site - The impact could affect the whole, or a measurable portion of the above-mentioned properties;</li> <li>• Local - The impacted area extends only as far as the activity, e.g. a footprint; and</li> <li>• Regional - The impact could affect the area including the neighbouring farms the transport routes and the adjoining towns.</li> </ul>
<b>Intensity</b>	<ul style="list-style-type: none"> <li>• Low Impact (Negligible alteration of natural systems, patterns or processes or social and cultural functions and processes);</li> <li>• Medium - (Notable alteration of natural systems, patterns or processes or social and cultural functions and processes); and</li> <li>• High - (Severe alteration of natural systems, patterns or processes or social and cultural functions and processes).</li> </ul>
<b>Duration</b> The lifetime of the impact; this is measured in the context of the lifetime of the proposed base.	<ul style="list-style-type: none"> <li>• Short-term (0 to 5 years);</li> <li>• Medium term (6 to 15 years); and</li> <li>• Long term (16 to 30 years).</li> </ul>
<b>Probability</b> This describes the likelihood of the	<ul style="list-style-type: none"> <li>• Improbable - The possibility of the impact occurring is very low, due either to the circumstances, design or experience;</li> <li>• Probable - There is a possibility that the impact will occur to</li> </ul>

Criteria	Assessment Rating Scales
impacts actually occurring. The impact may occur for any length of time during the life cycle of the activity, and not at any given time. The classes are rated as follows	<p>the extent that provisions must be made therefore;</p> <ul style="list-style-type: none"> <li>• Highly probable - It is most likely that the impacts will occur at some or other stage of the development. Plans must be drawn up before the undertaking of the activity; and</li> <li>• Definite - The impact will take place regardless of any prevention plans, and there can only be relied on mitigatory actions or contingency plans to contain the effect.</li> </ul>
<p><b>Significance</b> Significance is determined through a synthesis of impact characteristics. Significance is an indication of the importance of the impact in terms of both physical extent and time scale, and therefore indicates the level of mitigation required.</p>	<ul style="list-style-type: none"> <li>• No significance - The impact is not substantial and does not require any mitigatory action;</li> <li>• Low - The impact is of little importance, but may require limited mitigation;</li> <li>• Medium - The impact is of importance and therefore considered to have a negative impact. Mitigation is required to reduce the negative impacts to acceptable levels; and</li> <li>• High - The impact is of great importance. Failure to mitigate, with the objective of reducing the impact to acceptable levels, could render the entire development option or entire project proposal unacceptable. Mitigation is therefore essential.</li> </ul>

#### Methodology used in assessing alternatives

Alternatives will be assessed according to the impact of the specific alignment on the surrounding environment. Since the impacts of all three alignments will be the same in generic surroundings, the environment on which these will impact will be the variable which will govern the decision of a recommended alignment. i.e. the sensitive areas through which each route alignment passes.

### **8.1.5 EIAR Public Participation Process**

During the Environmental Impact Assessment phase, the draft EIA report will be made available for public review and comments. All stakeholders and registered I&AP's will be notified via e-mail, fax, SMS's and post (depending on the preferred method of communication by stakeholders and I&AP's). The draft EIA report will be made available for 30 days to the I&AP's and Organs of state.

At the end of the review period of the draft EIA Report, all comments/input from stakeholders and I&AP's will be captured in the Issues and Response Report (IRR) which will form part of the final EIA Report. The Final EIAR including the IRR and EMPr, will be submitted to DEA for decision making. All I&AP's on the project database will be notified of the submission of the Final EIAR report.

Authority's decision: All stakeholders and registered I&AP's will be notified about the Authority's decision.

## 9. CONCLUSION

The negative impacts that are identified in are **to be earmarked for further in depth studies during the EIA Phase**. Alternative 1 is preferred due to the location further from the sensitive Fynbos areas, from large wetlands and further north of the holiday homes that are located around Klein Brak and Hartenbos. The Scoping level assessment has indicated that this route may impact negatively on certain sensitive vegetation, game farms and intensive farming activities. The Scoping level assessment has however indicated that this route may impact negatively on Game Ranches and on intensive farming activities.

During the Public Participation Process, concerns related to bird collisions were prominent, in particular where water bodies are present on the ground.

At this stage a combination of Alternative 3 is preferred, but Alternative 4 should be investigated during the EIA phase, due to the possible better avoidance and minimisation of impacts carrying more weight than management and mitigation.

Loss of vegetation along sections of the Alternative 1, 2 and 3 routes is expected to impact on farming land, the hospitality industry and income. The latter situation also needs to be evaluated in specialist agricultural, visual and social studies. During the Public Participation Process, resistance has been given to all three alternatives. It is thus recommended that a 4<sup>th</sup> Alternative be investigated, as discussed above.

The project will enable the transmission of generated electricity to the national grid, which will support the IDPs and SDFs in terms of surety (reliability) of supply. A No GO Alternative would Socio-economic benefits are likely to result from the proposed project and might include job creation, which cannot be achieved with a No Go Alternative.

This Draft Scoping Report has been prepared to allow public review and comments that will guide the EIA phase and allow decision making by the authorities regarding the need for information and specialist investigations that may be required during the EIA phase.