



TOWN AND REGIONAL PLANNING
SPECIALIST INPUT FOR THE
ENVIRONMENTAL IMPACT ASSESSMENT
AND ENVIRONMENTAL MANAGEMENT
PROGRAMMES IN TERMS OF THE
PROPOSED SALDANHA BAY NETWORK
STRENGTHENING PROJECT, WESTERN
CAPE PROVINCE



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1. Project Specific Information and Background

Eskom Holdings SOC Limited has appointed Savannah Environmental (Pty) Ltd to undertake an Environmental Impact Assessment Process and compile an Environmental Management Programme (EMPr) for the proposed Saldanha Bay Network Strengthening Project, Western Cape Province.

1.1 Project Description

1.1.1 Applicant: Eskom Holdings SoC Limited

1.1.2 Proposed Activity: Proposed Saldanha Bay Network Strengthening Project - Construction of a two new 400kV power lines of approximately 20km as well as a new transmission substation and new distribution substation in the Saldanha Bay area of the Western Cape, and expansion of the Aurora Substation.

1.1.3 Location: Saldanha Bay area of the Western Cape

1.1.4 Description of proposed activities:

- 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 132/66kV Distribution Substation near the current Blouwater Substation in the Saldanha Bay area;
- The construction of two 400kV Power lines (approximately 35 - 40 km) from the Aurora Station to the new proposed Dx and Tx substations;
- 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; and
- The registration of servitude lines associated with the power lines.

2. Report

The purpose of the Report is to determine the main issues and the potential land use conflicts of the proposed project based on existing information and inputs from stakeholders obtained through the impact assessment process. This will be done in the following manner:

- Identify existing and planned land uses may be impacted on by the proposed project and any potential land use conflicts which may occur.
- Identify “No-Go” Areas, where applicable.
- Assess the potential impacts and recommend preferred alternatives for implementation.

2.1.1 Description of the Environment that may be affected:

2.1.1.1 *Description of Area in which the Study Area is Located:*

The proposed project will take place within the jurisdiction of the Saldanha Bay Municipal Area, which again falls within the jurisdiction of the West Coast District Municipality, located in the Western Cape Province of South Africa.

Saldanha Bay Municipality was constituted after the 2001 Local Government Elections. Saldanha Bay consists of the following local settlements and rural nodes:

- Vredenburg,
- Saldanha,
- Paternoster,
- Hopefield,
- St Helena Bay,
- Langebaan,
- Jacobsbaai,
- Green Village, and
- Koperfontein.

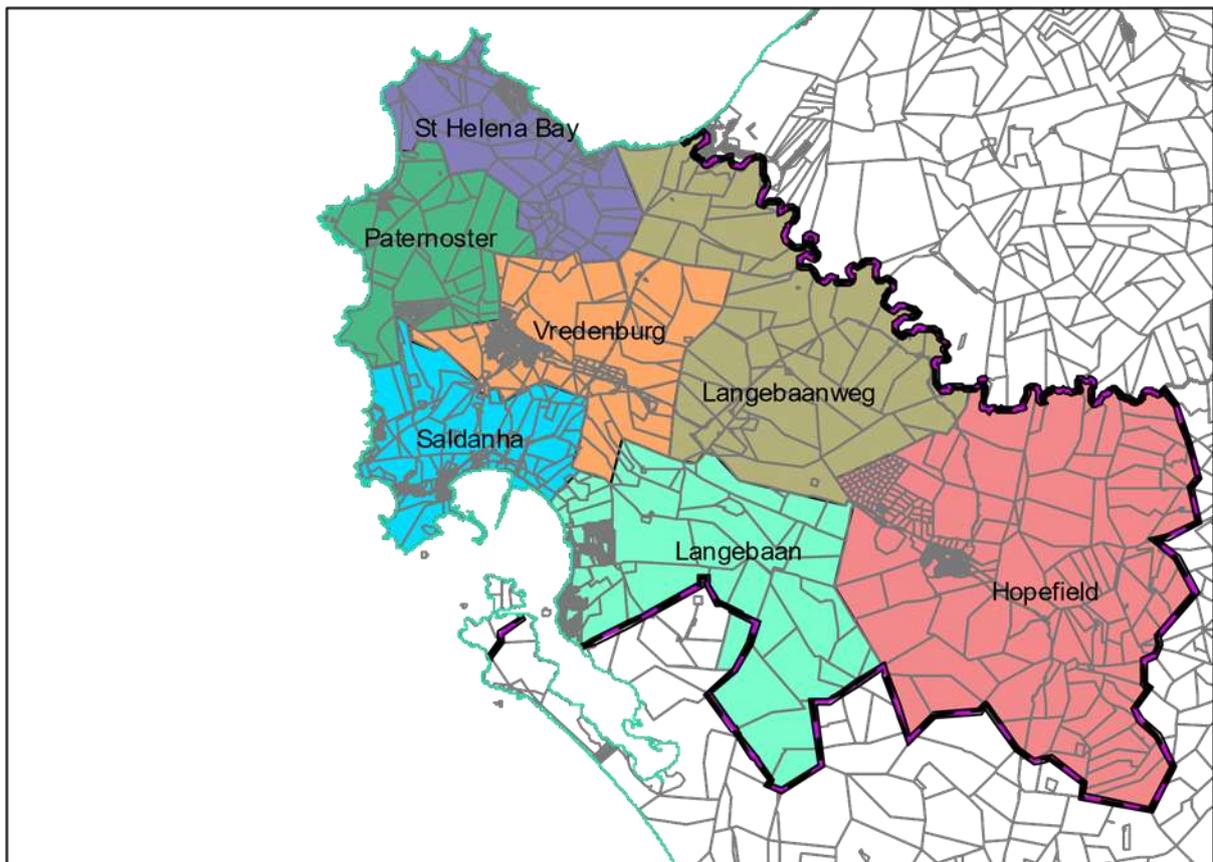


Figure 1: Saldanha Municipal Area and Planning Units.

