ENVIRONMENTAL IMPACT ASSESSMENT PROCESS
FINAL SCOPING REPORT

SALDANHA BAY NETWORK STRENGTHENING PROJECT, WESTERN CAPE PROVINCE

FINAL SCOPING REPORT
MAY 2016

Prepared for:
Eskom Holdings SOC Ltd

Prepared by:

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PROJECT DETAILS

DEA Reference No.	:	N/A
Title	:	Saldanha Bay Network Strengthening Project, Western Cape Province
Authors	:	Savannah Environmental (Pty) Ltd Jo-Anne Thomas John von Mayer
Project Developer	:	Eskom Holdings SOC Ltd
Report Status	:	Final Scoping Report

When used as a reference this report should be cited as: Savannah Environmental (2015) Final Scoping Report: Saldanha Bay Strengthening Project

PURPOSE OF THE SCOPING REPORT

Eskom Holdings SOC Ltd (to be referred to as Eskom hereafter) is proposing the Saldanha Bay Network Strengthening Project which involves the proposed construction of a new Distribution substation (Dx), Transmission substation (Tx), 2X 400kV Power Lines and associated upgrade and extension of the Aurora Substation. The proposed Saldanha Bay Network Strengthening is located in the Saldanha Bay area, approximately 130km north west of Cape Town, in the Western Cape Province. The closest towns to the study area are Saldanha Bay, Langebaan and Vredenburg.

The EIA process is being undertaken in accordance with the requirements of the National Environmental Management Act (NEMA; Act No. 107 of 1998).

Scoping is an important part of the EIA process, as it helps to ensure that the impact assessment is appropriately focussed. The main objectives of the Scoping process are:

» To engage with stakeholders at an early stage of the development so that they may contribute their views with regards to the proposed project;
» To identify potential issues and impacts associated with the proposed development;
» To define the scope of the Environmental Impact Assessment (EIA);
» To define the methodology that is required for the EIA; and
» To describe the plan of study for the EIA.

In terms of NEMA, the Scoping Report is submitted to the competent authority (i.e. the National Department of Environmental Affairs (DEA)) as part of the decision-making process with regard to the proposed wind energy facility. The Scoping Report is also intended to provide sufficient background information to other Organs of State, non-statutory bodies, the general public, organisations and local communities in order to obtain their commentary and input on the proposed development. The Scoping Phase of the EIA process identifies and describes potential issues associated with the proposed project, and defines the extent of the studies required within the EIA Phase of the process. The EIA Phase will assess those identified potential environmental impacts and benefits associated with all phases of the project including design, construction, operation and decommissioning, and will recommend appropriate mitigation measures for potentially significant environmental impacts.

The Scoping Report consists of eleven sections:

- **Chapter 1** provides background to the proposed project and associated infrastructure, and the environmental impact assessment.
- **Chapter 2** describes project details as well as the site selection process for the project.
- **Chapter 3** outlines the process which was followed during the Scoping Phase of the process and outlines the regulatory and legal context.
- **Chapter 4** describes the existing biophysical and socio-economic environment affected by the proposed project.
- **Chapter 5** provides the description of the potential environmental issues and potential impacts identified to be associated with the project.
- **Chapter 6** presents the conclusions of the scoping evaluation.
- **Chapter 7** describes the Plan of Study for EIA.
- **Chapter8** provides references used to compile the Scoping Report.

The Scoping Report provided the public with an opportunity to verify that all potential issues associated with the proposed project have been identified through this scoping study, and provides an opportunity for additional key issues for consideration to be raised. The Final Scoping Report now incorporates all comments received prior to submission to the National Department of Environmental Affairs (DEA).

INVITATION TO COMMENT ON THE DRAFT SCOPING REPORT

Members of the public, local communities and stakeholders were invited to comment on the Draft Scoping Report which was made available for public review and comment for a 30-day period at the following locations from 15 April 2016 – 18 May 2016**:**

» Vredenburg Public Library (School Street, Vredenburg)
» Hopefield Public Library (Oak Street, Hopefield)
» Langebaan Public Library (Cnr. Oostewal & Bree Street, Langebaan)
» Saldanha Public Library (Berg Street, Saldanha)

SUMMARY

Eskom Holdings SOC Ltd (to be referred to as Eskom hereafter) is proposing the Saldanha Bay Network Strengthening Project which involves the proposed construction of a new Distribution substation (Dx), Transmission substation (Tx), 2X 400kV Power Lines and associated upgrade and extension of the Aurora Substation. The proposed Saldanha Bay Network Strengthening is located in the Saldanha Bay area, approximately 130km north west of Cape Town, in the Western Cape Province. The closest towns to the study area are Saldanha Bay, Langebaan and Vredenburg.

The nature and extent of this proposed project, as well as potential environmental impacts associated with its construction, operation and decommissioning are explored in more detail in this Scoping Report.

Eskom Holdings SOC Ltd is responsible for the provision of reliable and affordable power to its consumers in South Africa. Electricity from non-renewable sources cannot be stored and therefore must be used as it is generated. It is, therefore, required that electricity must be efficiently transmitted from the point of generation to the end user.

If Eskom is to meet its mandate and commitment to supply the ever-increasing needs of end-users, it has to plan, establish and expand its infrastructure of generation capacity and transmission power lines on an on-going basis. As part of the envisaged developments in the Saldanha Bay area, Eskom has been prompted to re-assess the capability of the existing electricity network in the area in order to meet the forecasted load requirements from industrial customers, the Industrial Development Zone (IDZ), local distributors and also to facilitate the integration of renewable generation. Power to the Saldanha Bay area is supplied from Aurora Substation which is located 28km east of Saldanha Bay. Aurora Substation supplies Blouwater, Saldanha Steel and Smelter distribution Substations. From the load forecast for the area, it is evident that there will be a constraint at Aurora Substation in the next five year period. The projected new load of approximately 200 MVA that will be realised in the area together with the natural load growth will increase Aurora Substation demand from 517 MVA to approximately 890 MVA in year 2030. The firm capacity in the area will be exceeded in 2018 if the additional loads are to be supplied from Aurora Substation. The transformation capacity is also insufficient to evacuate all of the potential renewable generation planned in the area, amounting to 2 885 MW.

Eskom is therefore proposing the Saldanha Bay network strengthening project, which includes the following:

» Construction of a new 400/132kV Transmission Substation in the

Saldanha Bay area with a planned capacity of 3 x 500 MVA transformers. The transmission substation footprint will be 600m x 600m.

» Construction of a new 132/66/11kV Distribution Substation near the current Blouwater Substation in the Saldanha Bay area. The distribution substation footprint will be 160m x 300m.
» The construction of two 400kV power lines (approximately 35 - 40 km) from the Aurora Substation to the new proposed distribution and transmission substations. A servitude of 55m is required for each power line.
» Three 132kV servitudes (31m each) are required to integrate the new 132/66/11kV substation into the proposed 400/132kV main transmission station.
» 132kV and 66kV servitudes are required to integrate the high voltage lines into the new proposed 132/66/11kV substation.
» Replacing two of the four existing 250 MVA 400/132kV transformers at Aurora Substation with 2 x 500 MVA transformers.
» Establishing 2 x 132 kV feeder bays at Aurora Substation.

The purpose of the proposed project is to:

» Improve the reliability of the existing network within the Saldanha area
» Ensure that transmission capacity keeps up with both electricity generation capacity and electricity demand within the area
» Create additional Transmission network capacity to be able to supply the increasing electricity demand.

Technically feasible **alternative substation (Dx & Tx) positions and transmission power line alignments** have been identified for investigation within a broader study area during this EIA process. These are reflected in Figure 1.1. Through the EIA process, preferred transmission power line corridors and substation positions will be nominated for consideration in the decision-making process by the National Department of Environmental Affairs (DEA), as competent authority for this project. Should the proposed Saldanha Bay Network Integration project be authorised, Eskom will then enter into negotiation process with each affected landowner. This negotiation process is independent of the EIA process.

The potentially significant issues identified to be associated with the **construction phase** of the substations and power lines include, *inter alia*:

» Impacts on flora
» Impacts on fauna
» Impacts on avifauna
» Impacts on wetlands
» Loss of heritage and fossil resources
» Socio-economic impacts, including both positive and negative

The potentially significant issues related to the **operational phase** of the project include, *inter alia*:

» Impacts on ecology in terms of the potential for the eestablishment and spread of declared weeds and alien invader plants
» Impacts on the "visual character and sense of place" of scenic features, nearby farmsteads and homesteads as well as observers travelling on main roads
» Bird mortality due to electrocution associated with the substation and collision with the power lines, and impacts of avifauna on the infrastructure as a result of faulting of the power line caused by birds
» Positive and negative socio-economic impacts

The following section provides a summary of the findings of the specialist studies undertaken as part of this scoping study:

i. Avifauna

Given the relative homogeneity of the habitat within the study area as well as existing levels of disturbance (existing roads, urban development, agricultural and stock farming), the proposed network strengthening project is unlikely to have a significant, long-term impact on the local avifauna. However, due to the sensitive avifaunal areas that support high populations of endemic and Red Listed species, in close proximity to some areas of the proposed development, a detailed site visit and species identification is required during the EIA phase. Potential habitat loss will also be investigated.

ii. Flora

There are high levels of transformation in the study area due to agricultural activities. Any highly degraded areas on site are likely to be classified as having low sensitivity and conservation value. The condition of the natural vegetation in areas where this is still present will have to be determined during detailed field surveys to be undertaken during the EIA phase of the project.

iii. Fauna

The desktop assessment indicated that there do not appear to be any obvious risks associated with the construction of the proposed substation and power line infrastructure from a faunal perspective. Various sections of the habitat within the study area are degraded and there is a large amount of power line infrastructure already present within the area. Due to the already high levels of environmental disturbance it is not predicted that any Red Data faunal species will be impacted by the proposed development.

iv. Wetlands

The desktop assessment of the study area identified two unchannelled valley bottom wetlands and six depression wetlands. A health

assessment was conducted for these wetlands according to the WET-Health Level 1 (desktop) methods. The unchannelled valley bottom wetlands have been classified as a PES category D or largely modified, and the depression wetlands as a PES category C, moderately modified. Modifications to the wetland systems are largely as a result of human disturbances including the operation of a phosphorus mine, agricultural activities and urban/ residential development within the catchment areas.

v. Heritage and palaeontology

The entire study area is sensitive from a palaeontological point of view, although different geological formations carry different levels of sensitivity and fossils may be found at variable depths across the area. Importantly, fossils can be associated with a geological stratum and be relatively widespread but they can also very easily be concentrated in very restricted areas, such as an old hyaena lair. Many known palaeontological sites occur in the general area including Elandsfontein a few kilometres to the south and Langebaanweg which is a declared Grade 1 heritage site and which falls within the northern part of the study area. Although archaeological sites are rare, a significant site, Anyskop, lies within the study area at the southern edge of the Langebaanweg declaration area and some of the fossil sites, most notably Elandsfontein, include archaeological material in them and are therefore also sensitive for that reason.

vi. Visual

The initial visual analysis indicates that due to relatively flat topography, the proposed development is likely to be visible from a broad area. However, the analysis of the various elements within the development plan indicates that due largely to the transparent nature of towers and other structures, the main impact on landscape character is likely to be limited in extent.

vii. Agricultural potential

Most of the study area consists mainly of sandy soils underlain by calcrete/limestone at varying depths ranging from <300 mm to >1 200 mm. According to the average annual rainfall for this area (280 mm), the dryland crop production potential is low, combined with the marginal crop production potential of the soil, due to the low moisture-holding capacity of the sandy soils and soil depth. The overall agricultural potential is therefore low to medium-low. No areas of high sensitivity have been identified from a soils and agricultural potential perspective.

viii. Traffic

The current demand on the existing road network in the site vicinity is low and the road network and intersections operate at acceptable levels of service. The construction phase will generate less than 20

vehicular trips during the typical weekday peak hour, which is considered insignificant. It is not expected that there will be permanent staff employed at the substations or for the power lines and the operational phase of this project is therefore not expected to generate any traffic volumes during the typical weekday peak hours.

ix. Social

Based on the initial assessment of the receiving environment it is anticipated that the proposed project could have some negative as well as positive social impacts.

The most important potential social benefits associated with the construction and operations of the proposed project refer to job opportunities and possible socio-economic spin-offs created. New economic activities such as this project having the potential to assist with the developmental challenges that much of province is faced with, providing employment and skills development to the local community and contributing to the social, economic and institutional development of the local area. Additional employment and associated indirect economic benefits could improve the quality of life of the local community. The main negative impacts are associated with the influx of in-migrants and intrusion impacts associated with the construction phase, as well as the visual impacts/ sense of place impacts and impacts on tourism from the development during the operation phase. No areas of very high sensitivity have been identified within the study area from a social perspective. The extent of the negative impacts and possible benefits would be further assessed during the EIA phase when these would be investigated in more detail.

Three substation site alternatives were identified for investigation within the scoping study (refer to Figure 6.1). From the specialist studies undertaken, the following can be concluded at this stage regarding these alternatives:

All the vegetation units identified in the study area are classified as endangered and the possibility of encountering red data species within areas of remaining natural vegetation is high. A large part of Substation Site B is situated in a Critical Biodiversity Area. This site is therefore considered least desirable from an ecological perspective. Substation site A is the preferred option from both a faunal and floral perspective at this stage.

The desktop analysis identified no sensitive avian micro-habitats within close proximity of the proposed Site A and the site is likely to have low sensitivity for avifauna. Furthermore, the power line which enters the substation Site A is also preferred from an avifaunal perspective.

Substation locations that are closest to existing heavy industry, the existing Blouwater Substation and other large scale infrastructure are

likely to have the least visual impact on sensitive areas. Site B and Site C are therefore considered preferred at this stage from a visual perspective.

Overall substation Site A appears to be the most preferred while Site B appears to be the least preferred at this stage. However, as these conclusions are largely based on existing information and limited field study, more detailed on-site investigations are required from all specialists to confirm these conclusions. None of the site alternatives can be ruled out at this stage and all three will be investigated in the EIA phase.

A combined sensitivity map is presented in Figure 6.1. This map shows preliminary identified sensitivities. This map will be refined and added to in the EIA report once detailed site assessments have been completed.

The findings of the Final Scoping Report indicate that there are no fatal flaws identified at this stage associated with the proposed wind energy facility. Detailed specialist studies have already been completed for the site. It is recommended that the proposed site can be considered in an EIA phase assessment according to the Plan of Study contained in this report.

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APPENDICES

DEFINITIONS AND TERMINOLOGY

Alternatives: Alternatives are different means of meeting the general purpose and need of a proposed activity. Alternatives may include location or site alternatives, activity alternatives, process or technology alternatives, temporal alternatives or the 'do nothing' alternative.

Cumulative impacts: Impacts that result from the incremental impact of the proposed activity on a common resource when added to the impacts of other past, present or reasonably foreseeable future activities (e.g. discharges of nutrients and heated water to a river that combine to cause algal bloom and subsequent loss of dissolved oxygen that is greater than the additive impacts of each pollutant). Cumulative impacts can occur from the collective impacts of individual minor actions over a period of time and can include both direct and indirect impacts.

Direct impacts: Impacts that are caused directly by the activity and generally occur at the same time and at the place of the activity (e.g. noise generated by blasting operations on the site of the activity). These impacts are usually associated with the construction, operation or maintenance of an activity and are generally obvious and quantifiable

Disturbing noise: A noise level that exceeds the ambient sound level measured continuously at the same measuring point by 7 dB or more.

'Do nothing' alternative: The 'do nothing' alternative is the option of not undertaking the proposed activity or any of its alternatives. The 'do nothing' alternative also provides the baseline against which the impacts of other alternatives should be compared.

Endangered species: Taxa in danger of extinction and whose survival is unlikely if the causal factors continue operating. Included here are taxa whose numbers of individuals have been reduced to a critical level or whose habitats have been so drastically reduced that they are deemed to be in immediate danger of extinction.

Endemic: An "endemic" is a species that grows in a particular area (is endemic to that region) and has a restricted distribution. It is only found in a particular place. Whether something is endemic or not depends on the geographical boundaries of the area in question and the area can be defined at different scales.

Environment: the surroundings within which humans exist and that are made up of:

i. the land, water and atmosphere of the earth;

ii. micro-organisms, plant and animal life;
iii. any part or combination of (i) and (ii) and the interrelationships among and between them; and
iv. the physical, chemical, aesthetic and cultural properties and conditions of the foregoing that influence human health and well-being.

Environmental Impact: An action or series of actions that have an effect on the environment.

Environmental impact assessment: Environmental Impact Assessment (EIA), as defined in the NEMA EIA Regulations and in relation to an application to which scoping must be applied, means the process of collecting, organising, analysing, interpreting and communicating information that is relevant to the consideration of that application.

Environmental management: Ensuring that environmental concerns are included in all stages of development, so that development is sustainable and does not exceed the carrying capacity of the environment.

Environmental management plan: An operational plan that organises and co-ordinates mitigation, rehabilitation and monitoring measures in order to guide the implementation of a proposal and its ongoing maintenance after implementation.

Indigenous: All biological organisms that occurred naturally within the study area prior to 1800

Indirect impacts: Indirect or induced changes that may occur as a result of the activity (e.g. the reduction of water in a stream that supply water to a reservoir that supply water to the activity). These types of impacts include all the potential impacts that do not manifest immediately when the activity is undertaken or which occur at a different place as a result of the activity.

Interested and Affected Party: Individuals or groups concerned with or affected by an activity and its consequences. These include the authorities, local communities, investors, work force, consumers, environmental interest groups and the general public.

Rare species: Taxa with small world populations that are not at present Endangered or Vulnerable, but are at risk as some unexpected threat could easily cause a critical decline. These taxa are usually localised within restricted geographical areas or habitats or are thinly scattered over a more extensive range. This category was termed Critically Rare by Hall and Veldhuis (1985) to distinguish it from the more generally used word "rare".

Red data species: Species listed in terms of the International Union for Conservation of Nature and Natural Resources (IUCN) Red List of Threatened Species, and/or in terms of the South African Red Data list. In terms of the South African Red Data list, species are classified as being extinct, endangered, vulnerable, rare, indeterminate, insufficiently known or not threatened (see other definitions within this glossary).

Significant impact: An impact that by its magnitude, duration, intensity or probability of occurrence may have a notable effect on one or more aspects of the environment.

ABBREVIATIONS AND ACRONYMS

BID	Background Information Document
GDACE	Gauteng Department of Agriculture, Conservation and Environment
DEA	National Department of Environmental Affairs
DME	Department of Minerals and Energy
DOT	Department of Transport
DWAF	Department of Water Affairs and Forestry
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
GIS	Geographical Information Systems
GG	Government Gazette
GN	Government Notice
I&AP	Interested and Affected Party
IDP	Integrated Development Plan
IEP	Integrated Energy Planning
km^2	Square kilometres
km/hr	Kilometres per hour
kV	Kilovolt
LUPO	Rezoning and Subdivision in terms of Land Use Planning Ordinance, Ordinance 15 of 1985
m^2	Square meters
m/s	Meters per second
MW	Mega Watt
NEMA	National Environmental Management Act (Act No 107 of 1998)
NERSA	National Energy Regulator of South Africa
NHRA	National Heritage Resources Act (Act No 25 of 1999)
NGOs	Non-Governmental Organisations
NIRP	National Integrated Resource Planning
NWA	National Water Act (Act No 36 of 1998)
SAHRA	South African Heritage Resources Agency
SANBI	South African National Biodiversity Institute
SANRAL	South African National Roads Agency Limited
SDF	Spatial Development Framework
SIA	Social Impact Assessment
ZVI	Zone of visual influence

INTRODUCTION CHAPTER 1

Eskom Holdings SOC Ltd (to be referred to as Eskom hereafter) is proposing the Saldanha Bay Network Strengthening Project which involves the proposed construction of a new Distribution substation (Dx), Transmission substation (Tx), 2X 400kV Power Lines and associated upgrade and extension of the Aurora Substation. The proposed Saldanha Bay Network Strengthening is located in the Saldanha Bay area, approximately 130km north west of Cape Town, in the Western Cape Province. The closest towns to the study area are Saldanha Bay, Langebaan and Vredenburg.

The nature and extent of this proposed project, as well as potential environmental impacts associated with its construction, operation and decommissioning are explored in more detail in this Final Scoping Report.

1.1. Project Overview and Purpose

Eskom Holdings SOC Ltd is responsible for the provision of reliable and affordable power to its consumers in South Africa. Electricity from non-renewable sources cannot be stored and therefore must be used as it is generated. It is, therefore, required that electricity must be efficiently transmitted from the point of generation to the end user.

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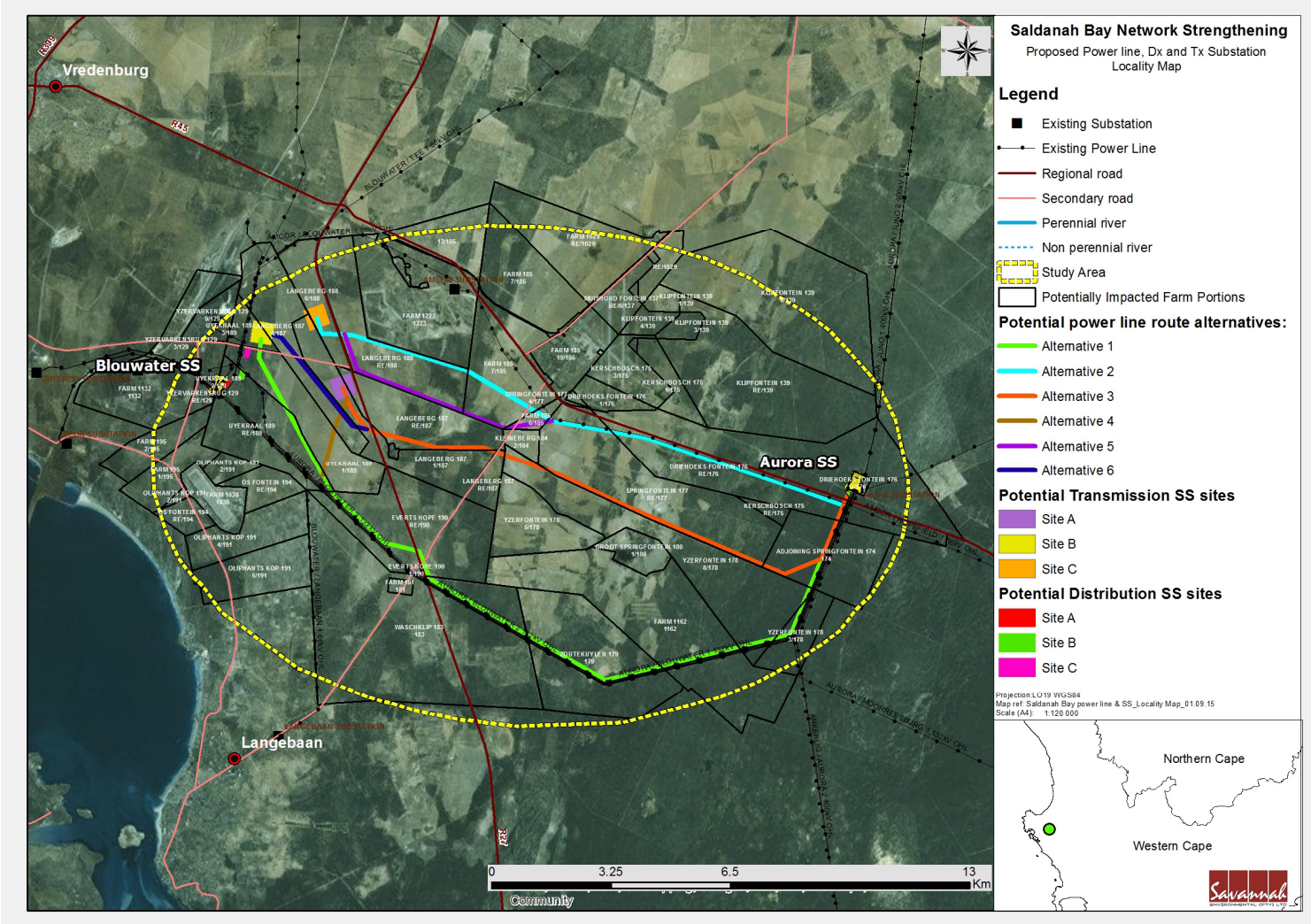

Figure 1.1 Locality Map showing the alternative substation (Dx & Tx) positions and transmission power line alignments identified for consideration in the EIA process.

The scope of the proposed Saldanha Bay Network Strengthening project, including details of all elements of the project (for the construction, operation and decommissioning phases) is discussed in detail in chapter 2.

1.2. Requirement for an Environmental Impact Assessment Process

The Saldanha Bay Network Strengthening project is subject to the requirements of the Environmental Impact Assessment Regulations (EIA Regulations) published in 2014 in terms of Section 24(5) of the National Environmental Management Act (NEMA, 1998, Act No 107). This section provides a brief overview of EIA Regulations and their application to this project.

NEMA is the national legislation that provides for the authorisation of 'listed activities'. In terms of Section 24(1) of NEMA, the potential impact on the environment associated with these activities must be considered, investigated, assessed and reported on to the competent authority that has been charged by NEMA with the responsibility of granting environmental authorisations. As this is a proposed electricity generation project and thereby considered to be of national importance, the National Department of Environmental Affairs (DEA) is the competent authority and the Western Cape Department of Environmental Affairs and Development Planning (DEA&DP) will act as a commenting authority.

The need to comply with the requirements of the EIA Regulations ensures that the competent authority is provided with the opportunity to consider the potential environmental impacts of a project early in the project development process and to assess if potential environmental impacts can be avoided, minimised or mitigated to acceptable levels. Comprehensive, independent environmental studies are required in accordance with the EIA Regulations to provide the competent authority with sufficient information in order to make an informed decision. Eskom appointed Savannah Environmental as the independent Environmental Consultant to conduct an EIA process for the proposed project.

An EIA is also an effective planning and decision-making tool for the project developer as it allows for the identification and management of potential environmental impacts. It provides the opportunity for the developer to be forewarned of potential environmental issues, and allows for resolution of the issues reported on in the Scoping and EIA Reports as well as dialogue with interested and affected parties (I&APs). The need to comply with the requirements of the EIA Regulations ensures that decision-makers are provided with an opportunity to consider the potential environmental impacts early in the project development process, and to ensure that environmental impacts are be minimised, avoided or mitigated to acceptable levels as far as possible.

Comprehensive, independent environmental studies are required to be undertaken in accordance with the EIA Regulations to provide the competent authority with sufficient information in order for an informed decision to be taken regarding the project.

1.3. Details of Environmental Assessment Practitioner and Expertise to conduct the Scoping and EIA

Savannah Environmental was contracted by Eskom as the independent Environmental Consultant to undertake and the required EIA process for the proposed Saldanha Bay Network Strengthening project. Neither Savannah Environmental nor any of its specialist sub-consultants are subsidiaries of or are affiliated to Eskom. Furthermore, Savannah Environmental does not have any interests in secondary developments that may arise out of the authorisation of the proposed project.

Savannah Environmental is a specialist environmental consulting company providing holistic environmental management services, including environmental impact assessments and planning to ensure compliance and evaluate the risk of development; and the development and implementation of environmental management tools. Savannah Environmental benefits from the pooled resources, diverse skills and experience in the environmental field held by its team.

The Savannah Environmental team has considerable experience in environmental impact assessments and environmental management, and have been actively involved in undertaking environmental studies, for a wide variety of projects throughout South Africa, including those associated with electricity generation.

- *John von Mayer* - the principle author of this report holds an Honours Bachelor degree in Environmental Management and 8 years of experience in the environmental field. His key focus is on environmental impact assessments, public participation and environmental management programmes for variety of environmental projects. He is currently involved in several EIAs for renewable energy projects EIAs across the country.
- *Jo-Anne Thomas* - the principle Environmental Assessment Practitioner (EAP) for this project, is a registered Professional Natural Scientist and holds a Master of Science degree. She has 18 years of experience consulting in the environmental field. Her 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. She is currently responsible for the project management of EIAs for several renewable energy and power line projects across the country.

In order to adequately identify and assess potential environmental impacts associated with the proposed project, Savannah Environmental has included the following specialist consultants to conduct specialist assessments:

» Avifauna – Craig Widdows (Afzelia Environmental Consultants (Pty) Ltd) and Robyn Phillips (independent ornithologist)
» Fauna – Craig Widdows (Afzelia Environmental Consultants (Pty) Ltd)
» Flora – Ronel Naude (Afzelia Environmental Consultants (Pty) Ltd)
» Wetlands – Rowena Harrison (Afzelia Environmental Consultants (Pty) Ltd)
» Heritage – Jayson Orton (ASHA Consulting (Pty) Ltd)
» Palaeontology – Graham Avery (Iziko Consulting)
» Soils and Agricultural Potential – Garry Paterson (ARC-Institute for Soil, Climate and Water)
» Social – Candice Hunter (Savannah Environmental) and Anton Pelser (external reviewer)
» Visual – John Marshall (Afzelia Environmental Consultants and Environmental Planning and Design)
» Traffic Impact Assessment – Pieter Arangie (ITS Engineers (Pty) Ltd)
» Town Planning Study - Jan Visagie (Jan Visagie Consulting)
» Gabriele Wood – Public Participation (Savannah Environmental (Pty) Ltd)

Appendix A includes the curricula vitae for the environmental assessment practitioners from Savannah Environmental and the specialist consultants.

DESCRIPTION OF THE PROPOSED PROJECT CHAPTER 2

Through the Integrated Strategic Electricity Planning (ISEP) process, Eskom continually assesses the projected demand for electricity within South Africa. By analysing usage patterns and growth trends in the economy, and matching these with the performance features of various generation technologies and demand side management options, ISEP identifies the timing, quantity and type (base load or peaking) of new generation capacity options required in the long-term (i.e. over the next 15–20 years). As part of this process, Eskom continues to investigate a variety of electricity generating options, strengthening and efficiency building options to improve Transmission efficacy.

As part of its capacity expansion and grid strengthening programme, Eskom is proposing the Saldanha Bay Network Strengthening Project, which includes the construction of a new Distribution substation (Dx), new Transmission substation (Tx), 2x 400kV Power Lines and associated upgrade and extension of the Aurora Substation.

The scope of the proposed Saldanha Bay Strengthening project is understood to be:

» Construction of a new 400/132kV Transmission Substation in the Saldanha Bay area with a planned capacity of 3 x 500 MVA transformers
» Construction of a new 132/66/11kV Distribution Substation near the current Blouwater Substation in the Saldanha Bay area.
» Three 132kV servitudes (31m each) are required to integrate the new 132/66/11kV substation into the proposed 400/132kV main transmission station.
» 132kV and 66kV servitudes are required to integrate the high voltage lines into the new proposed 132/66/11kV substation.
» Replacing two of the four existing 250 MVA transformers with 2 x 500 MVA transformers, as well as new 400 / 132 kV transformers.
» Establishing 2 x 132 kV feeder bays at Aurora Substation.
» The construction of two 400kV Power lines (approximately 35 - 40 km) from the Aurora Station to the new proposed Dx and Tx substations.

2.1. The Need for the Proposed Project

Eskom is currently experiencing a primary energy constraint to be able to meet its obligation to supply the load requirements of South Africa. The electricity load

is expected to continue growing placing increased strain on the supply of electricity. The forecast for the Western Grid is based on assumption of constant growth of the existing load plus some new development in certain areas. Growth in this region is expected to be 2%-3% per year and as part of the envisaged developments in the Saldanha Bay area, Eskom has been prompted to re-assess the capability of the existing electricity network in the area in order to meet the forecasted load requirements from industrial customers, the Saldanha Bay Industrial Development Zone (IDZ), local distributors and also to facilitate the integration of renewable generation planned for the area. Power to the Saldanha Bay area is supplied from Aurora Substation which is located 28km east of Saldanha Bay. Aurora Substation supplies Blouwater, Saldanha Steel and Smelter distribution Substations. From the load forecast, it is evident that there will be a constraint at Aurora Substation in the near future. The projected new load of approximately 200 MVA that will be realised in the area together with the natural load growth will increase Aurora Substation demand from 517 MVA to approximately 890 MVA in year 2030. The firm capacity in the area will be exceeded in 2018 if the additional loads are to be supplied from Aurora Substation. The transformation capacity is also insufficient to evacuate all of the potential renewable generation planned in the area, amounting to 2 885 MW.

In order to meet this demand, Eskom requires additional generation capacity that needs to be transmitted to load centres throughout the Eskom Transmission System. An unreliable Transmission system could hamper growth in the country.

As all options for optimisation of the existing infrastructure in the area have already been studied and implemented within the study area, a new Transmission power line will be required to be constructed to meet the increasing power demand. The new Transmission line is proposed to be brought into operation at the time when the load growth and demand exceeds the supply. It is therefore necessary to secure the necessary servitude timeously, to ensure this will be possible.

A definite twofold need for a new Transmission power line has therefore been identified:

» to optimise the existing system; and
» to increase line capacity in the Transmission system.

By increasing the supply into the Transmission system, the foreseen load growth can be addressed in a suitable and economical way. Optimisation of the current system is currently underway, and would alleviate some problems in the system.

The medium to long term load requirements can be addressed by the increased supply due to the new Transmission power line.

2.2. Description of Alternative Transmission Power Line Development Corridors and Substation

The following alternatives were identified by Eskom Transmission:

2.2.1 Alternative Power Line Corridors

The extent of the study area and the selection of the alternative power line alignment and Substation positions gave consideration to aspects such as broad environmentall impacts, social impacts, technical feasibility and cost. A number of technically viable and cost effective corridors and substation sites were identified (refer to Figure 1.1).

The following criteria were considered by Eskom in the identification of technically feasible corridors for 2x 400kV Power Lines:

» As far as possible, the number and magnitude of angles along the transmission lines should be minimised in order to allow the use of less expensive and visually less-intrusive tower types.
» Crossing over of existing major power lines should be avoided as far as possible as this increases the potential for technical incidents during operation.
» The alignment should cater for known topographical/terrain constraints of the tower types to be used, and soil conditions for the foundations in terms of geotechnical suitability and costs.
» The proposed alignment should provide for the need of appropriate access roads to the servitude and tower positions for both construction and maintenance/operation phases.
» Care should be taken to avoid the following as far as tower positioning and access road construction are concerned:
  * extensive rock outcrops;
  * rugged terrain
  * active clay soil, vleis and floodplains;
  * potential unstable side-slope terrain; and
  * eroded and unstable areas.
» Other issues which technically affect the location of a Transmission power line include:
  * agricultural lands, in particular those under irrigation
  * water bodies

- crossing points with roads, rail and telecommunication lines at off-set angles less than 60°.

» The following obvious and observable environmental issues were taken into account:
- human settlements and communities;
- land use (where possible)
- passing between water bodies (bird flight paths usually extend between water bodies)
- ecologically sensitive areas
- scenic areas with high visual/aesthetic quality and
- untransformed indigenous vegetation.

Six (6) technically feasible alternative **Transmission power line** development corridors have been identified for investigation within the study area during the EIA process (refer to Figure 2.1). The EIA will assess the environmental suitability of these options, The identified power line development corridors as proposed and the areas affected are described in more detail below.

Alternative 1 power line corridor is indicated as the green line on figure 2.1. This route is approximately 25km in length and is proposed to exit from the existing Aurora Substation which is situated approximately 12km north west of the town of Hopefield, parallel to the existing Aurora/Bouwater 132kV power line. Where the existing power line crosses the R27 regional road, the proposed power line alignment deviates slightly from the existing line, running parallel to the R27 road for a stretch of 1km in order to avoid existing buildings, then follows the existing line to the proposed transmission substation Site B.

Alternative 2 power line corridor is indicated as the cyan line on figure 2.1. This route is approximately 18km in length and is proposed to exit from the existing Aurora Substation and follows the existing Amcor/Hopefield 66kV power line and the R45 regional road in a westerly direction, 800m east of the Langebaanweg air force base, it crosses the R27 road before turning into the transmission substation. This is the most direct (straightest) power line route as it represents an almost straight line from Aurora substation to the transmission substation Site C.

Alternative 3 is indicated as the orange line respectively on figure 2.1. This route is approximately 22km in length and is proposed to to exit from the existing Aurora Substation passing through the centre of the study area mostly following farm boundaries. Alternative 3 is located 1 – 2 km south of Alternative 1 and 2. It cross the R27 regional road before turning into the transmission substation Site A.

Alternative 4 power line corridor is indicated as the brown line on figure 2.1. This route is approximately 22km in length and is proposed to exit from the existing Aurora Substation then follows the same route as alternative 1 described above and splits where the two alternatives enter into different substation sites. It ends at substation Site A

Alternative 5 power line corridor is indicated as the purple line on figure 2.1. This route is approximately 15km in length and is proposed to to exit from the existing Aurora Substation and follow the existing Amcor/Hopefield 66kV power line and the R45 regional road in a westerly direction, running adjacent to the Langebaan air force located approx.800m east, then the West Coast Fossil Park also on the eastern side, crosses the R27 road before turning into the transmission substation Site C.

Alternative 6 power line corridor is indicated as the navy blue line on figure 2.1. The alternative follows the same route as alternative 3 but is approximately 3km longer and turns into substation Site B.

The authorised power line will be built as a 400kV, but will run as a 132kV in order to connect into the proposed Distribution substation discussed below until the completion of the Transmission substation.

2.2.2 Alternative Substation Sites

Alternative substation sites by Eskom for investigation within a broader study area is based on technical criteria. The criteria used in selecting these alternative sites include, amongst others, the proximity to the load centre to achieve shorter power line lengths, access during construction and operation, as well as avoiding obvious environmentally sensitive features/areas.

Three Distributions substation (Dx) sites are being investigated within this EIA process, the identified sites are all located within 1km east of the existing Blouwater Substation with a foot print of 120m x 120m. The authorised substation will replace the existing Blouwater Substation which is planned to be decommissioned[1].

Like the Dx substation **three** technically feasible sites for the **Transmission Substation (Tx)** is also being investigated as part of the EIA process. All three sites are located in the vicinity of the Blouwater Substation (approx. 3km east)

[1] The decommissioning of the Blouwater Substation is not part of this EIA report

and adjacent to the R27 regional road that crosses the study area. The transmission substation footprint will be 600m x 600m.

These alternative s are evaluated within this Scoping Report (refer to Chapter 5).

Aurora Substation will be upgraded/extended as part of the proposed project. This will include the following:

» Replacing two of the four existing 250 MVA 400/132kV transformers with 2 x 500 MVA transformers at Aurora Substation.
» Establishing 2 x 132 kV feeder bays around Aurora Substation.

This proposed expansion will be undertaken within the existing substation footprint and, therefore, no alternatives are proposed for assessment.

2.3. Construction phase

Substations are constructed in the following simplified sequence:

Step 1: *Survey the area*
Step 2: Final design of the substation and placement of the infrastructure
Step 3: Issuing of tenders and award of contract to construction companies
Step 4: Vegetation clearance and construction of access roads (where required)
Step 5: Construction of foundations
Step 6: Assembly and erection of infrastructure on site
Step 7: Connect conductors
Step 8: Rehabilitation of disturbed area and protection of erosion sensitive areas
Step 9: Testing and commissioning
Step 10: Continued maintenance

Transmission lines are constructed in the following simplified sequence:

Step 1: Determination of technically feasible alternatives
Step 2: EIA input into route selection
Step 3: Negotiation of final route with affected landowners
Step 4: Survey of the route (by air)
Step 5: Determination of the conductor type
Step 6: Selection of best-suited conductor, towers, insulators, foundations
Step 7: Final design of line and placement of towers (including final walk-though survey by environmental specialists and compilation of site-specific Environmental Management Programme (EMP)).

Step 8: Issuing of tenders, and award of contract to construction companies
Step 9: Vegetation clearance and construction of access roads (where required)
Step 10: Tower pegging
Step 11: Construction of foundations
Step 12: Assembly and erection of towers
Step 13: Stringing of conductors
Step 14: Rehabilitation of disturbed areas and protection of erosion sensitive areas
Step 15: Testing and commissioning

Construction of the proposed 400kV lines will take approximately 24 months to complete, the Tx & Dx substation up to 12 months Construction crews for the Transmission power line and substations upgrade will constitute mainly skilled and semi-skilled workers. It is most likely that construction workers will be accommodated within construction camps which will move along the transmission line as construction progresses. Construction Camps can be located within the construction area but only in consultation and agreement with the landowner and in consultation with an ecologist. It is generally preferred that the construction camps be in close proximity to the construction site.

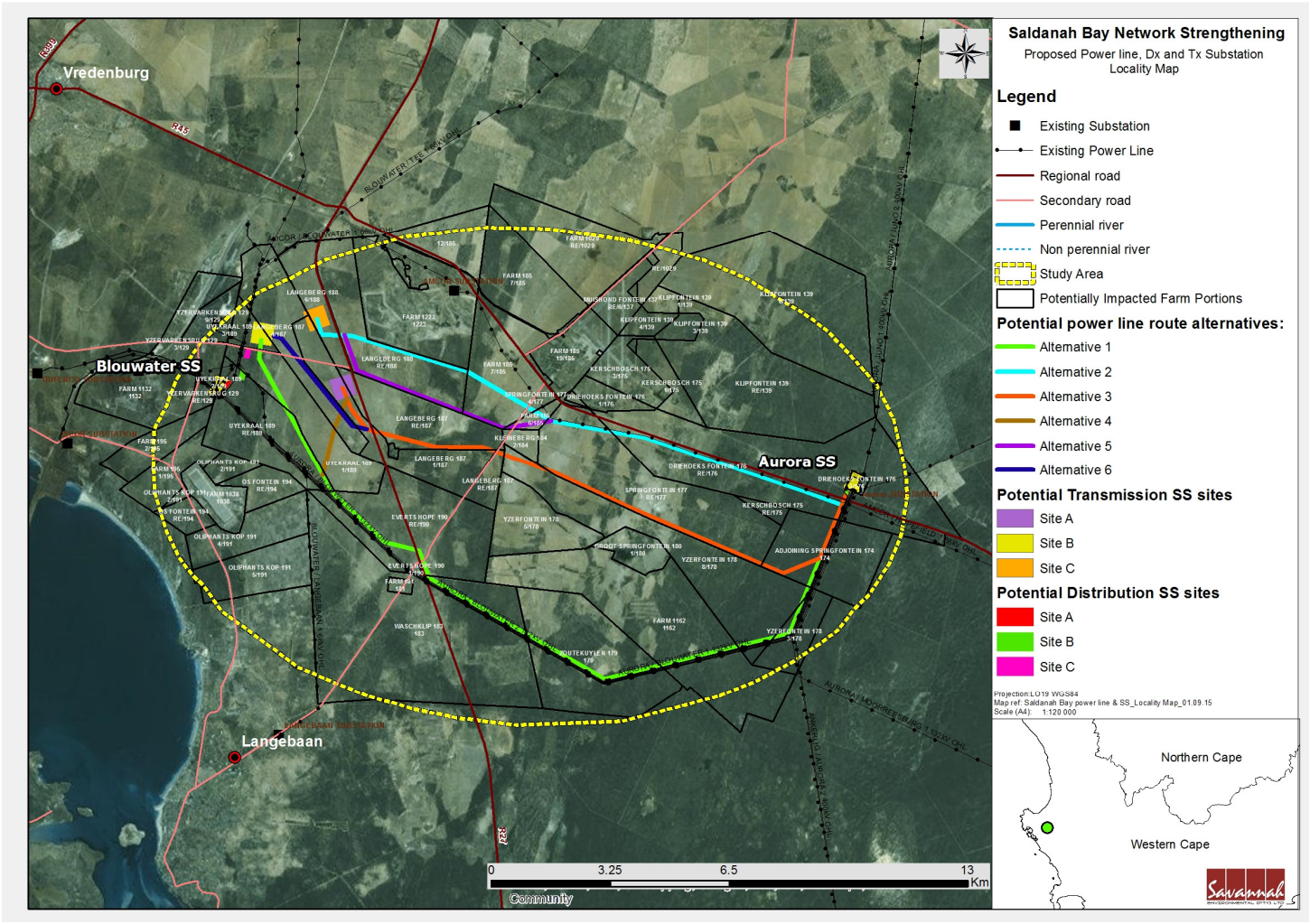

Figure 2.1: Map indicating the alternative Transmission line & Substation sites identified for consideration in the EIA process

2.2.3 Technical Details of Tower and Transmission Line Designs

All components of a Transmission line are interdependent, but are distinct in the roles which they fulfil. The primary components include towers, foundations, insulators and hardware, and conductors.

» *Towers*

Transmission line conductors are strung on in-line (suspension) towers and bend (strain) towers. Various tower designs are available for use by Eskom on the proposed project (refer to Figure 2.2 to 2.4). The type of towers which can be used will be dependent on the final alignment of the power lines and individual agreements with affected landowners and stakeholders. Suspension towers are typically less cumbersome structures, which are less steel-intensive than strain/bend towers. This makes them less visually intrusive, and cheaper to construct than strain towers. Therefore Transmission line routes are planned with as few bends as possible. The compact cross-rope suspension tower is typically used along the straight sections of the servitude, while the self-supporting angle towers are used where bends occur in the power line alignment.

» *Servitude Requirements*

The servitude width for a 400kV Transmission line is 55 m. The servitude is required to ensure the safe construction, maintenance and operation of the line, and thereby entitles Eskom Transmission Division certain rights (e.g. unrestricted access). Where 400kV Transmission lines are constructed in parallel, a minimum separation distance of 55 m is required in order to ensure the reliable operation of both lines. The minimum vertical clearance to buildings, poles and structures not forming part of the power line must be 3.8 m, while the minimum vertical clearance between the conductors and the ground is 8.1 m (Refer to Figure 2.5).

The minimum distance of a 400kV Transmission power line running parallel to proclaimed public roads must be 100 m from the centre of the Transmission power line servitude to the centre of the road servitude. Any main road located close to a Transmission line tower must have Armco barriers as protection. The minimum distance between any part of a tree or shrub and any bare phase conductor of a 400kV Transmission line must be 3,8 m, allowing for the possible sideways movement and swing of power towers and conductors.

A maximum 8 m wide strip is to be cleared of all trees and shrubs down the centre line of the Transmission line servitude for stringing purposes only. Any tree or shrub in other areas which will interfere with the operation and/or reliability of the Transmission line must be trimmed or completely cleared. The clearing of vegetation will take place, with the aid of a surveyor, along approved profiles and in accordance with the approved EMP, and in accordance with the minimum standards to be used for vegetation clearing for the construction of the proposed new Transmission line as listed in Table 2.1.

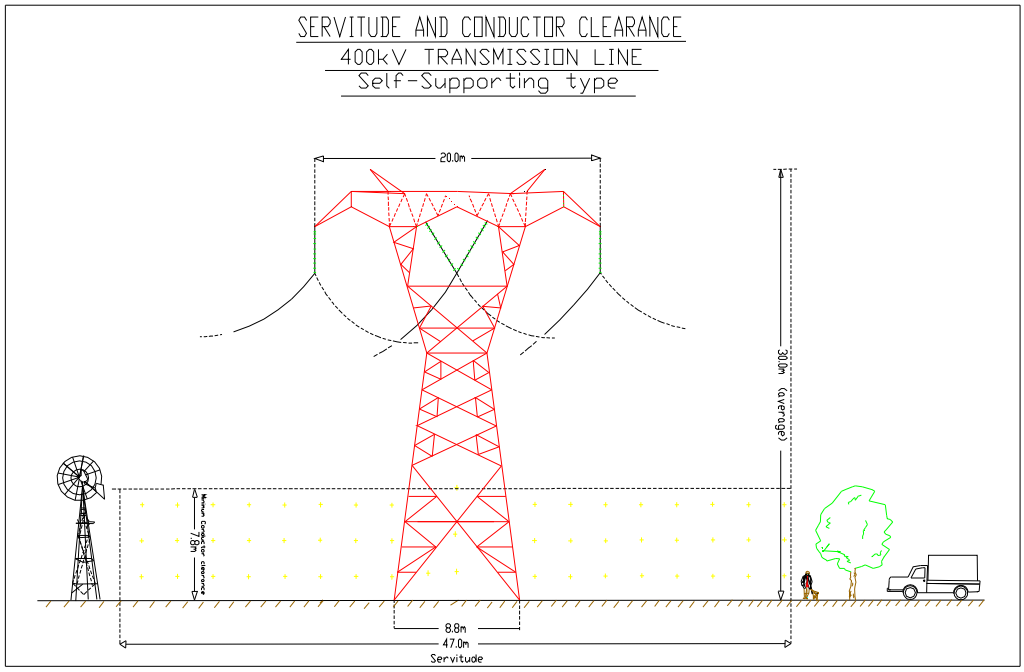

Figure 2.2: Diagrammatic representation of the self-supporting strain/bend tower

Figure 2.3: Compact Cross-rope suspension tower

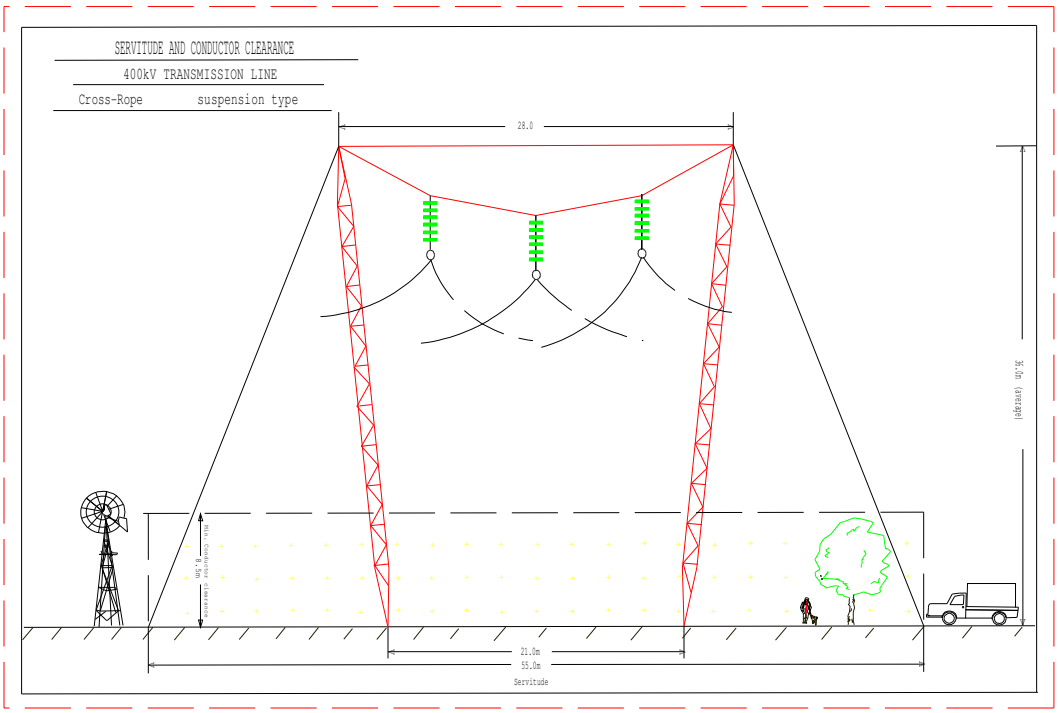

Figure 2.4: Cross Rope Suspension Tower

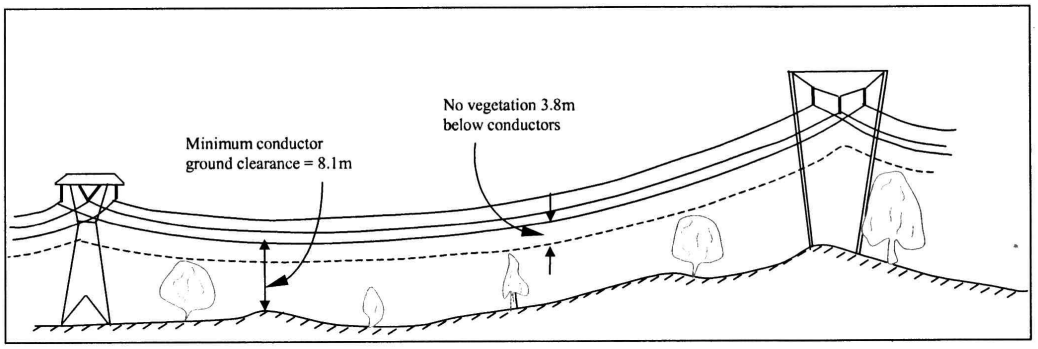

Figure 2.5: Servitude requirements in terms of vegetation clearing under conductors and minimum ground clearance

Table 2.1: Minimum standards to be used for vegetation clearing for the construction of a new Transmission power line (Eskom Standard)

Item	Standard	Follow up
Centre line of the proposed Transmission line	Clear to a maximum (depending on tower type and voltage) of a 4-8m wide strip of all vegetation along the centre line. Vegetation to be cut flush with the ground. Treat stumps	Re-growth shall be cut within 100 mm of the ground and treated with herbicide, as necessary.

Item	Standard	Follow up
	with herbicide.	
Inaccessible valleys (trace line)	Clear a 1 m strip for access by foot only, for the pulling of a pilot wire by hand.	Vegetation not to be disturbed after initial clearing – vegetation to be allowed to re-grow.
Access/service roads	Clear a maximum (depending on tower type) 6 m wide strip for vehicle access within the maximum 8 m width, including de-stumping/cutting stumps to ground level, treating with a herbicide and re-compaction of soil.	Re-growth to be cut at ground level and treated with herbicide as necessary.
Proposed tower position and proposed support/stay wire position	Clear all vegetation within proposed tower position in an area of 20 x 20 m (self-supporting towers) and 40 x 40 m (compact cross-rope suspension towers) around the position, including de-stumping/cutting stumps to ground level, treating with a herbicide and re-compaction of soil. Allow controlled agricultural practices, where feasible.	Re-growth to be cut at ground level and treated with herbicide as necessary.
Indigenous vegetation within servitude area (outside of maximum 8 m strip)	Area outside of the maximum 8 m strip and within the servitude area, selective trimming or cutting down of those identified plants posing a threat to the integrity of the proposed Transmission line.	Selective trimming
Alien species within servitude area (outside of maximum 8 m strip)	Area outside of the maximum 8 m strip and within the servitude area, remove all vegetation within servitude area and treat with appropriate herbicide.	Cut and treat with appropriate herbicide.

Once the centre line has been cleared, the contractor's surveyor will peg every tower position and marks the crossing point with existing fences for new gate installation. Where required, once the tower positions have been marked, the vegetation clearing team will return to every tower position and clear vegetation (in accordance with the specification outlined in the Environmental Management Programme (EMP)) for assembling and erection purposes.

» *Foundations*

The choice of foundation is influenced by the type of terrain encountered, as well as the underlying geotechnical conditions. Geotechnical requirements for all tower types are catered for by using various foundation types, which are designed to withstand conditions varying from hard rock to waterlogged marshes. The main types of foundations include piles, pad-and-chimney, and rock anchors. The actual size and type of foundation to be installed will depend on the type of tower to be erected, and the actual sub-soil conditions. Strain towers require more extensive foundations for support than in-line suspension towers, which contribute to the construction expenses.

The construction of foundations is the slowest part of the line construction, and is typically started some time ahead of tower erection. Prior to filling of the foundations and tower erection, excavated foundations are covered or fenced in, in order to safe-guard unsuspecting animals and people from injury. The foundations also represent the biggest unknown in the cost and construction time, since access to the tower sites is required for earth-moving machinery and concrete.

All foundation excavations are back-filled, stabilised through compaction, and rehabilitated at ground level.

» *Insulators and Hardware*

The insulators and hardware are used to connect the conductors to the towers. The main types are glass, porcelain, and composite insulators.

Glass and porcelain have been used for many years, and are the most common. They are, however, heavy and susceptible to breakage by vandals, as well as contamination by pollution. Composite insulators have a glass-fibre core with silicon sheds for insulation. The composite insulators are light-weight and resistant to both vandalism and pollution. They are, however, more expensive than the more common glass insulators.

» *Conductors*

The conductors are made of aluminium with a steel core for strength. Power transfer is determined by the area of aluminium in the conductors. Conductors are used singularly, in pairs, or in bundles of three, four or six. The choice is determined by factors such as audible noise, corona, and electro-magnetic field mitigation.

Many sizes of conductor are available, the choice being based on the initial and life-cycle costs of different combinations of size and bundles, as well as the required load to be transmitted.

2.2.4 Technical Details of the Substations upgrade and expansion

The proposed substations would be constructed in the following simplified sequence, and will take approximately 12 months to complete:

Step 1: Survey of the substation site
Step 2: Site clearing and levelling and construction of access road to substation site
Step 3: Construction of terrace and substation foundation, including the installation of stormwater drainage on the surface to dispose of such stormwater on the terrace
Step 4: Assembly, erection and installation of equipment (including transformers and control building)
Step 5: Connection of conductors to substation infrastructure
Step 6: Rehabilitation of any disturbed areas and protection of erosion sensitive areas.

A number of fences will be installed to secure the substations and the substation sites. These fences include a 2.4 m high security fence to enclose all assets, a 1.8 m high fence around the yards, and a 1.2 m high boundary fence on the property-line.

Construction crews for construction of the substation will constitute mainly skilled and semi-skilled workers. No construction workers will reside on site. It is most likely that construction workers will be accommodated within formal housing within towns surrounding the study area.

The proposed 400kV transmission substation footprint will be up to 600 m x 600 m. The 132kV distribution substation will be 120 m x 120 m in size.

Upgrades to the existing Aurora substation are also required as part of the project. This involved replacing two of the four existing 250 MVA transformers with 2 x 500 MVA transformers. The upgrade also involves establishing 2 x 132 kV feeder bays at Aurora Substation.

2.3 Servitude Negotiation and the EIA Process

Transmission power lines are constructed and operated within a servitude (55 m wide for 400kV lines) that is established along the entire length of the power line.

Within this servitude, Eskom Transmission has certain rights and controls that support the safe and effective operation of the power line. The process of achieving the servitude agreement is referred to as the Servitude Negotiation Process, or simply just the negotiation process. The following important points relating to the negotiation process should be noted:

» Servitude negotiation is a private matter between Eskom Transmission and the appropriate landowner.
» The negotiation process involves a number of stages (see below), and culminates in the 'signing' of a servitude. Here Eskom Transmission enters into a legal agreement with the landowner.
» The servitude is registered as a 'right of way', and Eskom do not purchase the servitude from the landowner. Compensation measures are agreed in each case.
» The agreements will detail such aspects as the exact location and extent of the servitude, and access arrangements and maintenance responsibilities, as well as any specific landowner requirements.
» The negotiation process may take place at any time in the planning of a new power line.
» This process must be completed (i.e. the agreement must be signed) with the relevant landowner before construction starts on that property.
» The negotiation process is undertaken directly by Eskom Transmission and is independent of the EIA process. It is important that the aims of the two processes are seen as separate.

The EIA process has become important in the initial planning and route selection of new Transmission lines. For this reason, it is usually preferable that the negotiation process begins after the EIA has been completed. At this stage there is greater confidence in the route to be adopted, and it would be supported by environmental authorisation. However, it may be required that the negotiation process begins earlier, and may begin before, or run in parallel with the EIA process. This may be due to urgent timeframes for the commissioning of the new power line, knowledge of local conditions and constraints, etc. Eskom Transmission has a right to engage with any landowner at any time, though they do so at risk if environmental authorisation has not been awarded.

2.3.1 The Negotiation Process

Eskom Transmission is responsible for the negotiation process for all new Transmission power lines. It is critical that the process is correctly programmed

and incorporated into the planning of a new line. The negotiation process involves the following steps:

i. Initial meeting with the landowner.
ii. The signing of an 'option' to secure a servitude (this indicates that the owner will accept that the power line will traverse his property, subject to conditions to be finalised in the negotiation of the servitude agreement). An option is valid for one year.
iii. Once the route is confirmed (i.e. options are signed with the upstream and downstream landowners), the servitude agreement will be finalised with the individual landowners. This agreement will set out the conditions for the establishment, rehabilitation and maintenance of the servitude, and will be site-specific (as different landowners may have different requirements). Compensation payments would be made when the servitude is registered at the Deeds Office[2].
iv. Once construction is complete and the land rehabilitated to the landowners satisfaction (and as agreed prior to construction), the landowner signs a 'Final Release' certificate. Until the 'Final Release' certificate has been signed, Eskom Transmission remains liable for the condition of the land.
v. Once the clearance certificate is signed, the responsibility for the power line and servitude is handed over to the regional Eskom Transmission office.

2.4. Project Operation Phase

The expected lifespan of the proposed Transmission power line is between 35 and 40 years, depending on the maintenance undertaken on the power line structures.

During the life-span of the Transmission power line and Substation, on-going maintenance is performed. Power line inspections are undertaken on an average of 1 – 2 times per year, depending on the area. During this maintenance period, the power line is accessed via the access routes, as agreed with affected landowners during the negotiation phase. During maintenance activities on the Substations, components may require replacement in order to significantly extend the lifespan. Maintenance of the power line and Substations are required to be

[2] Compensation will be based on present day property valuations for all properties obtained from registered evaluators. Eskom only pays compensation for the strip of land that is affected at 100% of present day property value. In cases where properties are significantly affected, Eskom may consider purchasing the whole property at present day market value. All improvements will be valued. Sentimental value is not considered in any valuations as it is not measurable. Valuations are done according to the Expropriation Act.

undertaken in accordance with the specifications of the Environmental Management Programme (EMP) which will form part of the Draft EIA Report.

The creation of additional employment opportunities during the operational phase of the power line and substations will be limited, and will be restricted to skilled maintenance personnel employed by Eskom.

2.4.1 Servitude Maintenance Responsibilities

The management of Transmission power line servitude is dependent on the details and conditions of the agreement between the landowner and Eskom Transmission, and are therefore site-specific. These may, therefore, vary from one location to another. However, it is a common occurrence that there is a dual responsibility for the maintenance of the servitude:

» Eskom Transmission will be responsible for the tower structures, maintenance of access roads, watercourse crossings, and gates and fences relating to servitude access.
» The landowner will retain responsibility for the maintenance of the land and land use within the servitude (e.g. cropping activities, veld management, etc.).

More detail regarding these arrangements will be included in the EMPr to be included in the EIA report

Exceptions to the above may arise where, for example dual use is made of the access roads and gates or specific land use limitations are set by Eskom Transmission within the servitude which directly affects the landowner (e.g. forestry). Maintenance responsibilities are, ultimately, clearly set out in the servitude agreement.

APPROACH TO UNDERTAKING THE SCOPING STUDY CHAPTER 3

An Environmental Impact Assessment (EIA) process refers to that process (in line with the EIA Regulations) which involves the identification and assessment of potential direct, indirect, and cumulative environmental impacts associated with a proposed project/ activity. The EIA process comprises two main phases: i.e. **Scoping Phase** and **EIA Phase**. The EIA process culminates in the submission of an EIA Report (including an Environmental Management Programme (EMPr)) to the competent authority for decision-making. The EIA process is illustrated below:

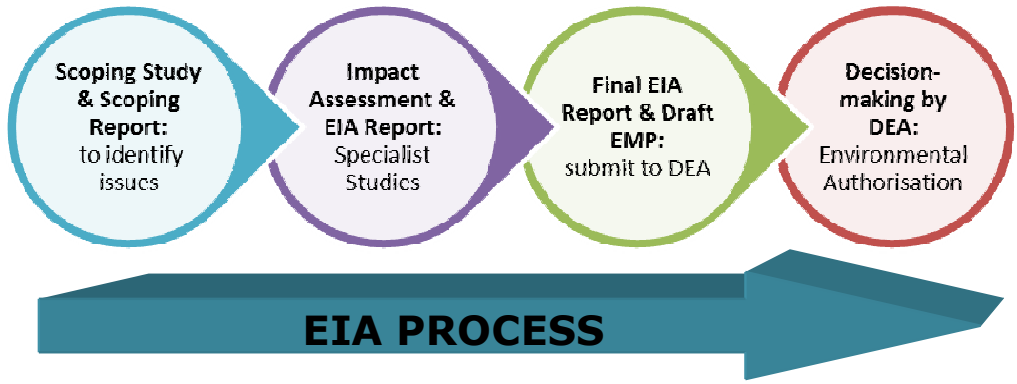

Figure 3.1: The Phases of an EIA Process

Eskom is proposing the Saldanha Bay Network Strengthening Project, which includes the construction of a new Distribution substation (Dx), Transmission substation (Tx), 2x 400kV Power Lines and associated upgrade and extension of the Aurora Substation in the Western Cape Province. In terms of the EIA Regulations (2014) of GN R982 - GN R985 published in terms of Section 24 (5) of the National Environmental Management Act (No 107 of 1998), a Scoping and EIA Study are required to be undertaken for this proposed project. In accordance with these Regulations, this scoping process aimed at identifying potential issues associated with the proposed project, and defining the extent of studies required within the EIA. This was achieved through an evaluation of the proposed project involving desk-top specialist studies, limited field surveys, as well as a consultation process with key stakeholders, relevant government authorities and interested and affected parties (I&APs). This chapter serves to outline the process which was followed during the Scoping Phase of the EIA process.

3.1. Legal Requirements as per the EIA Regulations, 2014

This chapter of the scoping report includes the following information required in terms of Appendix 2: Content of the Scoping Report of the EIA Regulations, 2014:

Requirement	Relevant Section
(d) a description of the scope of the proposed activity, including (i) all listed and specified activities triggered and (ii) a description of the activities to be undertaken, including associated structures and infrastructure	All listed activities that are triggered through the development of the project and a description of the activities to be undertaken are included in Table 3.1 within section 3.2 of this chapter.
(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	Legislation, policies, plans, guidelines, municipal development planning frameworks and instruments associated and considered for the development of the project is included within Table 3.4 and section 3.6 of this chapter.
(h)(ii) details of the public participation process undertaken in terms of Regulation 41 of the Regulations, including copies of the supporting documents and inputs	The public participation process that has been undertaken (including the identification of stakeholders, the registration of interested and affected parties, the distribution of notifications and publishing of adverts, consultation and involvement of the public and the identification and recording of issues and concerns) for the scoping phase of the project is detailed within section 3.4 of this chapter and Appendix C of this report.
(h)(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	No issues or concerns have been raised regarding the project to date. All issues and concerns raised by interested and affected parties will be included within the Comments and Responses Report included in the final scoping report.

3.2. Relevant Listed Activities

In terms of the EIA Regulations of GN R983, GN R984 and GN R985, the following listed activities are triggered by the proposed project:

Table 3.1: Listed activities triggered by the proposed project

Number & date of relevant notice	Activity No (s) (in terms of relevant Regulation or notice)	Describe each listed activity as per project description
GN 983, 08 December 2014	11	The development of facilities or infrastructure for the transmission and distribution of electricity- (i). outside urban areas or industrial complexes with a capacity of more than 33 but less than 275 kilovolts ***A Distribution Substation of 132kV is proposed and 132kV lines connecting it to existing 132kV lines and the proposed 400kV substation.***
GN 983, 08 December 2014	12	The development of (xii) infrastructure or structures with a physical footprint of 100 square metres or more Where such development occurs- (c) if no development setback line, within a watercourse or within 32 metres of a watercourse, measured from the edge of a watercourse, ***The proposed power line towers and associated access road will impact upon watercourses.***
GN 983, 08 December 2014	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 lines, access roads and substations would require the removal or infilling of material more than 5 cubic metres from a watercourse.***
GN 983, 08 December 2014	24(ii)	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 ***Some access roads will be wider than 8m.***
GN 983, 08 December 2014	28(ii)	Residential, mixed, retail, commercial, industrial or institutional developments where such land was

Number & date of relevant notice	Activity No (s) (in terms of relevant Regulation or notice)	Describe each listed activity as per project description
		used for agriculture or afforestation on or after 01 April 1998 and where such development: (ii) will occur outside an urban area, where the total land to be developed is bigger than 1 hectare; excluding where such land has already been developed for residential, mixed, retail, commercial, industrial or institutional purposes. ***The area to be transformed for the proposed substations and power lines will be greater than 1 ha and less than 20ha in extent.***
GN 983, 08 December 2014	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. ***Extension of Aurora substation, replacing two of the four existing 250 MVA 400/132kV transformers with 2 x 500 MVA transformers at Aurora Substation and establishing 2 x 132 kV feeder bays at Aurora Substation***
GN 983, 08 December 2014	56	The widening of road by more than 6 meters, or the lengthening of a road by more than 1 kilometre (ii) where no reserve exists, where the existing road is wider than 8 metres ***The widening and/lengthening of existing roads will be required when existing lines are being switched or interchanged to connect to the proposed substations.***
GN 984, 08 December 2014	9	The development of facilities or infrastructure for the transmission or distribution of electricity with a capacity of 275kV or more, outside an urban area or industrial complex. ***Two 400kV power lines and 400kV substation are proposed to be constructed outside an urban area***
GN 985, 08 December 2014	4	The construction of a road wider than 4 metres with a reserve less than 13,5 metres

Number & date of relevant notice	Activity No (s) (in terms of relevant Regulation or notice)	Describe each listed activity as per project description
		(f) In Western Cape: (i) Areas outside urban areas; (aa) Areas containing indigenous vegetation; ***The project is proposed in an area containing indigenous vegetation***
GN 985, 08 December 2014	10	The construction of facilities or infrastructure for the storage, or storage and handling of a dangerous good, where such storage occurs in containers with a combined capacity of 30 but not exceeding 80 cubic metres (g) In Western Cape: (i) All areas outside urban areas ***Fuel to be used during construction will exceed 30 cubic metres, and will need to be stored on-site in areas falling outside urban areas***[LM1]
GN 985, 08 December 2014	12	The clearance of an area of 300 square metres or more of vegetation where 75% or more of the vegetative cover constitutes indigenous vegetation. (a) In Western Cape: (ii) Critical biodiversity areas as identified in systematic biodiversity plans ***The project (for substations and lines) will require the clearance of 300 square metres or more of vegetation where 75% or more of the vegetation cover constitutes indigenous vegetation which falls within an area defined as a CBA***.
GN 985, 08 December 2014	14	The development of: (xii) infrastructure or structures with a physical footprint of 10 square metres or more. within a watercourse; (f) In Western Cape: (i) outside urban areas, in: (ff) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the

Number & date of relevant notice	Activity No (s) (in terms of relevant Regulation or notice)	Describe each listed activity as per project description
		competent authority or in bioregional plans ***There are drainage lines within the proposed study area which will be impacted by the proposed infrastructure within an area defined as a CBA.***
GN 985, 08 December 2014	18	The widening of a road by more than 4 meters or the lengthening of a road by more than 1 kilometres (f) In Western Cape: (i) All areas outside urban areas: (aa)Areas containing indigenous vegetation; ***Access roads will be widened or lengthened within areas containing indigenous vegetation***

3.3. Objectives of the Scoping Process

This Scoping report documents the evaluation of the potential environmental impacts of the proposed project and forms part of the EIA process. The Scoping Phase was conducted in accordance with the requirements of the EIA Regulations in terms of Section 24(5) of the National Environmental Management Act (NEMA; Act No 107 of 1998).

This Scoping Phase aims to:

» Identify, describe and evaluate potential environmental (biophysical and social) impacts and benefits of all phases of the proposed project (including design, construction, operation and decommissioning) through a desk-top review of existing baseline data and desk-top specialist studies.
» Identify potentially sensitive environmental features and areas within the study area in order to inform the preliminary design process of the project.
» Define the scope of studies to be undertaken within the EIA process.
» Provide the authorities with sufficient information in order to make a decision regarding the scope of issues to be addressed in the EIA process, as well as regarding the scope and extent of specialist studies that will be required to be undertaken as part of the EIA Phase of the process.

Within this context, the objectives of this Scoping Phase are to:

» Clarify the **scope** and **nature** of the proposed development.
» Clarify any reasonable and feasible project specific **alternatives** to be considered through the EIA process, including the 'no-go' option.
» Identify and evaluate key **environmental issues/impacts** associated with the proposed project through a process of broad based consultation with I&APs and stakeholders, and through specialist studies (including limited field work).
» Identify those issues to be assessed in more detail in the EIA Phase of the EIA process through an evaluation of the identified impacts.
» Conduct an open, participatory and transparent **public involvement process** and facilitate the inclusion of I&AP and stakeholder concerns regarding the proposed project in the decision-making process.

3.4. Overview of the Scoping Process undertaken for the Proposed Project

Key tasks undertaken within the scoping phase included:

» Consultation with relevant decision-making and regulating authorities (at National, Provincial and Local levels).
» Submission of the completed application form for authorisation to the competent authority (DEA) in terms of Regulations 5 and 16 of Government Notice R982 of 2014.
» Undertaking a public involvement process throughout the Scoping process in accordance with Chapter 6 of Government Notice R982 of 2014 in order to identify issues and concerns associated with the proposed project.
» Undertaking of independent specialist studies in accordance with Appendix 6 of Government Notice R982 of 2014.
» Preparation of a Scoping Report and Plan of Study for EIA in accordance with the requirements of Appendix 2 of Government Notice No R982 of 2014.
» Preparation of a Comments and Response Report detailing key issues raised by I&APs as part of the EIA Process.

The tasks are discussed in detail below.

3.4.1. Authority Consultation and Application for Authorisation in terms of GNR982 of 2014

As Eskom is a Statutory body (i.e. an Organ of State), the National Department of Environmental Affairs (DEA) will act as the relevant competent authority for this proposed project. The DEA will be supported in the decision-making role by the

Western Cape – Department of Environmental Affairs and Development Planning (DEA&DP) who will act as a commenting authority. Consultation with these authorities has been undertaken throughout the Scoping process. This consultation has included the following:

» Submission of the application for authorisation to DEA.
» Submission of the draft Scoping Report for review by I&APs, the Organs of State and the competent authority.

A record of all authority correspondence undertaken prior to and within the Scoping Phase is included in **Appendix B**.

3.4.2 Public Participation

The aim of the public participation process conducted was primarily to ensure that:

» All relevant stakeholders and I&APs are identified and consulted with.
» Information containing all relevant facts in respect of the application is made available to stakeholders and I&APs.
» Participation by stakeholders and I&APs is facilitated in such a manner that they are all provided with a reasonable opportunity to comment on the application.
» Comments received from stakeholders and I&APs are recorded and considered in the EIA process, where appropriate.

The following sections detail the tasks which were undertaken as part of the public participation process.

i. Stakeholder identification

The first step in the public involvement process was to initiate the identification of relevant stakeholders and interested and affected parties (I&APs). This process was undertaken through existing contacts and databases, as well as through the process of networking. Stakeholder groups identified include:

» National, Provincial and local government departments (including DEA, DEA&DP, SAHRA, DWS, SANRAL, SANParks, District and Local Municipalities).
» Government Structures (including the Provincial Roads Authority, municipal planning departments, etc.).
» Potentially affected and neighbouring landowners on all proposed alternative routes and throughout the broader study area.

» Conservation authorities (West Coast Bird Club, BirdLife South Africa, Wildlife and Environment Society of South Africa (WESSA), Endangered Wildlife Trust (EWT), West Coast Fossil Park).
» Industry and mining.

Table 3.2: List of Stakeholders identified and consulted during the Scoping Phase

Organs of State
National Government Departments
Department of Agriculture, Forestry and Fisheries (DAFF)
Department of Communications
Department of Energy (DoE)
Department of Mineral Resources (DMR)
Department of Public Works (DPW)
Department of Rural Development and Land Reform (DRDLR)
Department of Water and Sanitation (DWS)
Department of Science and Technology (DST)
Government Bodies and State Owned Companies
South African Civil Aviation Authority (CAA)
South African National Roads Agency Limited (SANRAL)
Telkom SA Ltd
Provincial Government Departments
Cape Nature
Heritage Western Cape
Western Cape Department of Agriculture and Rural Development
Western Cape Department of Economic Development and Tourism
Western Cape Department of Local Government, Environmental Affairs and Development Planning
Western Cape Department of Transport and Public Works
Conservation Authorities
BirdLife South Africa
Wildlife and Environment Society of South Africa (WESSA)
Endangered Wildlife Trust (EWT)
Landowners
Affected landowners and tenants
Neighbouring landowners and tenants

ii. Stakeholder Database

All relevant stakeholder and I&AP information has been recorded within a database of interested and affected parties (refer to **Appendix C** for a listing of

recorded parties). While I&APs have been encouraged to register their interest in the project from the start of the process, the identification and registration of I&APs will be on-going for the duration of the EIA process. The I&AP database will be updated throughout the EIA process, and will act as a record of the parties involved in the public involvement process.

iii. Adverts and Notifications

In order to notify and inform the public of the proposed project and invite members of the public to register as I&APs for the project and EIA process, adverts have been placed in the Die Burger, Buite and Weslander newspapers which are distributed in the study area. The advertisements have been placed in both English and Afrikaans in order to inform the wider community. The advert provides information on the following (in terms of Regulation 41):

» the details of the project;
» the availability of the draft Scoping Report and
» the date of the public meeting.

Site notices (in English and Afrikaans) will be placed at visible points within the study area (i.e. Aurora Substation, along the R27 Regional road) on 30 September 2015 in accordance with the requirements of the EIA Regulations. Further notices were placed at the Saldannah Bay Local Municipality and the Langebaan Library. In addition to the advertisements and site notices, key stakeholders and registered I&APs were notified in writing of the commencement of the EIA process, the availability of the draft Scoping Report and the date of public meeting. Copies of all advertisements, site notices and written notifications are included within **Appendix C**.

iv. Public Involvement and Consultation

In order to provide information regarding the proposed project and the EIA process, a background information document (BID) for the project was compiled at the outset of the process (refer to **Appendix C**). The BID has been distributed to identified stakeholders and I&APs, additional copies will be made available at public venues within the broader study area, and it will be posted electronically on the Savannah Environmental website.

Through consultation with key stakeholders and I&APs, issues for inclusion within the issues-based scoping study will be identified and confirmed. In order to accommodate the varying needs of stakeholders and I&APs within the study area, as well as capture their views, issues and concerns regarding the project, various

opportunities will be provided in order for I&APs to have their issues noted. I&APs will be consulted through the following means:

» **Public meeting** in the study area (open meeting advertised in the local press)
» **Focus group meetings** (pre-arranged and stakeholders invited to attend)
» One-on-one **consultation meetings** (for example with directly affected or surrounding landowners)
» **Telephonic** consultation sessions
» Written, faxed or e-mail **correspondence**

v. Identification and Recording of Issues and Concerns

A Comments and Response Report was compiled to include all comments received through the public participation process. Comments received during the scoping phase of the process; including those received in the public review period of the draft Scoping Report are included in Comments and Response Report included in the Final Scoping Report.

3.5 Public Review of Draft Scoping Report and Public Meeting

The Draft Scoping Report was made available for public review from **15 April 2016 – 18 May 2016** at the following locations:

» Vredenburg Public Library
» Langebaan Public Library
» Hopefield Library
» www.savannahSA.com

Copies of the Draft Scoping Report were made available to the Saldanha Bay Local Municipality as well as the West Coast District Municipality. Affected parties and stakeholders also receivedCDs containing the report, on request.

3.5.1 Evaluation of Issues Identified through the Scoping Process

Issues (both direct and indirect environmental impacts) associated with the proposed project identified within the scoping process have been evaluated through desk-top studies. In evaluating potential impacts, Savannah Environmental has been assisted by specialist consultants (as detailed in **Table 3.3**).

Table 3.3: Specialist consultants appointed to evaluate the potential impacts associated with the construction of the proposed power line and substations

Specialist	Area of Expertise	Refer Appendix
Craig Widdows (Afzelia Environmental Consultants (Pty) Ltd) & Robyn Philips (external reviewer)	Avifauna	Appendix D
Craig Widdows (Afzelia Environmental Consultants (Pty) Ltd)	Fauna	Appendix E
Ronel Naude (Afzelia Environmental Consultants (Pty) Ltd)	Flora	Appendix F
Rowena Harrison (Afzelia Environmental Consultants (Pty) Ltd)	Wetlands	Appendix G
Jayson Orton (ASHA Consulting (Pty) Ltd) & Palaeontology – Graham Avery (Iziko Consulting)	Heritage & Paleo	Appendix H
Garry Paterson (ARC-Institute for Soil, Climate and Water)	Soils and Agricultural Potential	Appendix I
Candice Hunter (Savannah Environmental) and Anton Pelser (external reviewer)	Social	Appendix J
John Marshall (Afzelia Environmental Consultants and Environmental Planning and Design)	Visual	Appendix K
Pieter Arangie (ITS Engineers (Pty) Ltd)	Traffic Impact Assessment	Appendix L
Jan Visagie (Jan Visagie Consulting)	Town Planning Study	Appendix M

In order to evaluate issues and assign an order of priority, it was necessary to identify the characteristics of each potential issue/impact:

» *the nature,* which includes a description of what causes the effect, what will be affected and how it will be affected
» *the extent,* wherein it is indicated whether the impact will be local (limited to the immediate area or site of development) or regional

The evaluation of the issues resulted in a description of the nature, significance, consequence, extent, duration and probability of the identified issues, as well as recommendations regarding further studies required within the EIA phase.

3.5.2 Final Scoping Report

The final stage in the Scoping Phase entails the capturing of responses from stakeholders and I&APs on the Draft Scoping Report in order to finalise this

report. It is the final Scoping Report upon which the decision-making environmental Authorities provide comment, recommendations, and acceptance to undertake the EIA Phase of the process.

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3.6 Regulatory and Legal Context

3.6.1. Regulatory Hierarchy

At **National Level**, the main regulatory agencies are:

» *Department of Energy (DoE):* This Department is responsible for policy relating to all energy forms.
» *National Energy Regulator of South Africa (NERSA):* This body is responsible for regulating all aspects of the electricity sector.
» *Department of Environmental Affairs (DEA):* This Department is responsible for environmental policy and is the controlling authority in terms of NEMA and the EIA Regulations. The DEA is the competent authority for this project, and charged with granting the relevant environmental authorisation.
» *The South African Heritage Resources Agency (SAHRA):* SAHRA is a statutory organisation established under the National Heritage Resources Act, No 25 of 1999, as the national administrative body responsible for the protection of South Africa's cultural heritage.
» *National Department of Agriculture, Forestry, and Fisheries (DAFF):* This Department is responsible for activities pertaining to subdivision and rezoning of agricultural land. The forestry section is responsible for the protection of tree species under the National Forests Act (Act No 84 of 1998).
» *South African National Roads Agency Limited (SANRAL):* This Agency is responsible for the regulation and maintenance of all national routes.
» *Department of Water and Sanitation:* This Department is responsible for water resource protection, water use licensing and permits.
» *Department of Mineral Resources (DMR):* Approval from the DMR is required to use land surface contrary to the objects of the Act in terms of Section 53 of the Mineral and Petroleum Resources Development Act, (Act No 28 of 2002): In terms of the Act approval from the Minister of Mineral Resources is required to ensure that proposed activities do not sterilise a mineral resource that might occur on site.

At the Provincial Level, the main regulatory agencies are:

» *Provincial Government of the Western Cape – Department of Environmental Affairs and Development Planning (DEA&DP):* This department is the responsible authority for review of environmental assessments and

development planning applications within the Western Cape. They are the commenting authority for this project.

» *Department of Transport and Public Works (Western Cape):* This department is responsible for Provincial roads within the Western Cape, and for the granting of exemption permits for the conveyance of abnormal loads on public roads.
» *Cape Nature:* This Department's involvement relates specifically to the biodiversity and ecological aspects of the proposed development activities on the receiving environment to ensure that developments do not compromise the biodiversity value of an area. The Department considers the significance of impacts specifically in threatened ecosystems as identified by the National Spatial Biodiversity Assessment or systematic biodiversity plans.
» *Department of Agriculture:* This Department's involvement relates specifically to sustainable agricultural resource management and land care.
» *Heritage Western Cape:* The provincial heritage resources authority within the Western Cape. This public entity seeks to identify, protect and conserve the rich and diverse heritage resources of the Western Cape. HWC is mandated to promote co-operative governance between national, provincial and local authorities for the identification, conservation and management of heritage resources.
» *Department of Water and Sanitation:* This Department is responsible for evaluating and issuing licenses pertaining to water use.

At the **Local Level,** the local and municipal authorities are the principal regulatory authorities responsible for planning, land use and the environment. In the Western Cape, both the local and district municipalities play a role. The local municipality is the Saldanha Bay Local Municipality which forms part of the West Coast District Municipality. There are also non-statutory bodies such as environmental non-governmental organisations (NGOs) and community based organisations (CBO) working groups that play a role in various aspects of planning and environmental monitoring that will have some influence on proposed solar energy development in the area.

3.6.2 Legislation and Guidelines that have informed the preparation of this EIA Report

The following legislation and guidelines have informed the scope and content of this EIA Report:

» National Environmental Management Act (Act No. 107 of 1998)
» EIA Regulations, published under Chapter 5 of NEMA (GNR R982 in Government Gazette No 38282 of December 2014)

- Provincial Government Western Cape, Department of Environmental Affairs and Development Planning: Guideline for Environmental Management Plans, 2005.
- Provincial Government Western Cape, Department of Environmental Affairs and Development Planning: Guideline for the Management of Development on Mountains, Hills and Ridges in the Western Cape (2002).
- Guideline for determining the scope of specialist involvement in EIA processes (DEA&DP)
- Saldanha Bay Local Municipality Integrated Development Plan (2012-2016)
- Saldanha Bay Local Municipality Spatial Development Framework (2011)
- West Coast District Municipality Integrated Development Plan (2012-2017)
- International guidelines – the Equator Principles and the International Finance Corporation and World Bank Guidelines.

Several other Acts, standards or guidelines have also informed the project process and the scope of issues evaluated in this report. A listing of relevant legislation is provided in Table 3.4.

Table 3.4: Initial review of relevant policies, legislation, guidelines and standards applicable to the proposed Saldanha Bay Network Strengthening Project

Legislation	Applicable Requirements
National Legislation	
National Environmental Management Act (Act No 107 of 1998)	The EIA Regulations have been promulgated in terms of Chapter 5 of the Act. Listed activities which may not commence without an environmental authorisation are identified within these Regulations. In terms of S24(1) of NEMA, the potential impact on the environment associated with these listed activities must be assessed and reported on to the competent authority charged by NEMA with granting of the relevant environmental authorisation. In terms of GN R982, R983, R984 and R985 of December 2014, a Scoping and EIA Process is required to be undertaken for the proposed project.
National Environmental Management Act (Act No 107 of 1998)	In terms of the Duty of Care Provision in S28(1) the project proponent must ensure that reasonable measures are taken throughout the life cycle of this project to ensure that any pollution or degradation of the environment associated with this project is

Legislation	Applicable Requirements
	avoided, stopped or minimised. In terms of NEMA, it has become the legal duty of a project proponent to consider a project holistically, and to consider the cumulative effect of a variety of impacts.
Environment Conservation Act (Act No 73 of 1989)	National Noise Control Regulations (GN R154 dated 10 January 1992)
National Water Act (Act No 36 of 1998)	Water uses under S21 of the Act must be licensed, unless such water use falls into one of the categories listed in S22 of the Act or falls under the general authorisation (and then registration of the water use is required). Consumptive water uses may include the taking of water from a water resource and storage - Sections 21a and b. Non-consumptive water uses may include impeding or diverting of flow in a water course - Section 21c; and altering of bed, banks or characteristics of a watercourse - Section 21i.
Minerals and Petroleum Resources Development Act (Act No 28 of 2002)	A mining permit or mining right may be required where a mineral in question is to be mined (e.g. materials from a borrow pit) in accordance with the provisions of the Act. S53 Department of Mineral Resources: Approval from the Department of Mineral Resources (DMR) may be required to use land surface contrary to the objects of the Act in terms of section 53 of the Mineral and Petroleum Resources Development Act, (Act No 28 of 2002): In terms of the Act approval from the Minister of Mineral Resources is required to ensure that proposed activities do not sterilise a mineral resource that might occur on site.
National Environmental Management: Air Quality Act (Act No 39 of 2004)	Measures in respect of dust control (S32) and National Dust Control Regulations of March 2014. Measures to control noise (S34) - no regulations promulgated yet.
National Heritage Resources Act (Act No 25 of 1999)	» Stipulates assessment criteria and categories of heritage resources according to their significance (S7). » Provides for the protection of all archaeological and palaeontological sites, and meteorites

Legislation	Applicable Requirements
	(S35). » Provides for the conservation and care of cemeteries and graves by SAHRA where this is not the responsibility of any other authority (S36). » Lists activities which require developers any person who intends to undertake to notify the responsible heritage resources authority and furnish it with details regarding the location, nature, and extent of the proposed development (S38). » Requires the compilation of a Conservation Management Plan as well as a permit from SAHRA for the presentation of archaeological sites as part of tourism attraction (S44).
National Environmental Management: Biodiversity Act (Act No 10 of 2004)	» Provides for the MEC/Minister to identify any process or activity in such a listed ecosystem as a threatening process (S53) » A list of threatened and protected species has been published in terms of S 56(1) - Government Gazette 29657. » Three government notices have been published, i.e. GN R 150 (Commencement of Threatened and Protected Species Regulations, 2007), GN R 151 (Lists of critically endangered, vulnerable and protected species) and GN R 152 (Threatened or Protected Species Regulations). » Provides for listing threatened or protected ecosystems, in one of four categories: critically endangered (CR), endangered (EN), vulnerable (VU) or protected. The first national list of threatened terrestrial ecosystems has been gazetted, together with supporting information on the listing process including the purpose and rationale for listing ecosystems, the criteria used to identify listed ecosystems, the implications of listing ecosystems, and summary statistics and national maps of listed ecosystems (National Environmental Management: Biodiversity Act: National list of ecosystems that are threatened and in need of protection, (G 34809, GN 1002), 9 December 2011). » This Act also regulates alien and invader

Legislation	Applicable Requirements
	species.
Conservation of Agricultural Resources Act (Act No 43 of 1983)	» Prohibition of the spreading of weeds (S5) » Classification of categories of weeds & invader plants (Regulation 15 of GN R1048) & restrictions in terms of where these species may occur. » Requirement & methods to implement control measures for alien and invasive plant species (Regulation 15E of GN R1048).
National Forests Act (Act No. 84 of 1998)	According to this Act, the Minister may declare a tree, group of trees, woodland or a species of trees as protected. The prohibitions provide that 'no person may cut, damage, disturb, destroy or remove any protected tree, or collect, remove, transport, export, purchase, sell, donate or in any other manner acquire or dispose of any protected tree, except under a licence granted by the Minister'.
National Veld and Forest Fire Act (Act 101 of 1998)	In terms of S12 the landowner must ensure that the firebreak is wide and long enough to have a reasonable chance of preventing the fire from spreading, not causing erosion, and is reasonably free of inflammable material. In terms of S17, the landowner must have such equipment, protective clothing, and trained personnel for extinguishing fires.
Hazardous Substances Act (Act No 15 of 1973)	This Act regulates the control of substances that may cause injury, or ill health, or death due to their toxic, corrosive, irritant, strongly sensitising or inflammable nature or the generation of pressure thereby in certain instances and for the control of certain electronic products. To provide for the rating of such substances or products in relation to the degree of danger; to provide for the prohibition and control of the importation, manufacture, sale, use, operation, modification, disposal or dumping of such substances and products. Group I and II: Any substance or mixture of a substance that might by reason of its toxic, corrosive etc., nature or because it generates pressure through decomposition, heat or other means, cause extreme risk of injury etc., can be

Legislation	Applicable Requirements
	declared as Group I or Group II substance • Group IV: any electronic product; and • Group V: any radioactive material. The use, conveyance, or storage of any hazardous substance (such as distillate fuel) is prohibited without an appropriate license being in force.
National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008)	The Minister may by notice in the Gazette publish a list of waste management activities that have, or are likely to have, a detrimental effect on the environment. The Minister may amend the list by – » Adding other waste management activities to the list. » Removing waste management activities from the list. » Making other changes to the particulars on the list. In terms of the Regulations published in terms of this Act (GN 921), a Basic Assessment or Environmental Impact Assessment is required to be undertaken for identified listed activities. Any person who stores waste must at least take steps, unless otherwise provided by this Act, to ensure that: » The containers in which any waste is stored, are intact and not corroded or in any other way rendered unlit for the safe storage of waste. » Adequate measures are taken to prevent accidental spillage or leaking. » The waste cannot be blown away. » Nuisances such as odour, visual impacts and breeding of vectors do not arise; and » Pollution of the environment and harm to health are prevented.
National Road Traffic Act (Act No 93 of 1996)	» The technical recommendations for highways (TRH 11): "Draft Guidelines for Granting of Exemption Permits for the Conveyance of Abnormal Loads and for other Events on Public Roads" outline the rules and conditions which apply to the transport of abnormal loads and

Legislation	Applicable Requirements
	vehicles on public roads and the detailed procedures to be followed in applying for exemption permits are described and discussed. » Legal axle load limits and the restrictions imposed on abnormally heavy loads are discussed in relation to the damaging effect on road pavements, bridges, and culverts. » The general conditions, limitations, and escort requirements for abnormally dimensioned loads and vehicles are also discussed and reference is made to speed restrictions, power/mass ratio, mass distribution, and general operating conditions for abnormal loads and vehicles. Provision is also made for the granting of permits for all other exemptions from the requirements of the National Road Traffic Act and the relevant Regulations.
Provincial Policies / Legislation	
Western Cape Noise Control Regulations: PN 627 of 1998	The control of noise in the Western Cape Province is legislated in the form of Noise Control Regulations promulgated in terms of section 25 of the Environment Conservation Act No. 73 of 1989. In terms of Regulation 4 of the Noise Control Regulations: "No person shall make, produce or cause a disturbing noise (greater than 5 dBA), or allow it to be made, produced or caused by any person, animal, machine, device or apparatus or any combination thereof". The NCR is not triggered by the proposed project.
The Nature and Environmental Ordinance 19 of 1974, (as amended by the Western Cape Nature Conservation Laws Amendment Act, Act 2 of 2000)	The Nature and Environmental Ordinance 19 of 1974, (as amended by the Western Cape Nature Conservation Laws Amendment Act, Act 2 of 2000) defines the protection status of plants as follows: * ''endangered flora'' means flora of any species which is in danger of extinction and is specified in Schedule 3 or Appendix I of the Convention on International Trade in Endangered Species of Wild Fauna and Flora, Washington, 1973; provided that it shall not include flora of any species specified in such Appendix and Schedule 4; (thus all Schedule 3 species) * ''protected flora'' means any species of flora

Legislation	Applicable Requirements
	specified in Schedule 4 or Appendix II of the Convention on International Trade in Endangered Species of Wild Fauna and Flora, Washington, 1973; provided that it shall not include any species of flora specified in such Appendix and Schedule 3 * ''indigenous unprotected flora'' means any species of indigenous flora not specified in Schedule 3 or 4;
Western Cape Transportation Amendment Act of 1996	The provincial MEC may grant permit to undertake works within 200m of the published route upon receipt of a report assessing the potential impacts thereof.

DESCRIPTION OF THE RECEIVING ENVIRONMENT CHAPTER 4

This section of the Scoping Report provides a description of the environment that may be affected by the proposed Saldanha Bay Network Strengthening Project. This information is provided in order to assist the reader in understanding the possible effects of the proposed project on the environment. Aspects of the biophysical, social, heritage and economic environment that could be affected by, or could affect, the proposed development have been described. This information aims to provide the overall context within which this EIA is being conducted. A more detailed description of each aspect of the affected environment is included within the specialist scoping reports contained within **Appendices D-M**.

4.1 Regional Setting: Location of the Study Area

The proposed transmission power line corridors and substations associated with the Saldanha Bay Network Strengthening Project are located within the Saldanha Bay Local Municipality and the West Coast District Municipality of the Western Cape Province (see **Figure 4.1**). The study area is situated the Saldanha Bay area, approximately 130km North West of Cape Town, in the Western Cape Province. The closest towns are Saldanha Bay, Langebaan and Vredenburg. The study area consists mainly of agricultural land with isolated patches of natural vegetation. The surrounding area is characterised by a agricultural lands with a relatively flat topographic profile, primarily wheat and crop production activities. Few farmsteads occur within the study area and within the surrounding area and adjacent farms. A number of properties within the study area are potentially affected by the proposed alternative transmission power line corridors and substation sites. These are mostly owned by private landowners. On a regional scale, the R27 and R45 roads provide access to the study area. The area is a highly sensitive environment characterized by a network of power line and railway lines. Prominent features in or near the study area include:

- Nearby areas are comprised of developments such as the Saldanha Bay Smelter, Langebaan Air Force Base and Independent Power Producers' Wind Farms.
- Saldanha Steel (ArcelorMittal South Africa, Saldanha Works) is located approximately 1km north west of the study area.
- Vredenburg town is located approximately 10km north west of the study area.
- Thali-Thali Game Lodge is located within the southern section of the study area. Thali Thali is a 1.460ha Cape West Coast game and fynbos reserve situated just off the R27 near Langebaan. The game lodge has a 3-star grading with 8 accommodation units.

- West Coast Fossil Park is located within the northern section of the study area. According to the Saldanha Bay SDF (2011) the West Coast Fossil Park is a national asset and the significance of this tourism attraction should be emphasised. The fossil park in the area is an important heritage resource which could potentially form part of a network of protected areas within the Saldanha Bay municipal area. The unique qualities of the fossil park should be enhanced as an important regional tourist attraction (as should be discussed in the heritage assessment).
- West Coast National Park (Langebaan) is located approximately 2km south of the study area.
- Elandsfontein Private Nature Reserve is located approximately 5km south east of the study area.
- Hopefield Private Nature Reserve is located approximately 4km south east of the study area.
- Elandsfontein Phosphate Mine is located approximately 2km east of the study area.
- Coastal areas to the west of the study area are developed as tourist destinations. Mykonos, Langebaan and areas to the south particularly around the lagoon are tourism areas of possible national importance.
- Existing power lines and substations are apparent within the study area.
- Oil storage, paper production and steel production have all been established in the area around the port of Saldanha Bay. The necessary infrastructure to supply power and support these heavy industries is also evident throughout the landscape.
- According to the Western Cape Provincial Spatial Development Framework, the R27 and R45 are secondary scenic routes. Both these secondary scenic routes traverse the study area.

4.2 Biophysical Characteristics of the Study Area

4.2.1 Climatic Conditions

The study area is located within a winter rainfall area. Mean maximum and minimum temperatures are 36.5°C and 2.2°C, for January/February and July/August respectively. Sea fog and dew contribute to the moisture balance in summer and autumn months. Summer months are characterised by strong south easterly winds, during winter months northerly winds are more frequent. The average annual rainfall for this area is around 280 mm, giving rise to a low production potential (rainfall 200 – 300 mm/year, if <20% in summer) according to the annual rainfall criteria (Jacobs, 1999).

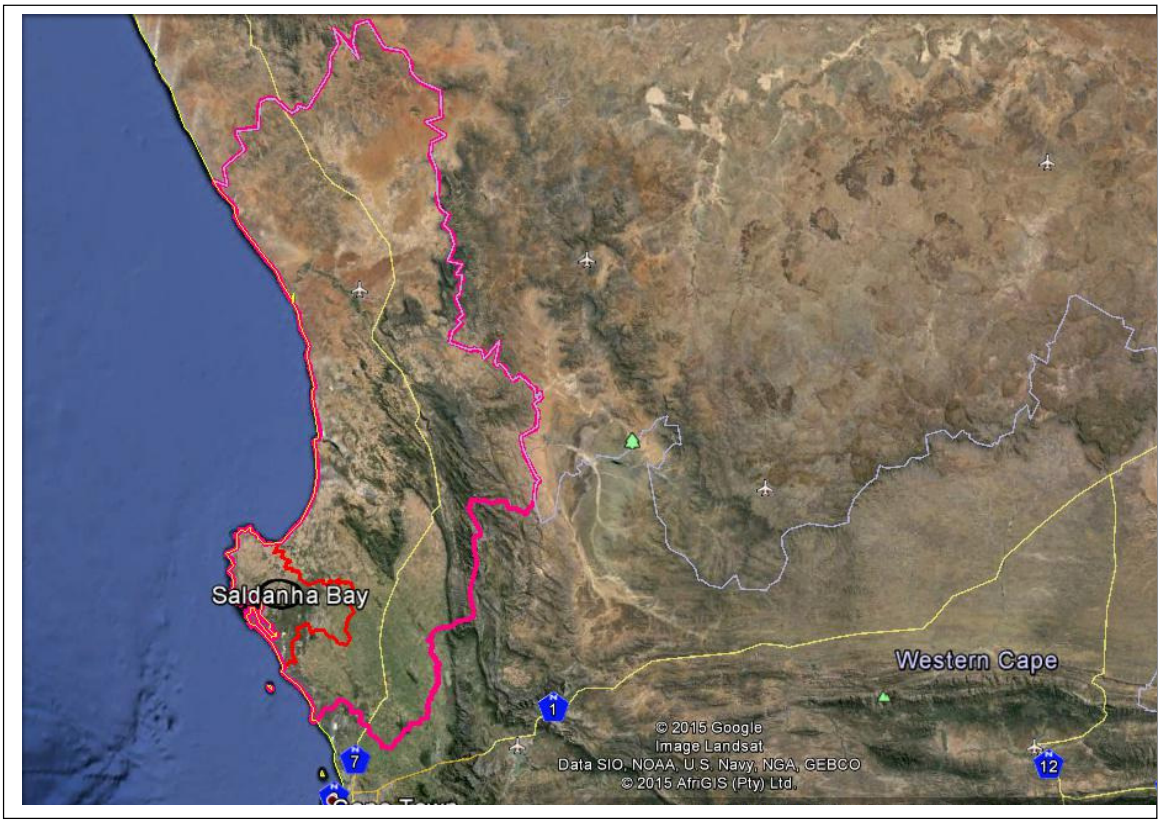

Figure 4.1: Municipal boundaries of the Saldanha Bay Local Municipality and the West Coast District Municipality

4.2.2 Topography and Geology

The study area is comprised of the west coast coastal plain. It is generally flat with limited undulations and ridgelines. The landform rises relatively rapidly from the coastline to 60 - 70m amsl which is maintained to the foot of more mountainous area approximately 70km inland. The elevation rises to approximately 150m amsl in the north around the town of Vredenburg and to the south of Langebaan. The Berg River is the main drainage feature located towards the north of the study area. This river has cut a broad valley through the landform reducing levels in the vicinity of the river channel to below 10m amsl. The extent of open, relatively flat land surrounding the proposed development is likely to mean that the proposed development may be visible over an extensive area. The depressed Berg River Valley and the more rugged land around Vredenburg and south of Langebaan are likely to be the only significant landform contribution to possible screening of the proposed development.

The area comprises aeolian sands of the Springfontyn Formation, underlain by limestone and calcrete of the Langebaan Formation with occasional outcrops of granite of the Vredenburg and Langebaaan-Saldanha Plutons, Cape Granite Suite (Geological Survey, 1990).

4.2.3 Land-Uses

The study area is characterised by urban development including the towns of Hopefield, Langebaan, Saldanha, Vredenburg, and Velddrift. These are relatively small rural towns with reasonably good infrastructure. Views of the broader landscape are probably only possible from the edges of urban development areas.

Agricultural development in the study area includes maize and wheat crop production. This results in an open area of arable farmland within which the main elements that are likely to influence visibility of the proposed power line and substations are the minor ridgelines located within the vicinity. Isolated farmsteads are located around the maize/wheat fields that include farmhouses, workers accommodation, storage and farm working areas. The farm houses and accommodation areas are often surrounded by trees that were possibly planted as wind breaks as well as for ornamental reasons.

Industrial Development including oil storage, paper production and steel production have all been developed within the area around the Port of Saldanha Bay. The necessary infrastructure to supply power and support these heavy industries is also evident throughout the landscape.

Two major conservation areas are located to the south east of the study area, these include:

» The West Coast National Park, which is a formally protected area, and
» The Elandsfontein Private Nature Reserve which is a private nature reserve.

These areas are largely covered with natural Fynbos which produces a very open landscape.

4.2.4 Soils, Land Types and Agricultural Potential

Soils

There are five separate land types occurring within the study area with no significant difference in the occurrence of the dominant soils in each land type except for the soil depth variation. The area consists mainly of shallow to deep, greyish brown, fine to medium, non-calcareous to calcareous, sandy soils underlain by calcrete/limestone and occasional rock. When vegetation is disturbed, these soils are susceptible to wind erosion due to the low clay content of the soils. (as can be seen from the information contained in Table 4.1 below).

Land Types

A summary of the dominant land type characteristics is given in Table 4.1 below.

Table 4.1: A summary of the main soil characteristics within the study area (Appendix G – soil assessment)

Map Unit	Dominant soils	Sub-dominant soils	Depth (mm)	Characteristics
Fc 108	Kalkbank Ms22, Loskop Ms12 Langebaan Fw21, Motopi Fw20, Fernwood Fw11, Maputa Fw10	60 19	20 – 300 600 – 1200+	Mainly very shallow to shallow, greyish-brown, fine- to medium- grained, neutral to alkaline, sandy soils underlain by calcrete/ limestone
Ha 13	Fernwood Fw11, Maputa Fw10 Tokai Ct11, Strombolis Ct10 Kalkbank Ms22, Loskop Ms12	50 21 15	600 – 1200+ 1200+ 200 – 400	Moderately deep to deep, greyish brown to brown, fine- to medium- grained, acid, sandy soils underlain by calcrete/limestone in some places
Hb14	Loskop Ms12, Kalkbank Ms22 Maputa Fw10, Motopi Fw20 Maputa Fw10, Motopi Fw20, Sunbury Cv30, Bleskop Cv40	48 24 25	100 – 400 400 – 600 600 – 1200	Mainly shallow, greyish-brown, fine-grained, neutral to alkaline, sandy soils underlain by calcrete/limestone
Hb22	Loskop Ms12, Kalkbank Ms22 Maputa Fw10, Motopi Fw20, Fw21 Maputa Fw10, Motopi Fw20, Fw21 Sunbary Cv30, Sandspruit Cv31	45 20 20 13	100 – 400 400 – 600 600 – 1200 400 – 600	Mainly shallow, greyish to greyish-brown, fine- to medium-grained, neutral to alkaline, sandy soils underlain by calcrete/limestone
Hb23	Fernwood Fw11, Maputa Fw10 Kalkbank Ms22, Loskop Ms12, Mispah Ms10, Malgas Gs20 Langebaan Fw21, Motopi Fw20	56 21 18	600 – 1200+ 150 – 400 1200+	Moderately deep to deep, greyish-brown, fine-to medium-grained, neutral to alkaline, sandy soils underlain by calcrete/limestone and occasional rock.

Agricultural Potential

Annual crops such as small grain (wheat and oats), medics (Family Medicago) and lupine with lucerne as a perennial pasture characterise the study area. The main limiting factor that influences the agricultural potential rating is the soil with above-mentioned limitations.

Taking all the above-mentioned factors into account, a general agricultural potential rating for the study area varies from low to medium–low, as per the attached soil study (Appendix G).

4.2.5 Wetlands

Two unchannelled valley bottom wetlands and six depression wetlands were identified within the study site (Figure 4.2).

Unchannelled valley bottom wetlands: Despite the FEPA (Freshwater Ecosystem Priority Area) category of these wetlands (Present Ecological State (PES) Category C; moderately modified) the scores obtained through the Level 1 Wet-Health assessment has found the unchannelled valley bottom wetlands to be generally a PES Category D, associated with largely modified systems. Modifications to the unchannelled valley bottom wetlands are predominantly as a result of a phosphorus mine which has been identified adjacent to the wetland areas. Mining activities generally lead to a decline in wetland health due to soil erosion, desiccation of soils and removal of hydrophytic vegetation through the operations of the mine (Refer to Wetland Assessment – Appendix H).

Depression wetlands: All depression wetlands within the study area were also generally assessed in terms of their health and found to be a PES Category C, associated with a moderately modified system. Modifications to the systems stem primarily from agricultural activities including grazing and cultivation. Agricultural activities generally lead to the removal of hydrophytic vegetation. Cultivation causes soil mixing which can cause desiccation of the soil changing the hydrology of the pan systems.

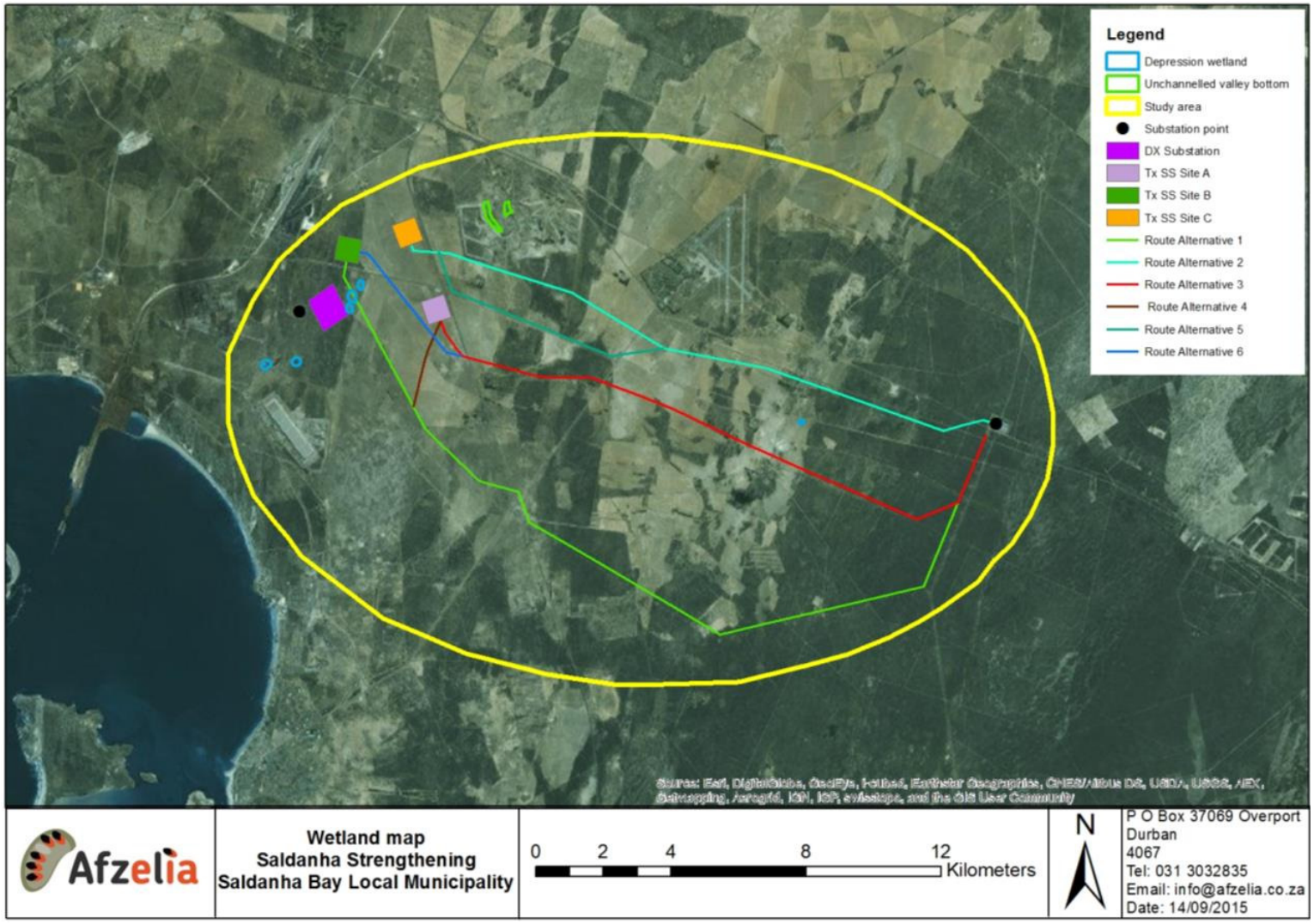

Figure 4.2 Desktop delineation of wetlands on site

4.2.6 Access roads and Transportation routes within the study area

Access roads and transportation routes located in the vicinity of the proposed transmission substation are detailed below.

» Site A - located to the west adjacent to the R27 and to the south of the weighbridge site at the R27/TR08501 intersection. Access to this site is currently possible off the R27 or TR08501. Direct access of the R27 is not ideal and access should preferably be taken of TR08501. However, the Western Cape Government's Department of Transport and Public Works is planning a grade separated interchange at the R27/TR08501 intersection in the future. The grade separation between the R27 and TR08501 will have an impact on the access opportunities to Site A.
» Site B - located to the north of TR08501 approximately 400 metres to the west of the R27/TR08501 intersection. Access to this site is currently possible off TR08501. The future road network planning for the area shows the realignment of Provincial Minor Road OP07644 and the Namakwa Sands Smelter access road currently intersecting TR08501 at KM4.24. The new alignment will intersect TR08501 in the vicinity of KM3.5 at the eastern boundary of the Namakwa Sands Smelter property. In the future this realigned road will have a grade separated interchange with TR08501. In the future once TR08501 is upgraded, access for Site B is recommended off this realigned road.
» Site C - located to the west adjacent to the R27 and approximately 1 kilometre to the north of the R27/TR08501 intersection. Access to this site is currently possible off the R27. Direct access of the R27 is not ideal and access should preferably be taken via a new service road of TR08501. The future road network planning for the area shows a north-south road approximately 2 kilometres from the R27 intersection. This road will have an underpass at the TR08501 with no direct link to the TR08501. Access to the larger road network will be via the realigned road along the eastern boundary of the Namakwa Sands Smelter site.

The Distribution substation site is located in the vicinity of the Blouwater Substation. Access to this site can be provided via the existing Blouwater Substation access road. In the future with the realignment of OP07644, access to the Blouwater Substation can remain via the existing access road.

Construction and service access to the power line servitudes will be via gated accesses at the different road crossings. Specific traffic management plans should be confirmed with the roads authority prior to any construction activity at the locations where the power lines cross any public road.

Construction and service access to the upgrades at the Aurora Substation will be via the existing access road at KM12.06. The topography of the surrounding area is relatively

flat and the roads in the vicinity of the proposed accesses are relatively straight. There is sufficient shoulder and stopping sight distances (SSD) available at all the proposed access positions and at the proposed power line road crossings.

4.3 Ecological Profile

4.3.1 Flora characteristics

Vegetation overview

At a broad scale the study area falls within the extensive Fynbos Biome (Mucina & Rutherford, 2006). At a local scale the study area falls within four vegetation types (**Figure 4.3**). Saldanha Flats Strandveld is the dominant vegetation type located within the study area while the Saldanha Limestone Strandveld occupies the western edge of the study area. A small outcrop of Saldanha Granite Strandveld is located along the southern section of the study area and Hopefield Sand Fynbos Vegetation traverses the northern boundary (Mucina and Rutherford, 2006).

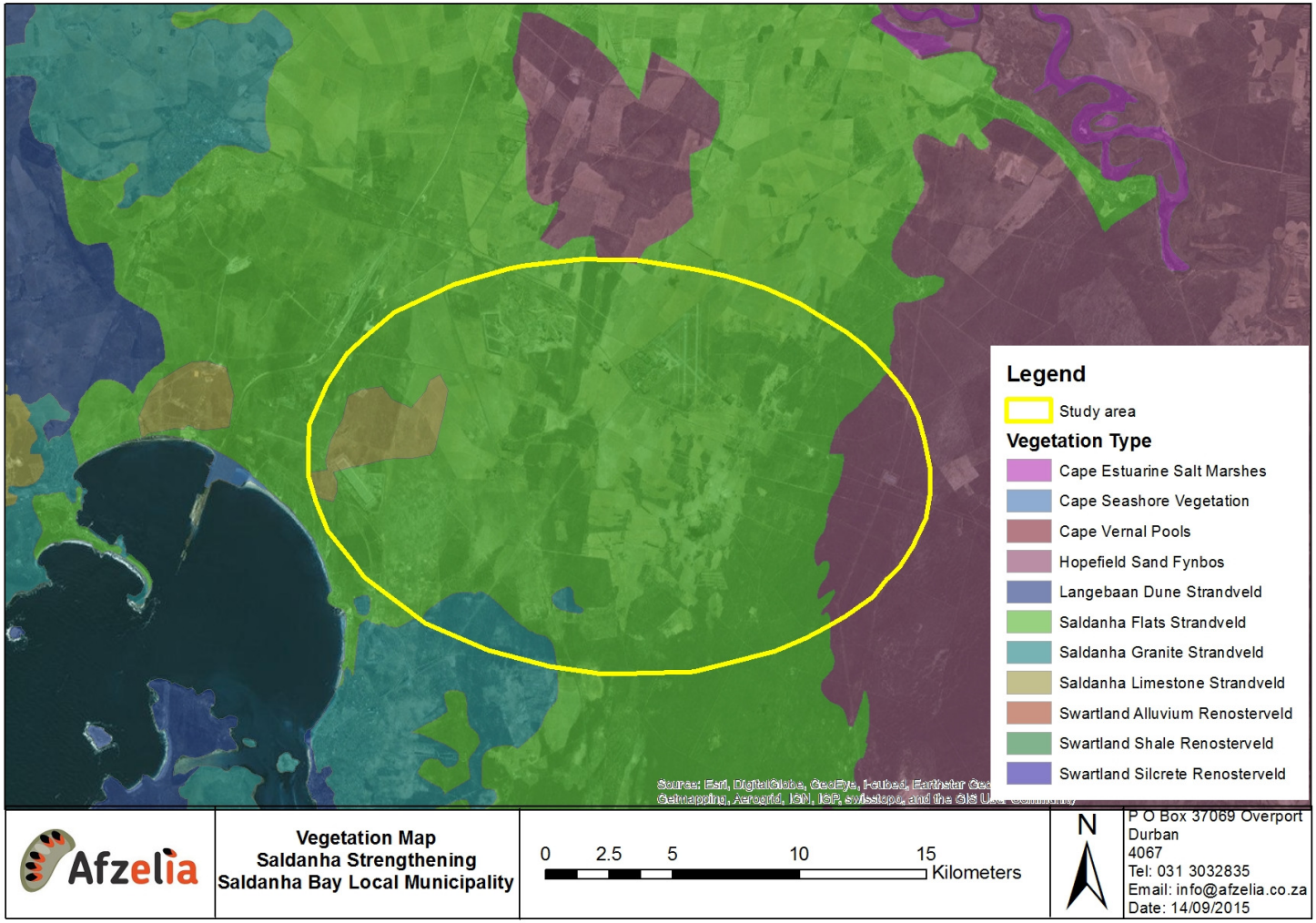

Figure 4.3: The vegetation types on the study site.

Saldanha Flats Strandveld: This vegetation unit is classified as Endangered. Only 11% is statutorily conserved in the West Coast National Park and Yzerfontein Nature Reserve, with a very small portion in private conservation areas such as Jakkalsfontein and West Point. More than half has already been transformed for cultivation, road building or by urban development. Alien infestation is caused by trees such as *Acacia cyclops* and *A. saligna* and herbs including *Bromus diandrus* and *Medicago hispida* (Mucina & Rutherford, 2006).

Saldanha Limestone Strandveld: This vegetation unit is classified as Endangered. None is conserved in statutory conservation areas and only a small portion is protected in the Swartriet Private Nature Reserve. About 40% of this vegetation unit has been transformed for cultivation or by development of coastal settlements. Some portions are under heavy grazing pressure. Aliens such as *Acacia cyclops* and *A. saligna* can become a problem in places. This vegetation unit is rich in Red Data plants.

Saldanha Granite Strandveld: This vegetation unit is classified as Endangered. Almost 10% of this vegetation unit is statutorily conserved in the West Coast National Park, SAS Saldanha and Columbine Nature Reserves, with a small portion in private reserves such as West Point, Groot Paternoster and Swartriet. About 70% has been transformed for cultivation or by urban development. This vegetation unit is regularly utilised for grazing. Alien species such as *Acacia saligna, A. cyclops* and *A. baileyana* are causing serious infestations in many places. Coastal development is a further threat to this vegetation unit.

Hopefield Sand Fynbos: The vegetation is a moderately tall, ericoid[3]-leaved shrubland with dense herbaceous stratum of aphyllous[4] hemicryptophytes[5]. This is mostly asteraceous and restioid fynbos, although proteoid[6] fynbos is extensive and ericaceous fynbos occurs in seeps and along watercourses. Hopefield Sand Fynbos has all three typical fynbos elements, but with a paucity (in species richness and density) of Ericaceae. This unit is most diverse in the Hopefield area, where extensive stands of *Leucadendron foedum, Leucospermum rodolentum* and *Serruria fucifolia* are dominant. This vegetation unit is endangered. A very small portion is statutorily conserved in the West Coast National Park, with an additional 2% protected in Hopefield and Jakkalsfontein Nature Reserve. 40% has been transformed for cultivation and grazing land.

[3] Small and tough leaves.

[4] Naturally leafless

[5] Plants whose renewal buds remain at ground level during the time of year unfavorable to vegetation.

[6] Plant roots that form clusters of closely spaced short lateral rootlets.

There is an increase in the occurrence of alien species such as *Acacia saligna, A. cyclops* as well as *Pinus* and *Eucalyptus* species.

Species of Conservation Concern

Species of Conservation Concern listed for the study area (Grid 3218CA & 3317BB) (as shown in Table 4.1) was obtained from the POSA database on the SANBI website. Threatened species are those that are facing high risk of extinction. This includes species in the categories Critically Endangered, Endangered and Vulnerable. Species of Conservation Concern include the Threatened Species, Near Threatened, Data Deficient, Critically Rare, Rare and Declining.

Table 4.1: Species of Conservation Concern (SANBI website, Quarter degree square Grid 3218CA & 3317BB)

Family	Species	Threat status
APIACEAE	*Capnophyllum leiocarpon*	Declining
ASTERACEAE	*Oncosiphon africanum*	VU
IRIDACEAE	*Babiana tubulosa*	VU
IRIDACEAE	*Ferraria foliosa*	NT
ASTERACEAE	*Cotula duckittiae*	VU
ASTERACEAE	*Cotula pusilla*	NT
ASTERACEAE	*Steirodiscus tagetes*	VU
FABACEAE	*Argyrolobium velutinum*	EN
IRIDACEAE	*Ixia calendulacea*	NT
MALVACEAE	*Hermannia procumbens subsp. myrrhifolia*	EN
SCROPHULARIACEAE	*Phyllopodium capillare*	NT
AMARYLLIDACEAE	*Gethyllis ciliaris subsp. Ciliaris*	NT
ASTERACEAE	*Felicia elongata*	VU
HYACINTHACEAE	*Daubenya zeyheri*	VU
HYACINTHACEAE	*Lachenalia pustulata*	NT
HYPOXIDACEAE	*Empodium veratrifolium*	EN
IRIDACEAE	*Babiana nana subsp. Nana*	EN
IRIDACEAE	*Babiana tubiflora*	Declining
IRIDACEAE	*Gladiolus caeruleus*	NT
IRIDACEAE	*Ixia purpureorosea*	VU
IRIDACEAE	*Moraea calcicola*	EN
IRIDACEAE	*Romulea saldanhensis*	EN
IRIDACEAE	*Watsonia hysterantha*	NT
MESEMBRYANTHEMACEAE	*Antimima limbata*	EN
MESEMBRYANTHEMACEAE	*Cephalophyllum rostellum*	EN
MESEMBRYANTHEMACEAE	*Cheiridopsis rostrata*	VU
MESEMBRYANTHEMACEAE	*Drosanthemum hispifolium*	VU

Family	Species	Threat status
PLUMBAGINACEAE	*Limonium acuminatum*	VU
PLUMBAGINACEAE	*Limonium capense*	NT
POLYGALACEAE	*Muraltia macropetala*	VU
RHAMNACEAE	*Phylica greyii*	EN
RUBIACEAE	*Nenax hirta subsp. Calciphila*	NT
RUTACEAE	*Diosma guthriei*	NT

Critical Biodiversity Areas

Critical Biodiversity Areas are those areas required to meet biodiversity thresholds. They are areas of land or aquatic features (or riparian buffer vegetation alongside CBA aquatic features) which must be protected in their natural state if biodiversity is to persist and ecosystems are to continue functioning. These Critical Biodiversity Areas incorporate:

» areas that need to be protected in order to meet national biodiversity pattern thresholds (target area);
» areas required to ensure the continued existence and functioning of species and ecosystems (including the delivery of ecosystem services); and/or
» important locations for biodiversity features or rare species.

The proposed area for the Dx Substation and Tx Substation site B as well as large parts of Corridor Alternative 1 are in an area classified as Critical Biodiversity Areas. These areas are likely to contain species of conservation concern and sensitive ecological areas.

4.3.2 *Fauna*

Faunal micro-habitats

The following faunal micro-habitats have been identified within the study area:

» *Water bodies*: Bodies of water such as pans, rivers, streams, estuaries and other wetland systems provide suitable habitats for a variety of faunal species. These include endemic species and those of conservation importance. Various amphibians present within the study area will be localised around these micro-habitats. Various faunal species rely on wetland areas as a water source as well as providing suitable habitats for roosting, foraging and breeding. The western section of the study area contains seasonal pans as well as an unchannelled valley bottom wetland north of the power line corridor alternatives. Pans are defined as a near-level shallow depression or basin, usually containing an intermittent supply of water. At

certain times of the year, these areas are characterised by slow flowing water and tall emergent vegetation. These factors provide habitats for various faunal species.

» *Strandveld low shrublands* occupy the central and southern boundaries of the study area (**Figure 4.3**). These shrubland areas support certain species such as Golden Moles, burrowing reptiles and several Rain frogs. Although the shrublands within the area are negatively impacted due to the disturbance and encroachment from agricultural land and power line infrastructure, they provide important corridors of natural vegetation, cover and foraging opportunities for many faunal species within the largely anthropogenically disturbed landscape.

» *Rocky outcrops:* Many faunal species, particularly reptiles and mammals, utilise rock habitats. Due to the relatively homogenous nature of the vegetation, rocky areas provide a unique habitat for faunal species.

Faunal composition within the study area and species of conservation concern

The study focused on the current status of threatened faunal species (mammals, reptiles and amphibians) occurring or likely to occur within the proposed study area.

» **Mammals**: According to distribution maps, 37 different terrestrial mammals may occur within the proposed development area (Skinner and Chimimba 2005). These include six insectivores, five Chiropterans, ten rodents, six viverrids, three felids and two canids. Of these, seven are listed as endemic to the region. It is predicted that 15 mammalian species are highly likely to be present within the study area.

Five Red Listed species are likely to occur within the study area. The Honey Badger (*Melivora capensis*) categorised as Near Threatened and the White Tailed Mouse (*Mystromys albicaudatus*) categorised as Endangered, both have a wide distribution within Southern Africa and as a result, the development is not predicted to have a significant influence on the regional populations. This also holds true for the Brown Hyena (*Hyaena brunnea*)

» **Amphibians**: The proposed study area falls within the distribution range of six amphibian species of which three are highly likely to be present within the development footprint. A series of wetland habitats (unchannelled valley bottom) and pan habitats located within the study area may provide suitable breeding and foraging habitats for resident amphibian species. Species likely

to be present include Clicking stream frog (*Strongylopus grayii*), Cape River Frog (*Amietia fuscigula*) and Raucous Toad (*Amietophrynus rangeri*).

The only Red Listed species which may occur within the study area is the Cape Caco (*Cacosternmum capense*) and has been listed as Vulnerable. *C. capense* inhabits low lying areas with poorly drained, loamy or clay soils and the preferred habitat consists of Renosterveld. Due to the lack of suitable natural and breeding habitats (the site falls within Strandveld vegetation) coupled with the fact that the study area is on the edge of its recorded distribution, it is considered unlikely that *C. capense* will have resident populations within the study area.

» **Reptiles:** The study areas falls within the distribution range of 44 reptile species. The (SARCA) has indicated that 37 species have been recorded within he study area. The proposed substation development will result in the natural habitat being replaced and largely unusable for various reptile species and the species diversity within this area will be lower than adjacent natural alternatives. This is particularly true for burrowing species such as the Near Threatened Bloubergstrand Dwarf Burrowing Skink (*Scelotes montispectus*) and Gronovi's Dwarf Burrowing Skink (*Scelotes gronovii*) as the hardened surface will restrict movement as these species avoid movement above the ground. However, various species, usually those not sensitive to anthropogenic disturbance, will still use the transformed area such as Variegated skink (*Trachylepis variegate*), Red Lipped Herald Snake (*Crotaphopeltis hotamboeia*) and Mole Snakes (*Pseudaspis cana*). According to SARCA, five Red listed species could be present within the study area.

The large sections of natural Strandveld located within the central and southern portions of the study area are likely to provide habitat for a variety of reptile species including Puff adders (*Bitis arietans arietans*), Cape Dwarf Chameleon (*Bradypodion pumilum*) and several Skink species. Based on the desktop study, the study site had limited rocky areas to support Girdled Lizard species, snakes and geckos. The development of the proposed strengthening project is unlikely to have a long term impact of reptilian populations within the area. Furthermore, these impacts would be on a local scale.

4.3.3 Avifauna

Avian micro-habitats within the study area

Agricultural lands: are found within the study area and are a common micro-habitat. Avian species that will be attracted to these areas include Blue Cranes,

Harrier species and various Heron species. In particular the White Stork has a high affinity for arable land, with 80% of sightings in South Africa recorded within this habitat (Dean & Ryan 2005).

Pans: The western section of the study area contains seasonal pans. Pans are defined as a near-level shallow depression or basin, usually containing an intermittent supply of water. At certain times of the year, these areas are characterised by slow flowing water and tall emergent vegetation. These factors provide habitats for various waterbirds. The pans in this study area could be used by White Storks, Greater and Lesser Flamingos. Furthermore, these water sources are often used by large flocks of granivorous bird species such as Cape Sparrow, Canary Species and Southern Red Bishops.

Strandveld Shrublands vegetation Strandveld low shrublands occupy the central and southern boundaries of the study area. These shrublands are important for Secretarybirds as they provide foraging opportunities in the form of invertebrates and small vertebrates. Furthermore, the shrubland habitat also provides habitat for various species such as the endemic Cape Spurfowl, Black Harrier, Thrushes and Lark species. Although the shrublands within the study area are negatively impacted due to the disturbance and encroachment from the croplands and power line infrastructure, they provide important areas of natural vegetation, cover and nesting opportunities for many avian species within the largely agricultural and industrial landscape.

Artificial habitats are provided by the existing overhead power lines that traverse through the study area. The power line towers are used by various species including raptors from which to hunt and to nest.

Avifauna species composition within the study area

A total of 243 species were recorded in 3218CC and 3318AA by SABAP2, with 20 species (8.2%) classified as Red Data species (Barnes 2014). Furthermore, 19 species are Southern African endemics (7.8%).

Reporting rates are an indication of the relative density of a species on the ground in that it reflects the number of times that a species was recorded relative to the total amount of cards that were completed for the pentad (Barnes 2014).

Avifaunal species of concern

Table 4.2 provides a guideline of the Red Data species that could potentially be encountered anywhere within the pentad where suitable habitat is available. This was based on avifaunal micro-habitats in combination with documented records

within the study area. Report rates are the likelihood of a particular species occurring within the study site and along any of the alignments/substation sites represented as a percentage.

Table 4.2: Red Listed bird species recorded in the 2821CA and 3318AA quarter degree square within which the proposed substations and power line infrastructure are located.

Species	Status[7]	Likelihood of Occurrence
SECRETARY BIRD (*Sagittarius serpentarius*)	VU	Low
MARTIAL EAGLE (*Polemaetus bellicosus*)	EN	Low
LUDWIG'S BUSTARD (*Neotis ludwigii*)	EN	Possible
LANNER FALCON (*Falco biarmicus*)	VU	Likely
GREAT WHITE PELICAN (*Pelecanus onocrotalus)*	VU	Likely
CAPE GANET (*Morus capensis*)	VU	Low
CAPE CORMORANT (*Phalacrocorax capensis)*	EN	Possible
BANK CORMORANT (*Phalacrocorax neglectus)*	EN	Low
CROWNED CORMORANT (*halacrocorax coronatus)*	NT	Low
GREATER FLAMINGO (*Phoenicopterus ruber)*	NT	Possible
LESSER FLAMINGO (*Phoenicopterus minor)*	NT	Possible
AFRICAN-MARSH HARRIER (*Circus ranivorus)*	EN	Likely
BLACK HARRIER (*Circus maurus)*	EN	Highly Likely
BLUE CRANE (*Anthropoides paradiseus)*	NT	Likely
CHESTNUT-BANDED PLOVER (*Charadrius pallidus)*	NT	Low
EURASIAN CURLEW(*Numenius arquata)*	NT	Low
CASPIAN TERN (*Sterna caspia)*	VU	Low
ANTARCTIC TERN (*Sterna vittata)*	EN	Low
SOUTHERN BLACK KORHAAN (*Afrotis afra)*	VU	Highly Likely

4.4 Visual Quality of the Area

The overriding character differentiating factors within the subject landscape appear to be landform /drainage and development. These factors appear to divide the landscape into three discrete areas including:

a) **Urban areas**. These are generally inward looking drawing little character influence from external areas. It is unlikely that the proposed development will have much influence on these areas other than perhaps the edges of the urban areas that face onto sections of the proposed development.

[7] *NT= Near Threatened; VU=Vulnerable; EN= Endangered

b) **The Coastal Plain**. This area is relatively flat with generally low vegetation. This zone is therefore unlikely to provide significant visual absorption capacity and the proposed development is likely to be highly visible. The visibility of the development may be slightly offset by the fact that there are numerous industrial elements that are obvious in the landscape including heavy industry and electrical and railway infrastructure. Mapping also indicates the presence of the West Coast National Park and the Elandsfontein Private Nature Reserve immediately to the south of the proposed development area. As these areas are relatively free of industrial elements, their presence may justify categorising this area as a separate LCA, although from previous site visits, it is known that electrical infrastructure does impact on the natural character of sections of these predominantly natural areas.

c) **The coastal strip**. This can be differentiated from the rest of the coastal plain due to its proximity to the sea and the fact that a large portion of the land use is tourism and recreation orientated. There are however also industrial elements present particularly orientated towards coastal activities such as oil and gas, and fishing. The area immediately adjacent to the coast generally falls to the west towards the sea and is steeper than the remainder of the coastal plain. As a result, the general outlook is generally to the west over the sea, although elements in the immediate hinterland to the east are also likely to sit prominently in the periphery of views. It is likely however that development inland will not be prominent from coastal areas due to the landform and a general focus towards the sea.

View of the urban area of Vredenburg and the industrial element

View of the coastal plains & coastal plan strip

F**igure 4.4**: Views of the different land characteristics within the study area

4.5 Social Characteristics of the Study Area and Surrounds

The socio-economic profile provides an overview of the study area. The following is a summary of the key baseline characteristics and challenges of the Saldanha Bay Local Municipality (SBLM). In summary, the area was found to have the following general characteristics (Census, 2011 & SBLM IDP 2012-2017):

- The population of the West Coast District Municipality (WCDM) in 2011 was approximately 391 766 people, of which 99 193 people reside in the SBLM.
- Of the ~99 193 population, about 50.2% are female, while 49.8% are male.
- In the SBLM there are ~28 835 households with an average household size of ~3.2 persons per household. Of the ~28 835 households in SBLM approximately 81.7% live in formal dwellings.
- Approximately 55.8% of the population comprise the Coloured ethnic group.
- The most spoken language in the SBLM is Afrikaans (70.8% of the population).
- The Economically Active Population (EAP) (individuals that are aged 15-64 that are either employed or actively seeking employment) accounts for 58.9% of the entire population.
- The population aged 0–14 years comprise 25.2% of the population and those aged 65 years and above accounts for 5.3% of the entire municipal population.
- The dependency ratio is the amount of individuals that are below the age of 15 and over the age of 64, that are dependent on the EAP. The dependency ratio in the SBLM comprises 30.5% of the population.
- There are low levels of literacy amongst the members of the community. The level of education influences growth and economic productivity of a region. In the SBLM 3.4% of the population have no schooling, 39.2% have some primary education, 6.2% have completed primary, 34.8% have some secondary, 12.4% have completed matric and only 1.4% of the population

have higher education. This means that majority of the population have a low-skill level and would need job employment in low-skill sectors.

» The municipality's unemployment rate stands at 23.4% (2011).
» Households that have either no income or low income fall within the poverty level (R0- R38 200 per annum) accounts for 48.4%. A middle-income is classified as earning between R38 201 - R307 600 per annum. Approximately 43.4% of the households earn a middle income and 6.8% of households earn a high income that is classified as earning R307 601 or more per annum. A high percentage of household income falls within the poverty level. The high poverty level has social consequences such as not being able to pay for basic needs and services.
» Approximately 88.2% of the population have access to electricity. For all the population that has access to electricity, 97% use it for lighting, 75.4% use it for heating and 92.4% for cooking. Approximately 97.4% of the SBLM have access to regional or local water schemes (operated by the municipality or other water service providers).
» Approximately 92.5% of households within the municipality have access to a flush toilet and 96.6% of the municipal households have their refuse disposal removed by the municipality.
» SBLM has a total of 14 primary health care facilities including 8 fixed clinics, 1 district hospital, 3 satellite and 2 mobile clinics.
» Saldanha Municipal area is considered to be well serviced in terms of the extent and level of infrastructure available.
» Agriculture forms the backbone of Saldanha economy and accounts for the largest labour to date. Despite the passing trade, the Saldanha economy has not diversified and capitalized on its potential.
» Saldanha Bay harbour is also considered as a key economic centre and major growth node within this district, unlocking trade and manufacturing opportunities.
» In comparison with the District labour force, Saldanha Bay's labour force represents 27.1% of the West Coast District labour force.

The greatest social problems in the SBLM are illiteracy and poverty. The income distribution is distorted in the SBLM to the disadvantage of the less economically secured people, who also represents the majority of the municipal area. Poor households are a result of a lack of wage income, either due to unemployment or low-paying jobs. However, SBLM area is considered to be well serviced in terms of the extent and level of infrastructure available.

The proposed development supports the social and economic development through enabling skills development and training in order to empower individuals and promote employment creation within the local area. The development would

mainly focus on economic benefits to the area and contribute towards strengthening the existing electricity network in the local area.

4.6 Heritage features of the region

4.6.1 Heritage and archaeology

Archaeological aspects

Although several very important archaeological sites are known from the Vredenburg Peninsula, the broader study area for this project is not generally archaeologically sensitive. Numerous surveys in the western part in particular have shown archaeological resources to be absent from the surface. A good example is the survey by Orton (2011) which covered a large area in the central western part of the present study area and did not reveal a single Stone Age artefact. Only one archaeological site is known to occur within the study area, while several others occur just outside of it (**Figure 4.5**).

The West Coast Fossil Park includes a sand dune with a deflation hollow in it that is known as Anyskop. This dune lies within the northern part of the study area. The deflation hollow has been the subject of archaeological research (Dietl *et al.* 2005; Kandel *et al.* 2006; Conard 2001, 2002) that has revealed stone artefacts from the Early (ESA), Middle (MSA) and Later (LSA) Stone Ages. The site also yielded pot sherds indicating occupation within the last 2000 years and two stone hearths made of local calcrete. The recovered animal bones were either mineralised, indicating a Pleistocene MSA age, or fresh and dating to the Holocene LSA. Occupation from the ESA appears to have been quite ephemeral, while MSA occupations (including both the Still Bay and Howieson's Poort periods) and to a greater extent, LSA occupations from the mid- and late Holocene were more extensive.

The Elandsfontein site is a very important archaeological site because it was there that the partial skull of an archaic hominid was found (Singer 1954). Although this is the only early human remain to have been recovered from the site, it has yielded many thousands of animal bones which have been studied intensively (e.g. (Braun *et al.* 2013a, 2013b; Ewer & Singer 1956; Hendey 1969; Hooijer & Singer 1960, 1961; Keen & Singer 1956; Klein 1988; Klein *et al.* 2007; Klein & Cruz-Uribe 1991; Singer 1962; Singer & Boné 1960, 1966; Singer & Inskeep 1961, Singer & Keen 1965; Singer & Wymer 1968)). In addition to bones, stone artefacts dating to the ESA, MSA and LSA have been found. The ESA material, including hand-axes, has attracted more attention because it is this component that would likely have been associated with the hominid (Archer & Braun 2010;

Goodwin & Van Riet Lowe 1929). Although the core of the Elandsfontein site lies 5 km away from the present study area and research there has been focussed on an area of approximately 3 km^2 (Braun *et al.* 2013), it is thought that the archaeological sediments may extend to cover as much as 6 km^2 to 15 km^2 (Besaans 1972; Mabutt 1956). These estimates are likely both too conservative as exemplified by the finding of fossil bones and stone artefacts in the northern part of the Elandsfontein Farm as near as 2.5 km from the present study area (Orton 2007) and on the Elandsfontein Wes mining site (G. Avery, personal observation).

Figure 4.5: Aerial view of the study area (black oval) with the National Heritage Site of Langebaanweg, Provincial Heritage Site of Elandsfontein and other known archaeological sites in the area indicated.

In the Club Mykonos area, just outside the indicated study area, many shell middens have been documented in association with the rocky points there. Some were excavated and revealed the typical cultural finds associated with coastal shell middens including stone artefacts, ostrich eggshell beads and shell scrapers (Hart 2001; Hart & Gribble 1998; Hart & Jerardino 1998). A small shell scatter has also been recorded on a dune top well away from the rocky shoreline and just outside the westernmost end of the study area (Orton 2012). Also in this general

area, the Spreeuwalle fossil site mentioned before produced sparse MSA artefacts possibly dating to around 50 000 years ago (Avery, Klein *et al.*, in prep.).

Some of the archaeological sites in this region are important for what they tell us about human development and behaviour, but also about past biodiversity.

Graves

Although formal graveyards would not be impacted, there is always the chance of uncovering unmarked pre-colonial burials. However, such finds cannot be predicted.

Historical aspects

Planning of the air force base began in 1942 and it was officially proclaimed in the government gazette in 1946. It was originally intended as a base from which the threat of Japanese and German submarines could be countered but once opened just after the end of World War II it was used as a training facility. Originally known as the "Bomber Gunnery and Air Navigation School", its name was changed to "Air Force Station Langebaanweg" in 1947. In 1968 the name changed again to "Flying Training School Langebaanweg". In 1983 the name was again changed to "Air Force Base Langebaanweg". These and subsequent changes all reflected the changing role of the base in South Africa (AFB Langebaanweg 2015).

Mining started in 1943, initially at Baard's Quarry close to the air force base, where phosphate was extracted for use as fertilizer. In the early 1960s mining commenced in the Varswater 'C' and 'E' Quarries. The phosphate is part of the Varswater Formation, hence the name. Mining ended in 1993 because it was no longer economically viable (West Coast Fossil Park, n.d.). This same formation is now being targeted for phosphate mining at Elandsfontein.

Built environment

The general area has many farm buildings that date back into the 19th and early 20th centuries. The Uyekraal farm complex is an excellent example that lies alongside the R27 in the western part of the study area (Orton 2011). Fransen (2004) only maps one built environment heritage site, Wasklip, inside the study area – it lies in the far south alongside the R27. He notes the main house to be much altered but to have originally dated to around 1860. A ruined stone house nearby, he thought, could have been an earlier homestead.

Cultural landscape

The cultural landscape of the area revolves strongly around dryland agriculture and livestock grazing. The landscape is generally flat with gum tree lines and groves the only natural, although anthropogenically planted, vertical elements. Industrial infrastructure is prominent to the northwest of the study area and a number of existing power lines and substations are present. The landscape is thus not considered sensitive to the proposed development because of the degree of modification already experienced through industrial development.

4.6.2 Palaeontology (Fossils)

'Paleontological' means any fossilised remains or fossil trace of animals or plants which lived in the geological past, other than fossil fuels or fossiliferous rock intended for industrial use, and any site which contains such fossilised remains or trace.

The Langebaanweg and Saldanha Steel sediments provide a model for the area. Given the sedimentology of the region (Rogers 1980; Hendey 1981; Roberts 1997), and based on current knowledge, it is likely that marine and/or terrestrial fossils will occur in Varswater, Springfontyn and Langebaan Formation sediments should they be encountered during excavations.

SCOPING OF ISSUES ASSOCIATED WITH THE CONSTRUCTION OF THE SALDANHA NETWORK STRENGTHENING PROJECT CHAPTER 5

This Scoping Study identifies the potential positive and negative environmental (biophysical and social) impacts associated with the Saldanha Bay Network Strengthening Project. Figure 5.1 provides an indication of the alternative power line corridors and substation sites evaluated through this Scoping Process.

A number of issues for consideration were identified by the environmental team during the scoping phase of the EIA process. This section serves to describe and discuss the potential environmental impacts associated with the proposed project and to make recommendations for further studies required within the EIA phase. A discussion of the potential environmental impacts that the proposed development might have on the physical, biological, social, economic and cultural aspects of the environment are provided in this chapter of the report. More detail is contained within the specialist reports included within Appendices D – N. More quantitative and qualitative assessment and evaluation of these impacts will be undertaken during the EIA process.

5.1 Methodology for Impact Assessment during the Scoping Phase

The following methodology was used to determine the main issues and potential impacts of the proposed project:

» Identify **sensitive environments** and **receptors** that may be impacted on by the proposed project and the **types of impacts** (i.e. direct, indirect and cumulative) that are most likely to occur.
» Determine the **nature and extent of potential impacts** during the construction and operational phases.
» Identify '**No-Go' areas**, if applicable.
» Summarise the potential impacts that will be **considered further** in the EIA Phase through specialist assessments.

5.2 Environmental Issues

Environmental issues associated with construction and decommissioning activities of the power lines, substations and substation upgrade are similar and include, among others:

» Impact on fauna, flora, wetlands and ecology;
» Impact on soil and agricultural potential of the site;

» Impact on heritage resources;
» Visual impacts; and
» Impacts on the social environment.

Environmental issues specific to the operation of the power lines and substations could include, among others:

» Long-term loss of habitat and endangered / red list / protected species (flora, fauna).
» Potential soil loss and change in land-use for the footprint of the infrastructure.
» Visual impacts (intrusion, negative viewer perceptions and visibility of the facility).
» Social impacts

Table 5.1 and Table 5.2 provide a summary of the findings of the scoping study which was undertaken for the construction and operation phases of the proposed project respectively. Potential direct and indirect impacts are described and evaluated, and recommendations are made regarding further studies required within the EIA phase of the process. These tables focus on potential impacts associated with the proposed power lines and substations. Limited impacts are expected as a result of the upgrade of the existing Aurora substation since the proposed activities fall within the existing HV yard, which is already disturbed by the substation infrastructure. Table 5.3 provides a summary of the potential for cumulative impacts associated with the proposed development.

Table 5.1: Evaluation of Potential Impacts Associated with the **Construction Phase**

Impacts on Avifauna (Birds)

The three main types of microhabitat available to avifauna in the study area are the stranddveld, low shrubland and agricultural lands. Additionally the western section of the study area contains seasonal pans. These provide habitats for various waterbirds and the pans in this study area could be used by White Storks, Greater and Lesser Flamingos. Furthermore, these water sources are often used by large flocks of granivorous bird species such as Cape Sparrow, Canary Species and Southern Red Bishops. The scoping avifaunal assessment has identified a series of sensitive avifaunal micro habitats within the vicinity of route alternative 1 as well as adjacent to the Dx substation. A sensitivity map indicating these areas is presented in chapter 6 of this scoping report.

During the construction phase of power lines and substations, some habitat destruction and alteration inevitably takes place. This happens with the construction of access roads, the clearing of footprint areas for the power line towers and at the substation sites and the levelling of substation yards.

During the construction and maintenance of electrical infrastructure, disturbance of bird species take place. For shy, sensitive species this can impact on their daily activities, particularly whilst breeding. In general terms, one would expect that any species already existing in the study area would have adapted to the relatively high levels of disturbance already present. Refer to Appendix F for the specialist avifaunal study.

Issue	Nature of Impact	Extent of Impact
Habitat destruction and displacement	During the construction of the substations and power lines, some habitat destruction and alteration will occur due to the clearing of power line tower footprints and substation sites. These activities will have an impact on foraging, breeding and roosting ecology of avian species within the area through modification of habitat. 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 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. Various sections of the habitat in the study area are already largely transformed and fragmented by agricultural land. Furthermore, the study area does not provide a unique habitat within the landscape. The construction of the proposed new power lines and substations should therefore have a low displacement impact from an avifaunal perspective.	Local

Disturbance and displacement	The disturbance of avifauna during the construction phase will occur. Species sensitive to disturbance and ground-nesting species resident within the development footprint. These species include African Marsh Harrier (*Circus ranivorus*), Black Harrier (*Circus maurus*) and Blue Cranes (*Anthropoides paradiseus*). Both Harrier species often breed in damp vegetation in close proximity to wetlands or pans and Blue Cranes often breed on open ground near a water source (Hockey *et al.* 2006). These species will be sensitive to disturbance and habitat loss due to the construction of the proposed substation and overhead power lines. The study area is already subject to varying degrees of disturbance due to agriculture, industrial infrastructure as well as existing power line infrastructure. Therefore, species within this landscape often experience disturbance. As a result, disturbance of birds by the proposed substations is anticipated to be of low significance as birds will move away from the area temporarily. The relatively small scale of the development (in relation to the large agricultural landscape in the area) is unlikely to have a significant impact on avifauna.	Local
Habitat destruction	During the construction of the substations and power lines, some habitat destruction and alteration will occur due to the clearing of power line tower footprints and vegetation at the substation sites. These activities will have an impact on foraging, breeding and roosting ecology of avian species within the area through modification of habitat. 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 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. Various sections of the habitat in the study area are already largely transformed and fragmented by agricultural land. Furthermore, this is not a unique habitat within the landscape. The construction of the proposed new power lines and substations should therefore have a low impact from an avifaunal perspective.	Local
Description of expected significance of impact Construction impacts on birds will be local in extent. However, the majority of impacts are expected to be restricted to the site only, of short-term		

duration, probable and of minor to moderate magnitude. The overall significance of some of the avifaunal impacts could be high but it is expected that mitigation could reduce the significance of impacts to acceptable levels (low – moderate).

Recommendations for further study:

No fatal flaws have been identified on this project from an avifaunal perspective at this stage in the process. As such the project may proceed into the EIA phase. The EIA phase must include a more detailed assessment of all impacts as well as recommendations of mitigation measures where necessary. It is recommended that route alternative 2 or 3 and substation site A is the preferred options from an avifaunal perspective. These alternatives will minimise the impacts to avifauna. This should be investigated further and confirmed during the EIA phase.

Impacts on Fauna

The proposed development site is located within a largely anthropogenically modified environment. A series of power lines exiting the Aurora substation radiate through the landscape and the presence of a phosphate mine near Elandsfontein Private Nature Reserve, as well as other developments in the area has had an impact on the environment. This combination of factors has resulted in habitat transformation and subsequent reduction in suitable habitats for faunal species.

The desktop assessment undertaken indicated that there do not appear to be any obvious risks associated with the construction of the proposed substation and power line infrastructure from a faunal perspective. This is largely due to the degraded nature of existing habitat within the study area and the power line, substation and other infrastructure already present within the area.

Potential impacts identified during the scoping phase included loss of habitat and ecological structure, direct mortalities or injury and disturbance. Habitat destruction will also result from the construction of internal access roads. Refer to Appendix E for the specialist faunal study. The scoping faunal assessment has identified a series of sensitive faunal micro habitats within the vicinity of route alternative 1 as well as adjacent to the Dx substation. A sensitivity map indicating the location of these is presented in Chapter 6 of this scoping report.

Issue	Issue	Extent
Fatalities or injuries to faunal species	Activities involving the clearing of development footprints/harvesting of natural vegetation may result in the loss of faunal species. Various faunal species are vulnerable to poaching during the construction phase due to the increased human activity within the area. Furthermore, the increase in vehicular activity during the construction phase increases the likelihood of collisions with vehicles.	Local
Loss of faunal habitat and ecological structure	The construction of the proposed substation and power line development will result in the loss of faunal habitats and a loss of ecological connectivity within the area. This impact relates to the complete removal or partial destruction/disturbance of existing vegetation	Local

	by machinery and workers, impacting directly on the ecological condition of natural vegetation and habitat availability. These activities will have an impact on the foraging and breeding ecology of faunal species. The habitat is however already largely transformed and fragmented by agricultural and industrial developments, settlements and urban development and the site does not provide a unique habitat within the landscape. 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.	
Disturbance	Disturbance created by noise-pollution associated with workers and construction activities will have an effect local fauna using habitats within the study area. Sensitive faunal species are likely to disperse away from the area during the construction phase. This impact is therefore likely to be short-lived. Smaller and less mobile species may be trapped and killed/injured during the construction phase of the project.	Local

Description of expected significance of impact

Faunal impacts related to construction are expected to be local in extent but short to moderate in duration since most of the impacts are present only during the construction phase. The magnitude of impacts is expected to be moderate and the impacts will have a high degree of probability of occurrence. The significance of faunal impacts during construction is expected to be moderate pre-mitigation.

Recommendations for further study

It is recommended that route alternative 2 or 3 and substation site A is the preferred options from a faunal perspective. These alternatives will minimise the impacts to faunal species. This will be investigated further and confirmed during the EIA phase.

Proposed scope of work for the EIA phase

i. Revision of the conducted literature review.
ii. Identification of key faunal species residing within the study area through detailed field surveys.
iii. Further inspection and delineation of faunal microhabitats and their ability to support Red Data listed or endemic species from data collected during the detailed field investigations.
iv. Further investigation of identified impacts associated with the proposed development and assessment thereof.
v. Recommendations regarding required mitigation and management measures to minimise impacts on fauna and faunal habitats.

Impacts on Flora

Four vegetation types occur within the study area. Saldanha Flats Strandveld is the dominant vegetation type. Saldanha Limestone Strandveld occupies the western edge of the study area. A small outcrop of Saldanha Granite Strandveld is located along the southern section of the site and Hopefield Sand Fynbos Vegetation traverses the northern boundary. The primary direct botanical impact would be permanent loss of natural and partly natural vegetation found on the development site. Cleared areas will be exposed to environmental factors such as rain and wind which lead to the removal of topsoil resulting in soil erosion. This impact will be most prominent during the construction of the substations and access roads as well as the pylons associated with power lines.

A risk assessment was undertaken which identified the main potential negative impacts on the ecological receiving environment. The significance of these impacts will be assessed in detail during the EIA phase after collection of relevant field data. An initial assessment indicates that many of these impacts are likely to be significant or that there is a legislative imperative t to establishing whether they will occur or not. The identified potential impacts are the following:

» Habitat fragmentation
» Impacts on indigenous natural vegetation

Issue	Nature of Impact	Extent of Impact
Loss of natural vegetation and soil erosion	The primary direct botanical impact would be permanent loss of natural or partly natural vegetation found on the development site. Cleared areas will be exposed to environmental factors such as rain and wind which lead to the removal of topsoil resulting in soil erosion. This impact will be most prominent during the construction of the substation and access roads as well as the pylons associated with power lines.	Local
Habitat fragmentation	The proposed development is likely to have a negative impact in terms of loss of ecological connectivity through the clearing of vegetation for the substation, access roads, and power line tower footprints. This will result in a minor degree of habitat fragmentation. A considered aspect of ecological connectivity relates to pollination success. As insects and wind are the primary plant pollinators this type of infrastructure should have a negligible impact in terms of pollination success.	Local

Description of expected significance of impact

The significance of impacts on vegetation associated with habitat fragmentation is likely to be very high. Other vegetation impacts are expected to be of moderate to high significance pre-mitigation. The extent of vegetation impacts will be on a local to regional scale, long-term duration, of high magnitude and with a high degree of probability of occurrence.

Recommendations for further study

All potential impacts will be further assessed in the EIA phase of this assessment. The specification of the duration, probability and reversibility of the impacts will be subject to change prior to a detailed site inspection and detailed EIA-phase specialist report. Detailed mapping of sensitive areas will also be undertaken.

Impacts on Wetlands

The desktop assessment of the study area identified two unchannelled valley bottom wetlands and six depression wetlands. A health assessment was conducted for these wetlands according to the WET-Health Level 1 (desktop) methods. The unchannelled valley bottom wetlands have been classified as a PES category D, or largely modified, and the depression wetlands as a PES category C, moderately modified. Modifications to the wetland systems are largely as a result of human disturbances including the operation of a phosphorus mine, agricultural activities and urban/ residential development within the catchment areas (refer to sensitivity map in chapter 6).

Impacts of the proposed Saldanha Bay Network Strengthening Project are related to soil erosion, pollution of wetland systems, loss of hydrophilic vegetation and disturbance of wetland systems which leads to encroachment by alien invasive species.

Issue	Issue	Extent
Soil erosion, sedimentation, disturbance and degradation of wetland areas	Construction activities (i.e. excavations and vegetation clearing and bringing fill/bedding material to site, depositing such material) expose soils to environmental factors including rainfall and wind which leads to the removal of topsoil resulting from soil erosion. This is particularly so for the construction of the substations as well as any access roads, and pylons associated with the power lines that may be adjacent to or through wetland areas. Sedimentation of deposited soil as a result of erosion poses a risk to the geomorphological/functional integrity of the wetland systems. Disturbance to the soils and vegetation associated with the wetlands leads to changes in the hydrological and geomorphologic integrity of these systems. This will need to be investigated in detail the	Local

	EIA phase of the assessment.	
Reduction in hydrophilic vegetation	Compaction of soil will occur in the work area which will experience heavy vehicle traffic during construction. This will increase the soil bulk density, reduce the porosity and the hydraulic conductivity, impeding hydrological flow and leading to wetland degradation.	Local
Pollution of water resources and soil	Disturbance will make the wetlands more prone to encroachment by alien invasive species. If this occurs, then potentially re-establishment and re-development of former indigenous vegetation communities may either be hindered or may not occur, resulting in changes to the ecological structure and species composition of the wetland area along the route.	Local

Description of expected significance of impact

Impacts on wetlands will be of local extent, are probably and may be of moderate magnitude. The expected significance of impacts is high but this could be reduced to moderate or low if the suggested mitigation is applied.

Recommendations for further study

The terms of reference for the wetland assessment for the EIA phase will include:

» Accurately delineate the outer wetland boundary and various wetness zones (i.e.: permanent, seasonal temporary wetness zones) within the study area according to methods contained in 'A Practical Field Procedure for Identification and Delineation of Wetland and Riparian Areas' (DWAF, 2005);
» Assess and describe the health of any wetland units identified, through evaluation of indicators based on geomorphology, hydrology and vegetation as per the WET-Health methods. A Level 2 assessment using an in-field assessment will be conducted to verify the scores obtained in this Scoping Phase report.
» Assess and describe the Ecological Importance and Sensitivity of any wetlands identified on site, based on the presence of red data species; variety of habitats for faunal diversity; the health of the wetland and ecosystem benefits the wetland provides as per the Health Index of Habitat Integrity (DWAF, 2007);
» Determine appropriate set-back buffers for all wetlands delineated within the study boundary;
» Identify current and future sources of impacts associated with the proposed project, during both construction and operational phases;
» Assess and evaluate identified potential impacts. Impacts will be assessed both pre- and post- implementation of mitigating measures; and
» Propose and explain mitigation measures for unavoidable impacts. This will need to be incorporated into the Environmental Management Programme (EMPr).

Heritage & palaeontological Impacts

Palaeontology

Significant fossil occurrences, primarily at Saldanha Steel and Langebaanweg, exist in the study area. This should not be taken to imply that potential is lacking in the remainder of the study area, although it is highly unlikely that anything that might constitute a fatal flaw would be encountered. Excavations into sediments not normally accessible to palaeontologists should be seen as providing opportunities to recover potentially important fossil material that enables observations to be made on geology, past sea levels, climates, environments and biodiversity, that would otherwise be impossible. This would be a direct positive impact (benefit). Although often sparsely distributed and rare, palaeontological remains, if encountered, must be recorded and/or collected by an appropriately qualified person in order to reduce direct negative impacts. Given the known palaeontological potential of the region, mitigation action, beyond simple recording and recovery during monitoring, including the possibility of systematic excavations, may be necessary.

Archaeology

Because the project area lies largely between known significant archaeological sites, it is not expected that there would be any fatal flaws in this regard. There is a good chance that fossil bones and/or associated stone artefacts might be revealed when excavating pylon foundations in the vicinity of Elandsfontein and the West Coast Fossil Park, but this material is likely to be sparse and of relatively low intrinsic significance. Direct negative impacts on archaeological sites are thus likely to be of low significance. Perhaps of greater interest here is the potential that the project might have for enhancing our understanding of the distribution of archaeological and/or related fossil material in the area and it is envisaged that with monitoring of excavations the project may actually have a positive impact (benefit) in terms of archaeology.

Graves

Because the locations of unmarked graves cannot be predicted, they are not worth considering further in terms of whether they will affect any proposed development. They simply need to be dealt with on a case by case basis when they are discovered. This would involve reporting the find to an archaeologist or the heritage authorities, and appointing an archaeologist to obtain an emergency exhumation permit and remove the burial.

Other heritage

Because the area has a precedent for industrial development and a number of other examples of electrical infrastructure are already present, it is not anticipated that impacts to the landscape will be significant. Built structures are generally always avoided by electrical infrastructure, although impacts to the context of significant structures could be a minor concern.

Issue	Nature of Impact	Extent of Impact
Impacts on in situ	Physical disturbance of the material itself and its context affecting their significance.	Local.

heritage sites	Excavations for the tower foundations will potentially impact buried archaeological material. Similarly clearing of access roads could impact material that lies buried in the surface sand.	
Impacts on the built environment	It is not expected that the built environment will be directly impacted by the proposed project unless it becomes necessary to demolish structures that are older than 60 years.	No impacts expected.
Impacts on palaeontology	Physical disturbance of fossil material itself and its context affecting their significance.	Regional

Description of expected significance of impact

* Impact significance: Unknown. Could be very low but potential exists for impacts to be of MEDIUM-HIGH significance in localised areas if significant artefacts are unearthed. Best overall estimate is MEDIUM.
* Consequence: negative (loss of local fossil and/or archaeological heritage)
* Duration: permanent
* Probability: low
* Degree to which these impacts-
  - can be reversed: non-reversible
  - may cause irreplaceable loss of resources: unknown
  - can be avoided, managed or mitigated: avoidance would be difficult, but mitigation of exposed fossils could be easily achieved during the construction phase.

Recommendations for further study

It is recommended from a heritage point of view that the proposed project be carried forward to the impact assessment phase. However, the following should be borne in mind when planning the proposed routes for assessment:

» The whole area is sensitive from a palaeontological point of view and it is impossible to minimise impacts during the design phase;
» The Langebaanweg Fossil Park area, because of its Grade 1 status, should be avoided completely;
» Built structures should be avoided with an appropriate buffer; and
» A heritage impact assessment should be carried out, primarily to assess the impacts to palaeontological and archaeological resources.

Impacts on Soil and Agricultural potential

The nature of the impact on agriculture potential of the study area includes the loss of arable land due to the infrastructure, mainly the towers for the

transmission lines. However, this impact would in all probability be of limited significance since the majority of agricultural activities can continue within the power line servitude.

Issue	Issue	Extent
Loss of agricultural land	The loss of agricultural land due to the associated infrastructure of the transmission lines and substation upgrade.	Local - Regional

Description of expected significance of impact

Construction phase soil impacts and impacts on agricultural potential will be local in extent, of low probability and of low magnitude and duration. The significance of identified impacts will be low.

Recommendations for further study

Due to the envisaged impact on the agricultural potential of the study area being of low significance. Certain mitigation measures have however been prescribed:

- To ensure that as little pollution or other non-physical disturbance occurs;
- To ensure that if disturbance (roads, pylons etc) takes place on steep slopes, appropriate soil conservation measures are put in place.
- Regarding the three proposed sites for the substation, they all fall in the same land type (Hb22), so a field survey investigation would be required to look at the soils at each site in more detail and to make recommendations regarding the relative suitability of the three alternative sites.

Impacts on Traffic

It is expected that less than 100 trucks will be required to deliver equipment and building material during the construction period per substation and lines, depending on the type and size of the substation. The construction period could vary between six to twelve months. It is assumed that delivery of the equipment will occur within and spread over a six month period.

Based on information sourced from other similar projects it is assumed that approximately 50 construction workers could be employed during the peak construction period. It can be expected that the bulk of these workers will commute to/from the construction site via bus or minibus taxis. If 70 percent of the construction staff travels with minibus taxis with an average occupancy of 10 passengers per vehicle it equates to approximately 4 taxis visiting the site in the morning and afternoon peak hours. If the remaining 30 percent travel with private vehicles, it equates to approximately 40 motor vehicle and truck trips during the average week day, which is insignificant.

Issue	Issue	Extent
Traffic impacts	Increase in volumes of traffic related to construction	Local
Description of expected significance of impact No significant traffic-related impacts are expected during construction. Any impacts would be localised, short-term and of low probability and low magnitude.		
Recommendations for further study No further studies are required. Traffic impacts associated with the project will not be significant.		

Impacts on the Social Environment

Social impacts can be defined as the consequences to human populations of any public or private actions (these include policies, programs, plans and or projects) that alter the way in which people live, work, play relate to one another, organise to meet their needs and generally live and cope as members of society.

A Social Impact Assessment tries to predict the probable impact of a development on people's way of life (how they live, work, play and interact with one another on a daily basis), their culture (their shared beliefs, customs and values) and their community (its cohesion, stability, character, services and facilities), by:

» Appraising the social impacts resulting from the proposed project;
» Relating the assessed social impacts of the project to future changes in the socio-economic environments that are not associated with it. This would serve to place the impacts of the project into context;
» Using the measurements (rating) to determine whether the impacts would be negative, neutral or positive;
» Determining the significance of the impacts; and
» Proposing mitigation measures to input into the EMP.

The proposed new substations, transmission lines and expansion of the Aurora Substation could have some negative as well as positive social impacts. The Scoping assessment of the possible impacts indicates at this stage that there are no fatal flaws associated with the proposed project. The gathering of detailed information and rating of the intensity of the various impacts, as well as the mitigation proposed, could result in a change in the status of the impacts as identified as part of the Scoping process.

Issue	Nature of Impact	Extent of Impact

Employment opportunities	The construction of the proposed project will require a workforce and therefore direct employment will be generated. The proposed development will create employment opportunities for the local community. This is a positive temporary social impact. There will be skilled and unskilled work available. Skilled work is mostly contested by electrical contractors through a tendering process. These contractors are encouraged employ or make use of local people where possible especially for less and unskilled work opportunities. People from the SBLM and nearby towns are most likely going to benefit the most from this positive impact.	Local - Regional
Pressure on economic and social infrastructure impacts from an in-migration of people	The in-migration of people to the area as either non-local workforce of construction workers and/or jobseekers could result in pressure on economic and social infrastructure (municipal services) due to in-migration of construction workers and jobseekers and pressure on local population (rise in social conflicts and social dynamics).	Local
Impact on local economy – economic multiplier effects	A very limited number of part-time employment opportunities will be created for locals during the construction phase. It is therefore not anticipated that any economic spin-offs would be created due to increased income levels.	Local
Disruption in daily living and movement patterns and impact on land-use	It is not expected that the construction of the proposed transmission line would have more than a very limited temporary intrusion impact on the daily living and movement patterns of the affected landowners. Specific construction related activities (e.g. heavy vehicular movement and the creation of access routes) could damage the veld and existing roads and could result in possible erosion if not properly managed.	Local - Regional
Impact on infrastructure and services	Impacts on infrastructure such as the provincial and local roads through the area and so forth would only be temporary and intermittent. These possible impacts are expected to respond favourably to mitigation measures.	Local - Regional
Safety and Security Impacts	An increase in crime is often associated with construction activities. The perceived loss of security during the construction phase of the proposed project due to the influx of workers and/or outsiders to the area (as influxes of construction workers, newcomers or jobseekers are usually associated with an increase in crime), may have indirect effects, such as increased safety and security issues for neighbouring properties and damage to property, such as the risk of veld fire, stock theft, crime and so forth. Areas of concern include the impacted farmland and adjacent farming areas where livestock farming may occur.	Local
Health Related Impacts	The spread of sexually transmitted diseases with specific emphasis on HIV/Aids. People movement, (workers and job seekers) associated with construction activities could increase the	Local - Regional

	risk of spreading this disease even though a limited influx of people are expected.	
Dust and noise pollution	Resulting from construction vehicles travelling on gravel roads, the reverse indicator of the construction trucks resulting in noise pollution, and the creation of access routes. This would especially be evident should homesteads or any other dwellings be in close proximity to the construction area.	Local

Description of expected significance of impact

Of the potential positive construction-phase impacts, these are probable, short term, with a low intensity and have a low - high significance. This will be confirmed during the EIA phase following detailed investigations and assessment of impacts. In terms of reversibility of the impact and irreplaceable loss of resources, this is not applicable to this type of impact. The potential impacts may be enhanced with possible enhancement measures which will be elaborated on in the SIA EIA phase.

Of the potential negative impacts, these are probable, short-term, with a low to moderate intensity and have a low - high significance. This will be confirmed during the EIA phase following detailed investigations and assessment of impacts. In terms of reversibility of the impact and irreplaceable loss of resources, this is not applicable to this type of impact. The potential impacts may be mitigated with possible mitigation measures which will be elaborated on in the SIA EIA phase.

Recommendations for further study

The following activities will be undertaken as part of the Social Specialist Study during the EIA Phase:

» Further literature review
A comprehensive literature review and analysis will be undertaken during the EIA phase of the project. This will 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.

» Consultation sessions and fieldwork
During the EIA Phase additional primary data will also be gathered by means of consultation with the stakeholders and affected parties, and linkages with the public participation process.

» Analysis of data compiled by parallel studies
If available, the social impact assessment team will study and analyse the information gathered by the biophysical studies. This would assist the social team to assess the impact of the proposed development on the direct (surrounding communities) and indirect (regional) environment.

» Variables to be assessed and impacts to be rated
  * Population impacts;

- Community/institutional arrangements;
- Conflicts between local residents and newcomers;
- Individual and Family level impacts;
- Community infrastructure needs; and
- Intrusion impacts.

» Significance Criteria
- During the EIA phase, the anticipated social impacts would be rated according to a specific rating approach which would include the extent of the impact, the probability of the impact occurring, the magnitude, the duration of the impact and its significance, as stipulated by Savannah Environmental.

» Writing of the Social Impact Assessment report
» Provide mitigating measures to input into the EMP.

Table 5.2: Evaluation of potential impacts associated with the Operational Phase

Impacts on Avifauna (Birds)

Electrocution of birds on overhead lines is cause of unnatural mortality of larger bird species. However, in the context of overhead lines above 132kV, electrocutions are not of major concern. Electrocutions are not possible on the larger transmission lines such as that proposed for the project as the relevant clearances between live parts and live and earthed components exceed the wingspan of any bird. Thus this impact will not occur and is not discussed any further. Electrocutions within the substation yards is an expected impact as the live components inside the substations are much closer together and therefore more risk to birds.

Collision is the biggest single threat posed by transmission lines to birds in Southern Africa (van Rooyen 2004). Collision refers to the scenario where a bird collides with the conductors or earth wires of overhead power lines. This occurs because the birds cannot see the cables whilst in flight. Most heavily impacted upon are bustards, storks, cranes and various species of water birds. These species are mostly heavy-bodied birds with limited manoeuvrability, which makes it difficult for them to take the necessary evasive action to avoid colliding with power lines. Unfortunately, many of the collision sensitive species are considered threatened (Red Data status) in southern Africa.

There are a number of mechanisms through which birds are able to cause electrical faults on power lines. In the case of a bird streamer induced fault, the fault is caused by the bird releasing a "streamer" of faeces which can constitute an air gap intrusion between the conductor and the earthed

structure. Obviously the more an insulator string becomes coated with faeces, the more likely that a fault will occur. Larger birds and congregations of birds are likely to result in heavy pollution of insulator strings. Bird nests may also cause faults through nest material protruding and constituting an air gap intrusion. Crows in particular often incorporate wire and other conductive material into their nests. When nests cause flashovers, the nesting material may catch fire. This in turn can lead to equipment damage or a general veld fire.

Issue	Nature of Impact	Extent of Impact
Electrocution on substation infrastructure	Since there is live hardware in the substation yard, the potential exists for birds to bridge the gap between two phases or a phase and earth resulting in electrocution. However, very few electrocutions have been recorded on transmission substations. Species likely to be affected are crows and other species that are tolerant of disturbance and are attracted to the suitable nesting opportunity provided by the electrical infrastructure within the yard. Small raptors such as Lanner Falcons are sometimes attracted into substation yards in pursuit of species nesting there such as sparrows and canaries. With the majority of threatened species (Secretary Bird, Lesser Flamingo and Blue Cranes) avoiding the substation yard as they are sensitive to disturbances, it is predicted to have a low impact.	Local
Collisions with the power line	Collisions are the biggest single threat posed by transmission power lines to birds in Southern Africa (van Rooyen 2004). Species particularly susceptible to collisions include bustards, cranes and various species of water birds. These species are heavy-bodied birds with limited manoeuvrability (Van Rooyen 2004, Anderson 2001). Many of the collision sensitive species are considered threatened in Southern Africa. In order to reduce the impacts of power line on avian species, where possible lines must be placed next to existing lines. Bird flight diverts have also been shown to be effective in mitigating this impact.	Local
Disturbance	Ongoing maintenance activities will have an impact on species within the vicinity of actvities.	Local

Description of expected significance of impact

Operational impacts on birds will be local in extent, of long-term duration, probable and of moderate - high magnitude. The overall significance of some of the avifaunal impacts could be high but it is expected that mitigation could reduce the significance of impacts to acceptable levels (low – moderate).

Recommendations for further study:

The scoping phase has identified potential avifaunal issues associated with the proposed project. These issues will be investigated in more detail during the full EIA phase. In particular, the significance of bird collisions and electrocutions as well as faulting caused by birds will be assessed in order to determine the risk. This will be assessed mainly in terms of the actual or estimated abundance of priority bird species in the area, and the distribution of relevant microhabitats and food resources, and the way in which the latter is likely to influence aggregation and movement of these birds through the study area.

The results will include a more detailed assessment of all impacts as well as recommended mitigation measures where necessary.

Impacts on Fauna

During the operational phase, there will be some vehicle activity resulting in disturbance, particularly within the road access corridor.

Issue	**Issue**	**Extent**
Mortalities	Ongoing maintenance activities will have an impact on species within the vicinity of the infrastructure. The rise in human activity will increase the probability of faunal species being killed by vehicles or being trapped and collected.	Local
Disturbance	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.	Local

Description of expected significance of impact

Faunal impacts related to operation are expected to be local in extent but moderate in duration. The magnitude of impacts is expected to be moderate and the impacts will have a high degree of probability of occurrence. The significance of faunal impacts during construction is expected to be moderate pre-mitigation.

Recommendations for further study

It is recommended that route alternative 2 or 3 and substation site A is the preferred options from a faunal perspective. These alternatives will minimise the impacts to faunal species. This will be investigated further and confirmed during the EIA phase.

Proposed scope of work for the EIA phase

i. Revision of the conducted literature review.
ii. Identification of key faunal species residing within the study area through detailed field surveys.
iii. Further inspection and delineation of faunal microhabitats and their ability to support Red Data listed or endemic species from data collected during

the detailed field investigations.

iv. Further investigation of identified impacts associated with the proposed development and assessment thereof.

v. Recommendations regarding required mitigation and management measures to minimise impacts on fauna and faunal habitats.

Impacts on Flora

There is a moderate likelihood that alien species will spread on site during the operational phase in the absence of control measures.

Issue	Nature of Impact	Extent of Impact
Establishment and spread of declared weeds and alien invader plants	Major factors contributing to invasion by alien invader plants includes disturbance related to maintenance activities of the power lines, negative grazing practices, and deforestation. Exotic species are often more prominent near infrastructural disturbances. It is not known what alien plants occur on site, but species of *Prosopis* are most likely to be problematic in this area.	Local - Regional

Description of expected significance of impact

The significance of impacts on vegetation associated with alien plant invasion is potentially very high. The extent of vegetation impacts will be on a local scale, of potentially long-term duration, of high magnitude and with a high degree of probability of occurrence.

Recommendations for further study

The following activities will be undertaken as part of the Ecological Specialist Study during the EIA Phase:

» Development of an alien plant management plan as part of the EMP.

Impacts on Wetlands

Degradation of wetland areas can occur during maintenance as part of the operational phase of the project.

Issue	Issue	Extent
Degradation of wetland	Long-term impacts of the proposed activity relate to improperly maintained roads to	Local

areas	service the new substations and power lines which may result in secondary impacts on any wetlands within the vicinity of the construction areas.	

Description of expected significance of impact

The significance of impacts on wetlands is likely to be very moderate-high pre-mitigation. The extent of the impacts will be on a local scale, of potentially long-term to permanent duration, of high magnitude and with a moderate degree of probability of occurrence.

Recommendations for further study

» A detailed assessment of potential impacts on wetlands must be undertaken within the EIA Phase. Mitigation measures which will be addressed in the EIA phase must limit the significance of these impacts on the functionality of the wetlands.

Visual Impacts

The initial visual analysis (zone of theoretical visibility) indicates that due to relatively flat topography, the proposed development is likely to be visible from a broad area. However, the analysis of the various elements within the development plan indicates that due largely to the transparent nature of towers the main impact on landscape character is likely to be limited in extent.

The visual analysis also indicates that much of the coastal strip is likely to be screened from the proposed development by existing landform.
In terms of potential impacts, the areas that are most likely to be sensitive to landscape change include:

- Natural areas of the Coastal Plain and particularly protected areas.
- Coastal routes that carry large volumes of tourism related traffic, particularly the R27.
- The edges of urban areas that face onto the various elements of the proposed development.
- Coastal areas that are not screened from the proposed development.

This preliminary assessment indicates that;

» Approximately 47 farmsteads could be impacted.
» The northern sections of Langebaan and Saldanha as well as the eastern section of Vrendenburg could be impacted.
» Inland sections of the West Coast National Park and Elandsfontein Private Nature Reserve could be impacted.
» Sections of the R27, the R45, the R399 as well as local tertiary roads could be impacted.
» It appears that the majority of the Coastal Strip LCA will be screened from views of the proposed development.

These impacts will be ground truthed during the assessment as will the degree to which these possible impacts will affect receptors. Figure 5.1 below

shows initial zones of theoretical visibility and identified sensitive visual receptors.

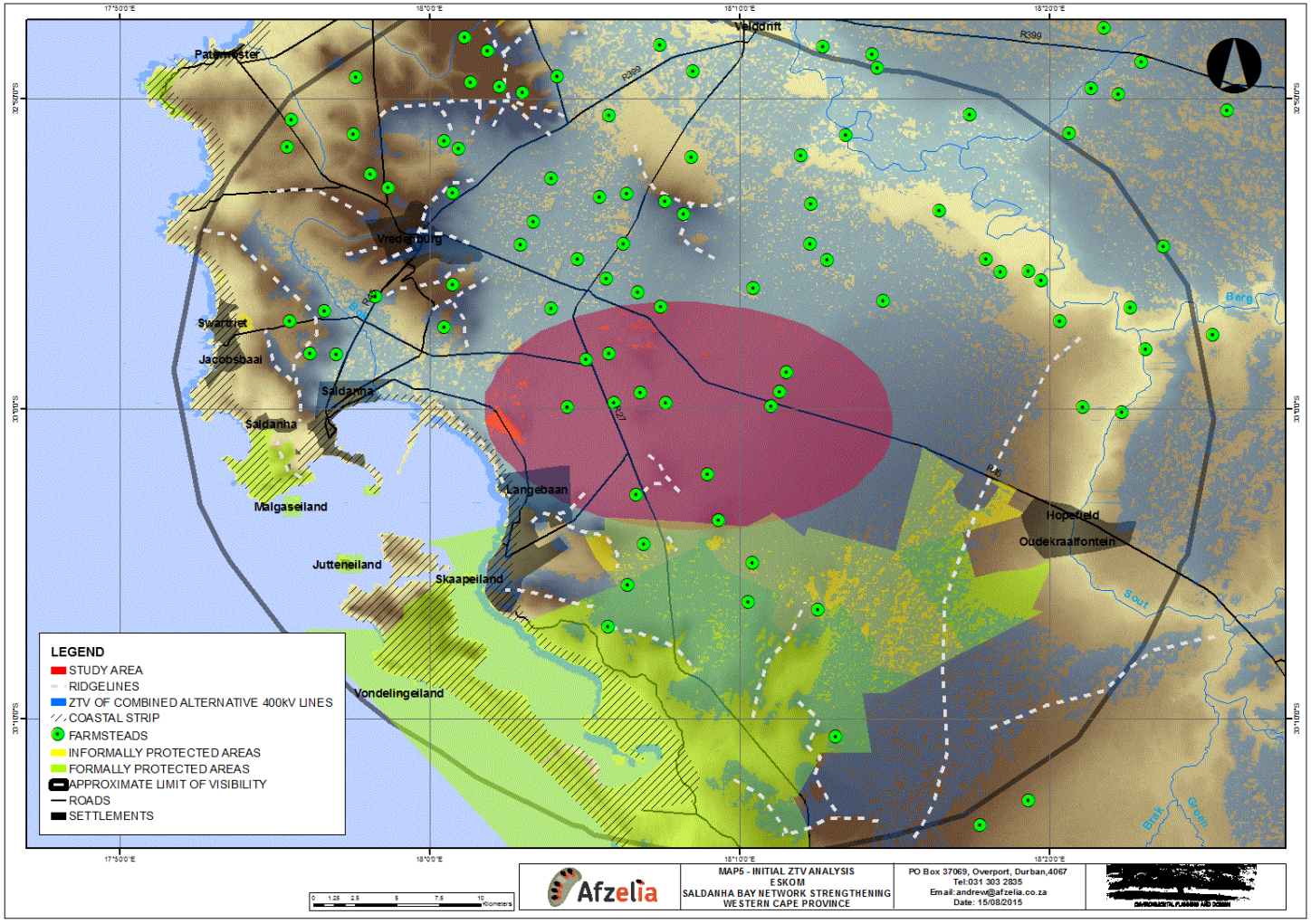

Figure 5.1: Visual receptors and initial visual analysis map

Issue	Nature of Impact	Extent of Impact
Visual impacts	The visibility of the facility to, and potential visual impact on farmsteads that have been identified as potentially being impacted.	Local
Visual impacts	The visibility of the facility to, and potential visual impact on sections of the R27, R45, R399 and local roads that have been identified as potentially being impacted.	Local
Visual impacts	The visibility of the facility to, and potential visual impact the towns of Langebaan, Saldanha and Vredenburg that have been identified as potentially being impacted.	Local
Visual impacts	The visibility of the facility to, and potential visual impact on the West Coast National Park, the Elandsfontein Private Nature Reserve and areas of high natural scenic quality.	Local
Visual impacts	The potential impact of the power line on the visual character and sense of place of the region	Local
Visual impacts	The visibility of the facility to, and potential visual impact on the coastal strip and particularly areas that are important for tourism and recreational use.	Local
Visual impacts	Lighting impacts	Local

Description of expected significance of impact

Visual impacts with be long-term (until decommissioning), local in extent and of potentially medium to high magnitude. Impacts will be potentially of high significance.

Recommendations for further study:

The analysis undertaken as part of this scoping exercise and conclusions drawn need to be ground truthed prior to undertaking the final Visual Impact Assessment. It is suggested that a Level 3 Assessment is undertaken and if it is found that the proposed development does have a significant impact on areas that can be considered to have high scenic quality then the level of assessment is elevated to Level 4 in order to finalise the assessment for those areas.

From the review of the proposed project, it is proposed that the following issues should be addressed during the assessment;

» The visibility of the facility to, and potential visual impact on farmsteads that have been identified as potentially being impacted.

- The visibility of the facility to, and potential visual impact on sections of the R27, R45, R399 and local roads that have been identified as potentially being impacted.
- The visibility of the facility to, and potential visual impact the towns of Langebaan, Saldanha and Vredenburg that have been identified as potentially being impacted.
- The visibility of the facility to, and potential visual impact on the West Coast National Park, the Elandsfontein Private Nature Reserve and areas of high natural scenic quality.
- The visibility of the facility to, and potential visual impact on the coastal strip and particularly areas that are important for tourism and recreational use.
- The possible impact of lighting associated with the project.
- These issues will be considered in the context of the Landscape Character Areas, visual effects identified and possible cumulative influence of other possible infrastructure projects that are planned in the vicinity.

Impacts on the Social Environment

Some negative as well as positive social impacts have been identified for the operational phase of the Saldanha Network Strengthening Project. The Scoping assessment of the possible impacts indicates at this stage that there are no fatal flaws associated with the proposed project. The gathering of detailed information and rating of the intensity of the various impacts, as well as the mitigation proposed, could result in a change in the status of the impacts as identified as part of the Scoping process.

Issue	Nature of Impact	Extent of Impact
Employment opportunities	It is expected that existing Eskom employees in the region would be responsible for the maintenance of the power line and servitude and the substations, although some temporary maintenance work could be undertaken by locals. The management of the existing substations would still be coordinated by the existing Eskom employees, thereby not resulting in additional long-term employment opportunities.	Local
Devaluation of properties	The construction of a transmission line, irrespective of its specific location, could lead to the decrease of property values mainly due to the visual impact associated with these lines.	Local - Regional
Impact on local economy - Economic multiplier effects:	There are likely to be opportunities for local businesses to provide services and materials for the operation phase of the development. The local service sector will also benefit from the proposed development. In terms of business opportunities for local companies, expenditure during the	Local - Regional

	operation phase will create business opportunities for the regional and local economy.	
Development of electricity network capacity	The provision of electricity is critical for economic growth and development. The industries in the local area rely heavy on the reliable energy sources. There is at present insufficient capacity to cater for the present demand, without the proposed developments and therefore the Saldanha Bay Network Strengthening project is required in order to cater for expansion in development.	Local - Regional
Impacts on tourism	The Saldanha Bay Network Strengthening project could have negative impacts on tourism in the study area. It is important that caution is taken to ensure that the development of the Saldanha Bay Network Strengthening project does not affect the tourism potential of the area. A site visit is required to identify the sensitivity of the tourism activities / attractions to the power line route alternatives.	Local - Regional
Visual and Aesthetic Impact	The social impacts associated with the impact on sense of place relate to the change in the landscape character and visual impact from the proposed power line and substations. Sensitive receptors include the immediate area of influence; landowners in the study area and commuters utilising the R27 and R45 as well as tourism attractions in the nearby area.	Local - Regional

Description of expected significance of impact

The potential impacts are expected to be both positive and negative, probable, long term, with a low-moderate intensity and have a low - high significance. This will be confirmed during the EIA phase following detailed investigations and assessment of impacts. The potential impact can be reversed in most cases, and there is no irreplaceable loss of resources associated with the potential impact. The potential impact may be enhanced with possible enhancement measures which will be elaborated on in the SIA EIA phase.

Recommendations for further study

The following activities will be undertaken as part of the Social Specialist Study during the EIA Phase:

» Further literature review
A comprehensive literature review and analysis will be undertaken during the EIA phase of the project. This will 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.
» Consultation sessions and fieldwork
During the EIA Phase additional primary data will also be gathered by means of consultation with the stakeholders and affected parties, and linkages with the public participation process.
» Analysis of data compiled by parallel studies

If available, the social impact assessment team will study and analyse the information gathered by the biophysical studies. This would assist the social team to assess the impact of the proposed development on the direct (surrounding communities) and indirect (regional) environment.

- Variables to be assessed and impacts to be rated
  - Population impacts;
  - Community/institutional arrangements;
  - Conflicts between local residents and newcomers;
  - Individual and Family level impacts;
  - Community infrastructure needs; and
  - Intrusion impacts.
- Significance Criteria
  - During the EIA phase, the anticipated social impacts would be rated according to a specific rating approach which would include the extent of the impact, the probability of the impact occurring, the magnitude, the duration of the impact and its significance, as stipulated by Savannah Environmental.
- Writing of the Social Impact Assessment report
- Provide mitigating measures to input into the EMP.

Table 5.3: Evaluation of potential Cumulative impacts associated with the proposed power line and substation

Approach to Cumulative Effects Assessment

Cumulative impacts, in relation to an activity, refer to the impact of an activity that in-itself may not be significant but may become significant when added to the existing and potential impacts eventuating from similar or diverse activities or undertakings in the area. For cumulative effects analysis to help the decision-maker and inform interested parties, it must be limited to effects that can be evaluated meaningfully (DEAT, 2004). Boundaries must be set so analysts are not attempted to measure effects on everything

Cumulative effects are commonly understood as the impacts which combine from different projects and which result in significant change, which is larger than the sum of all the impacts (DEAT, 2004). The complicating factor is that the projects that need to be considered are from past, present and reasonably foreseeable future development. Cumulative effects can be characterised according to the pathway they follow. One pathway could be the persistent additions from one process. Another pathway could be the compounding effect from one or more processes. Cumulative effects can therefore occur when impacts are:

* additive (incremental);
* interactive;
* sequential; or
* synergistic.

The potential direct cumulative impacts associated with the project are expected to be associated predominantly with the potential visual and social impacts in the surrounding area.

» Visual impacts – The visual impact of power line routes are likely to change the immediate landscape of the area. The cumulative impact of other power lines in the area could alter the nature of the visual landscape. The potential impact of power lines on the landscape is an issue that does need to be taken into consideration. Sensitive receptors includes the immediate area of influence; landowners in the study area, tourism and indirect areas of influence such as commuters utilising the R27 and R45.
» Possible cumulative impacts as a result of other similar power line development and associated infrastructure in the area could have cumulative negative and positive impacts for the local community.

Minor cumulative impacts are expected to be associated with impacts on wetlands, avifauna, flora and fauna in the region. This is mainly as a result of the extent of similar infrastructure in the area and the high level of transformation and disturbance already present in the area.

Cumulative impacts will be confirmed and fully assessed in the EIA phase.
Gaps in knowledge & recommendations for further study: » Each specialist study will consider and assess the cumulative impacts of proposed, approved and authorised projects in the area.

CONCLUSIONS AND RECOMMENDATIONS CHAPTER 6

The Scoping Report for the proposed Saldanha Bay Network Strengthening Project, Western Cape Province, has been undertaken in accordance with the EIA Regulations, 2014 and in terms of Section 24(5) of the National Environmental Management Act (NEMA; Act No 107 of 1998).

This Final Scoping Report aimed to:

» Identify the broad issues detailing the nature and extent of the proposed project.
» Identify, describe and evaluate the potential issues associated with the proposed project.
» Define the specific studies required within the EIA.

These aims were achieved through an evaluation of the proposed project involving the project proponent, specialist consultants and a consultation process with key stakeholders, relevant government authorities and I&APs. In accordance with the requirements of the EIA Regulations, feasible alternatives (including the 'do nothing' option) have been identified for consideration within the EIA process.

The conclusions and recommendations of this Scoping Report are the result of brief on-site inspections, desk-top evaluations of impacts identified by specialists, and the parallel process of public participation.

A summary of the conclusions of the evaluation of the proposed project is provided below. Recommendations regarding investigations required to be undertaken within the EIA are provided within the Plan of Study for EIA (refer to Chapter 7).

6.1 Conclusions drawn from the Evaluation of the Study Area for the Saldanha Bay Network Strengthening Project

The Saldanha Bay Network Strengthening project is located within the Saldanha Bay Local Municipality (SBLM) which forms part of the West Coast District Municipality (WCDM) of the Western Cape Province.

The Western Cape is located on the southern tip of the African continent between the Indian and Atlantic Oceans. It is bordered by the Northern Cape and Eastern Cape provinces.

The study area essentially consists of agricultural land. The surrounding area is characterised by flat agricultural farm areas, primarily wheat and crop production activities. Majority of the area has a low number of farmsteads that are sparsely

populated. Farmsteads occur within the study area and within the surrounding area and adjacent farms. Nearby areas are comprised of developments such as the Saldanha Bay Smelter, Langebaan Air Force Base and Independent Power Producers' Wind Farms. A number of substations and power lines are present within the area. There are numerous nature reserves and significant tourism attractions of national relevance located in or near the study area, such as Thali Thali Game reserve, West Coast Fossil Park, West Coast National Park and the Elandsfontein and Hopefield Private Nature Reserves. Two secondary scenic routes (R27 and R45) also traverse the study area (WC SDF, 2011).

No environmental fatal flaws or absolute 'no-go' areas were identified to be associated with the proposed project through the scoping study. Potential sensitive areas within the study area have however been identified based on information available at this stage in the process. These sensitivities are reflected in Figure 6.1 and described below.

6.1.1. Summary of Potential Impacts Identified

The potentially significant issues identified to be associated with the **construction phase** of the substations and power lines include, *inter alia*:

» Impacts on flora
» Impacts on fauna
» Impacts on avifauna
» Impacts on wetlands
» Loss of heritage and fossil resources
» Socio-economic impacts, including both positive and negative

The potentially significant issues related to the **operational phase** of the project include, *inter alia*:

» Impacts on ecology in terms of the potential for the eestablishment and spread of declared weeds and alien invader plants
» Impacts on the "visual character and sense of place" of scenic features, nearby farmsteads and homesteads as well as observers travelling on main roads
» Bird mortality due to electrocution associated with the substation and collision with the power lines, and impacts of avifauna on the infrastructure as a result of faulting of the power line caused by birds
» Positive and negative socio-economic impacts

A combined sensitivity map is presented in Figure 6.1 below. This map shows preliminary identified sensitivities. This map will be refined and added to in the EIA report once detailed site assessments have been completed.

6.1.2. Conclusions from specialist studies

The following section provides a summary of the findings of the specialist studies undertaken as part of this scoping study:

x. Avifauna

Given the relative homogeneity of the habitat within the study area as well as existing levels of disturbance (existing roads, urban development, agricultural and stock farming), the proposed network strengthening project is unlikely to have a significant, long-term impact on the local avifauna. However, due to the sensitive avifaunal areas that support high populations of endemic and Red Listed species, in close proximity to some areas of the proposed development, a detailed site visit and species identification is required during the EIA phase. Potential habitat loss will also be investigated.

xi. Flora

There are high levels of transformation in the study area due to agricultural activities. Any highly degraded areas on site are likely to be classified as having low sensitivity and conservation value. The condition of the natural vegetation in areas where this is still present will have to be determined during detailed field surveys to be undertaken during the EIA phase of the project.

xii. Fauna

The desktop assessment indicated that there do not appear to be any obvious risks associated with the construction of the proposed substation and power line infrastructure from a faunal perspective. Various sections of the habitat within the study area are degraded and there is a large amount of power line infrastructure already present within the area. Due to the already high levels of environmental disturbance it is not predicted that any Red Data faunal species will be impacted by the proposed development.

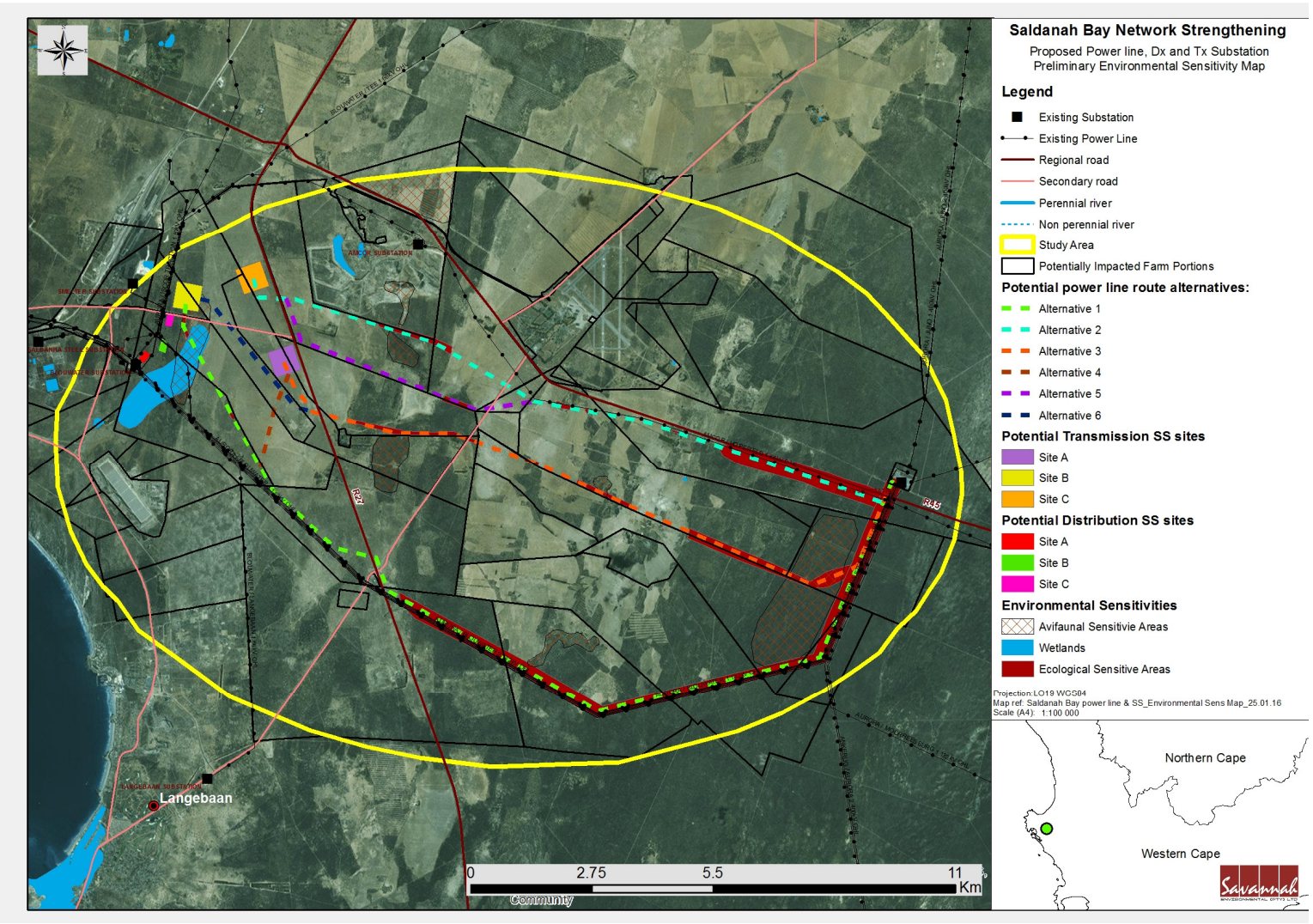

Figure 6.1 Combined sensitivity map for the project

xiii. Wetlands

The desktop assessment of the study area identified two unchannelled valley bottom wetlands and six depression wetlands. A health assessment was conducted for these wetlands according to the WET-Health Level 1 (desktop) methods. The unchannelled valley bottom wetlands have been classified as a PES category D or largely modified, and the depression wetlands as a PES category C, moderately modified. Modifications to the wetland systems are largely as a result of human disturbances including the operation of a phosphorus mine, agricultural activities and urban/ residential development within the catchment areas.

xiv. Heritage and palaeontology

The entire study area is sensitive from a palaeontological point of view, although different geological formations carry different levels of sensitivity and fossils may be found at variable depths across the area. Importantly, fossils can be associated with a geological stratum and be relatively widespread but they can also very easily be concentrated in very restricted areas, such as an old hyaena lair. Many known palaeontological sites occur in the general area including Elandsfontein a few kilometres to the south and Langebaanweg which is a declared Grade 1 heritage site and which falls within the northern part of the study area. Although archaeological sites are rare, a significant site, Anyskop, lies within the study area at the southern edge of the Langebaanweg declaration area and some of the fossil sites, most notably Elandsfontein, include archaeological material in them and are therefore also sensitive for that reason.

xv. Visual

The initial visual analysis indicates that due to relatively flat topography, the proposed development is likely to be visible from a broad area. However, the analysis of the various elements within the development plan indicates that due largely to the transparent nature of towers and other structures, the main impact on landscape character is likely to be limited in extent.

xvi. Agricultural potential

Most of the study area consists mainly of sandy soils underlain by calcrete/limestone at varying depths ranging from <300 mm to >1 200 mm. According to the average annual rainfall for this area (280 mm), the dryland crop production potential is low, combined with the marginal crop production potential of the soil, due to the low moisture-holding capacity of the sandy soils and soil depth. The overall agricultural potential is therefore low to medium-low. No

areas of high sensitivity have been identified from a soils and agricultural potential perspective.

xvii. Traffic

The current demand on the existing road network in the site vicinity is low and the road network and intersections operate at acceptable levels of service. The construction phase will generate less than 20 vehicular trips during the typical weekday peak hour, which is considered insignificant. It is not expected that there will be permanent staff employed at the substations or for the power lines and the operational phase of this project is therefore not expected to generate any traffic volumes during the typical weekday peak hours.

xviii. Social

Based on the initial assessment of the receiving environment it is anticipated that the proposed project could have some negative as well as positive social impacts.

The most important potential social benefits associated with the construction and operations of the proposed project refer to job opportunities and possible socio-economic spin-offs created. New economic activities such as this project having the potential to assist with the developmental challenges that much of province is faced with, providing employment and skills development to the local community and contributing to the social, economic and institutional development of the local area. Additional employment and associated indirect economic benefits could improve the quality of life of the local community. The main negative impacts are associated with the influx of in-migrants and intrusion impacts associated with the construction phase, as well as the visual impacts/ sense of place impacts and impacts on tourism from the development during the operation phase. No areas of very high sensitivity have been identified within the study area from a social perspective. The extent of the negative impacts and possible benefits would be further assessed during the EIA phase when these would be investigated in more detail.

6.1.3. Conclusions drawn from the Evaluation of the Proposed Transmission Substation Sites

Three substation site alternatives were identified for investigation within the scoping study (refer to Figure 6.1). From the specialist studies undertaken, the following can be concluded at this stage regarding these alternatives:

All the vegetation units identified in the study area are classified as endangered and the possibility of encountering red data species within areas of remaining

natural vegetation is high. A large part of Substation Site B is situated in a Critical Biodiversity Area. This site is therefore considered least desirable from an ecological perspective. Substation site A is the preferred option from both a faunal and floral perspective at this stage.

The desktop analysis identified no sensitive avian micro-habitats within close proximity of the proposed Site A and the site is likely to have low sensitivity for avifauna. Furthermore, the power line which enters the substation Site A is also preferred from an avifaunal perspective.

Substation locations that are closest to existing heavy industry, the existing Blouwater Substation and other large scale infrastructure are likely to have the least visual impact on sensitive areas. Site B and Site C are therefore considered preferred at this stage from a visual perspective.

Overall substation Site A appears to be the most preferred while Site B appears to be the least preferred at this stage. However, as these conclusions are largely based on existing information and limited field study, more detailed on-site investigations are required from all specialists to confirm these conclusions. **None of the site alternatives can be ruled out at this stage and all three will be investigated in the EIA phase.**

6.1.4. Conclusions drawn from the Evaluation of the Proposed Distribution Substation Sites

Three substation site alternatives were identified for investigation within the scoping study (refer to Figure 6.1). From the specialist studies undertaken, the following can be concluded at this stage regarding these alternatives:

The scoping faunal assessment has identified a series of sensitive faunal micro habitats within the vicinity of the DX substation. It is recommended that substation site A is the preferred option from a faunal perspective. There is little preference at this stage from other specialist studies regarding the position of the distribution substation. **None of the site alternatives can be ruled out at this stage and all three will be investigated in the EIA phase.**

6.1.5. Conclusions drawn from the Evaluation of the Proposed Transmission Power Line Corridors

Six transmission power line corridors were identified for investigation within the scoping study (refer to Figure 6.1). From the specialist studies undertaken, the following can be concluded at this stage regarding these alternatives:

Comments on the transmission line corridors from an ecological perspective
A large part of Corridor Alternative 1 is situated in the Critical Biodiversity Areas. Alternatives 2 and 3 are preferred from a floral perspective.

The scoping faunal assessment has identified a series of sensitive faunal micro habitats within the vicinity of corridor alternative 1. It is recommended that corridor alternative 2 or 3 are the preferred options from a faunal perspective. Selection of these alternatives will minimise the impacts to faunal species.

Power line corridor alternatives 1 and 4 are the longest line alternatives, 23km and 21.6km respectively. Alternative 1 is the southernmost alternative and is the closest alternative to Saldanha Bay. Alternative 1 crosses a series of pan micro habitats that are considered sensitive in terms of avifauna. The longer power line coupled with the presence of sensitive micro habitats, poses an increased risk of collision by larger avifauna (Blue Crane, Lesser Flamingo, Greater Flamingo and Secretarybird) within the area. Alternatives 2 and 3 are preferred from an avifaunal perspective.

Comments on the transmission line corridors from a wetlands perspective
The desktop wetland delineation has shown that a number of pans occur within the vicinity of Corridor Alternative 1. In light of this, it is recommended that Corridor Alternative 3 be the recommended option with regards to minimising the impact on wetland systems. Corridor Alternative 5 or Corridor Alternative 6 have also been identified as potential suitable corridors, which will need to be investigated further and confirmed during the EIA phase.

Comments on the transmission line corridors from a visual perspective
Power line corridors that are located to the north of the study area (Alternatives 2 and 3) and particularly away from the coastline, protected areas of the landscape and the R27 are likely to have the least visual impact on sensitive areas and are therefore preferred from a visual perspective.

Comments on the transmission line corridors from a heritage perspective
It is expected that archaeological material in the study area will be sparse. One of the proposed routes (Alternative 2) does run very near to a known Stone Age

site (Anyskop) and is not preferred. There is no preference from a palaeontology perspective at this point.

Comments on the transmission line corridors from a social perspective

At this stage in the process the Alternative 1 power line route would be the most preferred from a social perspective as the majority of the proposed power line route follows an existing servitude corridor.

Overall comments on the transmission line corridors

The conclusions relating to preferred alternatives still need to be confirmed from field work. Since there are no alternatives that can be completely ruled out at this stage **it is recommended that all six power line Alternatives be considered in further detail in the EIA-phase.**

A full detailed comparative assessment of these four power line corridors will be undertaken and preferred alternative power line corridor will be identified within the EIA phase. Recommendations regarding appropriate mitigation measures for identified significant impacts will be made.

Through the EIA phase more detailed studies will be conducted, and further sensitive areas will be marked, more accurately and in more detail than in this Scoping Report.

PLAN OF STUDY FOR ENVIRONMENTAL IMPACT ASSESSMENT CHAPTER 7

This Scoping Report includes a detailed description of the nature and extent of the proposed Saldanha Bay Network Strengthening Project, with details regarding the Scoping Phase as well as the issues identified and evaluated through the Scoping Phase (to date). This chapter provides the context for a Plan of Study for the EIA.

The Plan of Study describes how the EIA Phase will proceed and includes detailed specialist studies for those potential impacts recorded to be of potential significance. The key findings of the Scoping Phase includes inputs from authorities, the public, the applicant and the EIA specialist team and are used to inform the Plan of Study for EIA together with the requirements of the NEMA EIA Regulations and applicable guidelines.

7.1. Aims of the EIA Phase

The EIA Phase will aim to achieve the following:

» Provide an overall assessment of the social and biophysical environment affected by the proposed project.
» Assess potentially significant impacts (direct, indirect and cumulative, where required) associated with the proposed project.
» Identify and recommend appropriate mitigation measures for potentially significant environmental impacts.
» Undertake a fully inclusive public involvement process to ensure that I&APs are afforded the opportunity to participate, and that their issues and concerns are recorded.

The EIA phase will address potential environmental impacts and benefits (direct, indirect and cumulative impacts) associated with all phases of the project including design, construction and operation, and will aim to provide the environmental authorities with sufficient information to make an informed decision regarding the proposed project.

7.2. Authority Consultation

Consultation with the competent and commenting authorities (i.e. DEA and Western Cape DEA&DP) has been undertaken and will continue throughout the

EIA process. On-going consultation and input from these authorities will include the following:

» Submission of a Final Scoping Report following a 30-day public review period of this scoping report (and consideration of comments received).
» An opportunity to visit and inspect the site during the EIA phase.
» Submission of a Final EIA Report following a 30-day public review period of the draft EIA Report.

7.3. Consideration of Alternatives

The following project alternatives will be investigated in the EIA:

» **The 'do nothing' alternative:** Should Eskom not establish the proposed Transmission Power Lines and Substations (maintain status quo).
» **Alternative tower designs:** the type of towers which can be used will be dependent on the final alignment of the power line.
» **Alternative corridors for power line routing:** In order to make clear recommendations regarding the preferred alignment corridor for the proposed 400kV lines, more detailed studies are required to be undertaken within the EIA phase for the identified alternative corridors detailed within this report.
» **Alternative substation sites: :** In order to make clear recommendations regarding the preferred site for the transmission substation and distribution substation, more detailed studies are required to be undertaken within the EIA phase for the identified alternative corridors detailed within this report

7.4. Assessment of Potential Impacts and Recommendations regarding Mitigation Measures

A summary of the issues which require further investigation within the EIA phase, as well as the proposed activities to be undertaken in order to assess the significance of these potential impacts is provided within Table 7.1. The specialists involved in the EIA Phase are also reflected in Table 7.1.

Based on the findings of this Scoping Report, the following issues were identified as being of low significance, and therefore not requiring further investigation within the EIA phase:

» Potential impacts on agricultural potential and soils.
» Traffic impacts

Table 7.1: Issues requiring further investigation during the EIA Phase and activities to be undertaken in order to assess the significance of these potential impacts

Issue	Activities to be undertaken in order to assess significance of impacts	Specialist
Flora	» Revision of the conducted literature review. » Undertaking of a detailed site investigation. » Identification of key floral species present within the study area. » Further investigation of identified impacts associated with the proposed development (direct, indirect and cumulative) and revised scoring will be conducted. » Sensitive floral habitats within the study area will be identified and mapped. » Make recommendations for avoidance, management and mitigation of impacts.	Afzelia Environmental Consultants
Fauna	» Revision of the conducted literature review. » Undertaking of a detailed site investigation. » Identification of key faunal species present within the study area. » Further inspection and delineation of faunal microhabitats and their ability to support Red Data listed or endemic species. » Further investigation of identified impacts associated with the proposed development (direct, indirect and cumulative) and revised scoring will be conducted; » Sensitive faunal habitats within the study area will be identified and mapped. » Make recommendations for avoidance, management and mitigation of impacts.	Afzelia Environmental Consultants
Avifauna	» Revision of the conducted literature review. » Undertaking of a detailed site investigation. » Identification and delineation of key avifaunal species residing within the study area as well as roost and nest sites. » Further inspection of avifaunal microhabitats and their ability to support Red Data listed or endemic species. » Further investigation of identified impacts associated with the proposed development (direct, indirect and cumulative) and revised scoring. » Sensitive avifaunal habitats within the study area will be identified and mapped. » Make recommendations for avoidance, management and mitigation of impacts.	Afzelia Environmental Consultants
Heritage and palaeontology	» A site visit would be necessary to inspect the substation sites and transmission line routes on the ground.	ASHA Consulting and Graham Avery

Issue	Activities to be undertaken in order to assess significance of impacts	Specialist
	» A full phase 1 archaeological impact assessment and paleontological assessment will be conducted to establish the range and importance of any possible exposed and *in situ* archaeological heritage materials and features, and to make recommendations to minimise possible damage to these sites. » Once sites are plotted they will be assessed in terms of the "Classification of landforms and visible archaeological traces for estimating the potential for archaeological sites (after J. Deacon, National Monuments Council" and relative to the known heritage of the region, providing a quantifiable measure for defining significance as a basis for recommendations to be made. » Assessment of identified impacts associated with the proposed development (direct, indirect and cumulative). » Recommendations will be made for avoidance, management and mitigation of impacts.	
Visual and aesthetics	» A site visit is required to confirm the likely sensitivity of areas highlighted. » Assessment of identified impacts associated with the proposed development (direct, indirect and cumulative). » Recommendations will be made for avoidance, management and mitigation of impacts. » Viewshed assessment of key areas » Drafting of EIA-phase assessment report with mitigation measures and inputs into EMPr	Afzelia Environmental Consultants
Wetlands	» Accurate delineations, buffers and impacts will be further investigated during the EIA phase. » Accurately delineate the outer wetland boundary and various wetness zones (i.e.: permanent, seasonal temporary wetness zones) within the study area according to methods contained in 'A Practical Field Procedure for Identification and Delineation of Wetland and Riparian Areas' (DWAF, 2005); » Assess and describe the health of any wetland units identified, through evaluation of indicators based on geomorphology, hydrology and vegetation as per the WET-Health methods. A Level 2 assessment using an in-field assessment will be conducted to verify the scores obtained in this Scoping Phase report. » Assess and describe the Ecological Importance and Sensitivity of any wetlands identified on site, based on the presence of red data species; variety of habitats for faunal diversity; the health of the wetland and ecosystem benefits the wetland provides as per the Health Index of	Afzelia Environmental Consultants

Issue	Activities to be undertaken in order to assess significance of impacts	Specialist
	Habitat Integrity (DWAF, 2007). » Determine appropriate set-back buffers for all wetlands delineated within the study boundary. » Identify current and future sources of impacts associated with the proposed project, during both construction and operational phases. » Assess and evaluate identified potential impacts (direct, indirect and cumulative). Impacts will be assessed both pre- and post- implementation of mitigating measures. » Propose and explain mitigation measures for unavoidable impacts. This will need to be incorporated into the Environmental Management Programme (EMPr).	
Social	The main aim for the social report will be to determine the social impacts that may arise from the proposed development. The proposed approach that will be used for the SIA study will be based on the Western Cape Department of Environmental Affairs and Development Planning Guidelines for Social Impact Assessment (February 2007). These guidelines are based on the international best practice, the key objectives in the SIA process will include: » Describing and obtaining an understanding of the proposed development (type, scale, location), the communities likely to be affected and determining the need and scope of the SIA; » Collecting baseline data on the current social environment and historical social trends; » Identifying and collecting data on the Social Impact Assessment variables and social change processes related to the proposed intervention. This requires consultation with affected individuals and communities; » Assessing and documenting the significance of social impacts associated with the proposed project; » Assessing the project (including any feasible alternatives) and identifying potential mitigation and enhancement measures; » Developing an Environmental Management Programme. Primary and secondary data sources will be utilised to inform the study in aid of the objectives of the study. Primary data sources for the SIA will include the following (refer to Figure 2):	Savannah Environmental with external review by Neville Bews

Issue	Activities to be undertaken in order to assess significance of impacts	Specialist
	» A site visit will be undertaken. Observations will also be made while on site and within the study area. » Meetings will be undertaken to collect information from representatives of key stakeholder groups. These included individuals both directly and indirectly associated with the proposed development. The meetings will mostly be undertaken face-to-face and where not possible telephonically. A project specific questionnaire will be developed and utilized for the semi-structured interviews. These meetings will form the basis of the primary data collection and assisted with the gathering of baseline information as well as establishing the stakeholder's perceptions, interests and concerns on the proposed development. Secondary data collection methods mostly centred on desktop study will be gathered and analysed for the purpose of the study, in which the following documents will be examined: » Project maps; » A desktop aerial study of the affected area through the use of the latest version of Google Earth Pro 2015; » The background information document (BID); » The 2011 South African Census Survey and the Local Government Handbook; » Planning documentation such as District Municipality (DM) Integrated Development Plans (IDPs), Spatial Development Framework (SDF) and Environmental Management Framework (EMF) as well as the Local Municipality (LM) IDPs and policies; » Relevant guidelines, policies and plan frameworks; » »Other similar specialist studies and relevant information where there have been cross-cutting issues, such as the EIAs undertaken for previous electricity network strengthening projects in the Western Cape Province and other parts of South Africa; » Literature reviews of social issues associated with electricity network strengthening projects. Information that is relevant to the project will be identified and assessed from these sources within the context of the pre-construction, construction, operational and decommissioning phases of the proposed project. The evaluation of the social impacts will involve the assessment of both	

Issue	Activities to be undertaken in order to assess significance of impacts	Specialist
	quantitative and qualitative data and the use of professional judgement. Quantitative data collected through national sources or local level interviews will be assessed and analysed with sociological techniques. However, qualitative data collected using the same methodology is more open to interpretation. In addition, what is a major impact to one person, one household or one community may be a minor impact to another according to specific personal circumstances. Hence, the results may not lend themselves easily to being ranked or assessed in exactly the same way as environmental data.	
Town Planning study	Site where substations could be built on must be assessed and the land use thereof must be identified or classified? Is land use application required? Liaise with the municipality in this regard.	

7.5. Methodology for the Assessment of Potential Impacts

Direct, indirect and cumulative impacts of the above issues, as well as all other issues identified will 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:
  - Local extending only as far as the development site area – assigned a score of 1;
  - Limited to the site and its immediate surroundings (up to 10 km) – assigned a score of 2;
  - Will have an impact on the region – assigned a score of 3;
  - Will have an impact on a national scale – assigned a score of 4; or
  - Will have an impact across international borders – assigned a score of 5.
- The **duration**, wherein it will be indicated whether:
  - The lifetime of the impact will be of a very short duration (0–1 years) – assigned a score of 1;
  - The lifetime of the impact will be of a 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 **magnitude**, quantified on a scale from 0-10, where a score is assigned:
  - 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, and a score assigned:
  - Assigned a score of 1–5, where 1 is very improbable (probably will not happen);
  - Assigned a score of 2 is improbable (some possibility, but low likelihood);
  - Assigned a score of 3 is probable (distinct possibility);
  - Assigned a score of 4 is highly probable (most likely); and
  - Assigned a score of 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 (refer formula below) and can be assessed as low, medium or high.
» The **status**, which will be described as *either positive, negative or neutral*.
» The degree to which the impact can be *reversed*.
» The degree to which the impact may cause *irreplaceable loss of resources*.
» The degree to which the impact can be *mitigated.*

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

S= (E+D+M) P; where

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).

As Eskom has the responsibility to avoid and/or minimise impacts as well as plan for their management (in terms of the EIA Regulations), the mitigation of significant impacts will be discussed. Assessment of mitigated impacts will demonstrate the effectiveness of the proposed mitigation measures.

The results of the specialist studies and other available information will be integrated and synthesised by the Savannah Environmental project team. An EIA report will be compiled, and will include:

» **detailed description** of the proposed activity
» a description of the property(ies) on which the activity is to be undertaken and the location of the activity on the property(ies)
» a description of the **environment that may be affected by the activity** and the manner in which the physical, biological, social, economic and cultural aspects of the environment may be affected by the proposed activity

- details of the **public participation process** conducted, including:
  - steps undertaken in accordance with the plan of study for EIA;
  - a list of persons, organisations and organs of state that were registered as interested and affected parties;
  - a summary of comments received from, and a summary of issues raised by registered interested and affected parties, the date of receipt of these comments and the response to those comments; and
  - copies of any representations, objections and comments received from registered interested and affected parties
- a description of the **need and desirability** of the proposed project and identified potential alternatives to the proposed activity, including advantages and disadvantages that the proposed activity or alternatives may have on the environment and the community that may be affected by the activity
- an indication of the methodology used in determining the **significance** of potential environmental impacts
- a description and comparative **assessment of all alternatives** identified during the environmental impact assessment process
- a summary of the findings and recommendations of **specialist reports**
- a description of all environmental issues that were identified during the environmental impact assessment process, an assessment of the significance of each issue and an indication of the extent to which the issue could be addressed by the adoption of mitigation measures
- an assessment of each identified potentially significant impact
- a description of any assumptions, uncertainties and gaps in knowledge
- an environmental **impact statement** which contains:
  - a summary of the key findings of the environmental impact assessment; and
  - a comparative assessment of the positive and negative implications of the proposed activity and identified alternatives
- a draft **environmental management programme**
- copies of specialist reports

The Draft EIA Report will be released for a 30-day public review period. The comments received from I&APs will be captured within a Comments and Response Report, which will be included within the Final EIA Report, for submission to the authorities for decision-making.

7.6. Public Participation Process

A public participation process was undertaken by **Savannah Environmental**. Consultation with key stakeholders and I&APs will be on-going throughout the EIA Phase. Through this consultation process, stakeholders and I&APs will be encouraged to identify any additional issues of concern or highlight positive aspects of the project, and

to comment on the findings of the EIA Phase. In order to accommodate the varying needs of stakeholders and I&APs within the study area, as well as capture their inputs regarding the project, various opportunities were provided for stakeholders and I&APs to be involved in the EIA Phase of the process, as follows:

» Focus group meetings
» Public meetings (pre-arranged and stakeholders invited to attend).
» One-on-one consultation meetings (for example with directly affected and surrounding landowners).
» Telephonic consultation sessions (consultation with various parties from the EIA project team, including the project participation consultant, lead EIA consultant as well as specialist consultants).
» Written, faxed or e-mail correspondence.

The Draft EIA Report was made available for public review for a 30-day period prior to finalisation and submission to the DEA for review and decision-making. In order to provide an overview of the findings of the EIA process and facilitate comments, public meetings were held during this public review period.

7.7. Key Milestones of the Programme for the EIA

The envisaged key milestones of the programme for the EIA Phase are outlined in the following table.

Key Milestone Activities	Proposed timeframe[8]
Authority acceptance of the Final Scoping Report and Plan of Study to undertake the EIA	May 2016
Undertake specialist studies and public participation process	May - June 2016
Make Draft EIA Report and Draft EMP available to the public, stakeholders and authorities	July 2016
Finalisation of EIA Report	August 2016
Submit Final EIA Report to DEA for review and decision-making	August 2016

[8] Note these are estimated timeframes

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