2.1.1.2. Location of Project and Alternatives:

In terms of this report the fine scale location will be of utmost importance to ensure that what is proposed is measured in terms of what is the micro planning and land use within the regional context. The following map thus indicates all the proposed project components, as well as the locations of alternatives as a whole.

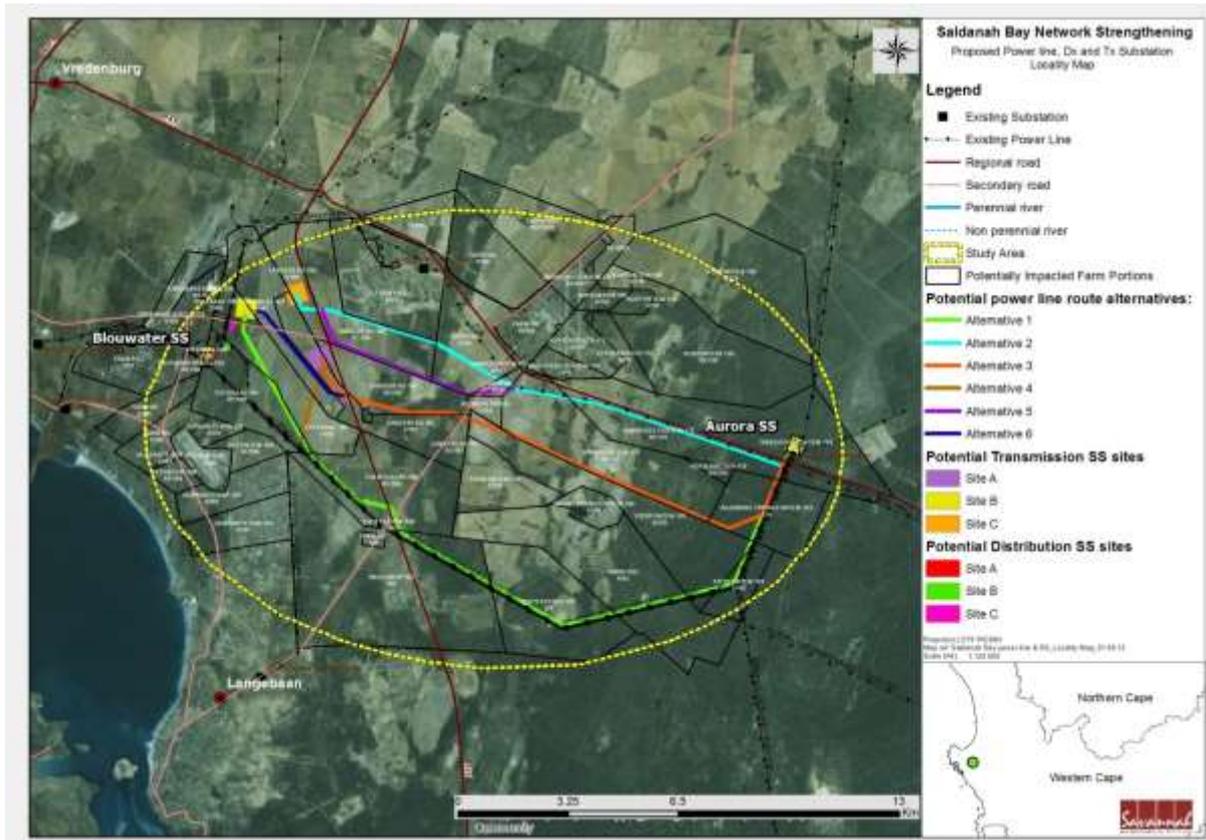


Figure 2: The Proposed Infrastructure Upgrade and Alternative locations / routes .

2.1.1.3 The Study Area:

The Study Area for the Proposed Project and thus for this Report is located very near three towns in the West Coast District Municipality. Saldanha is to the West, Langebaan to the South and Vredenburg to the North West of the proposed project. Langebaanweg Air Force Base is located within the Study Area of the project. The Saldanha Vredenburg Aerodrome is just outside the Study Area, but the impact on this facility was also considered in the evaluation and recommendations of this report.

2.2 Topography and Drainage

2.2.1 Topography:

The majority of the Saldanha Bay Municipal area is dominated by rolling hills. The landscape in the western parts of the Saldanha Bay Municipal area is characterised by granite outcrops and koppies.

2.2.2 Drainage:

The eastern parts of the Saldanha Bay Municipal area are drained, primarily, by tributaries of the Berg River, particularly the Sout River and its tributaries.

In the western parts of the Saldanha Bay Municipal area, the Bok River drains in a generally southern direction into the bay immediately east of Saldanha Bay. A number of other rivers drain in a generally westward direction towards the coast in the Paternoster area.

2.2.3 Biodiversity Conservation in the Study Area

The Study Area falls within the Cape Floristic Region (CFR), which constitutes one of six - and the smallest - of the plant kingdoms at the global scale. The CFR is in fact the smallest and richest floral kingdom in the world, and the only one to be contained within a single country. Most of the CFR lies within the Western Cape, although its eastern limits spill over into the Eastern Cape. The CFR is internationally recognised as a global biodiversity 'hotspot' - such 'hotspots' are often symptomatic of unusual evolutionary processes. The CFR is a global priority for conservation action, and has two main groups of vegetation: fynbos and renosterveld.

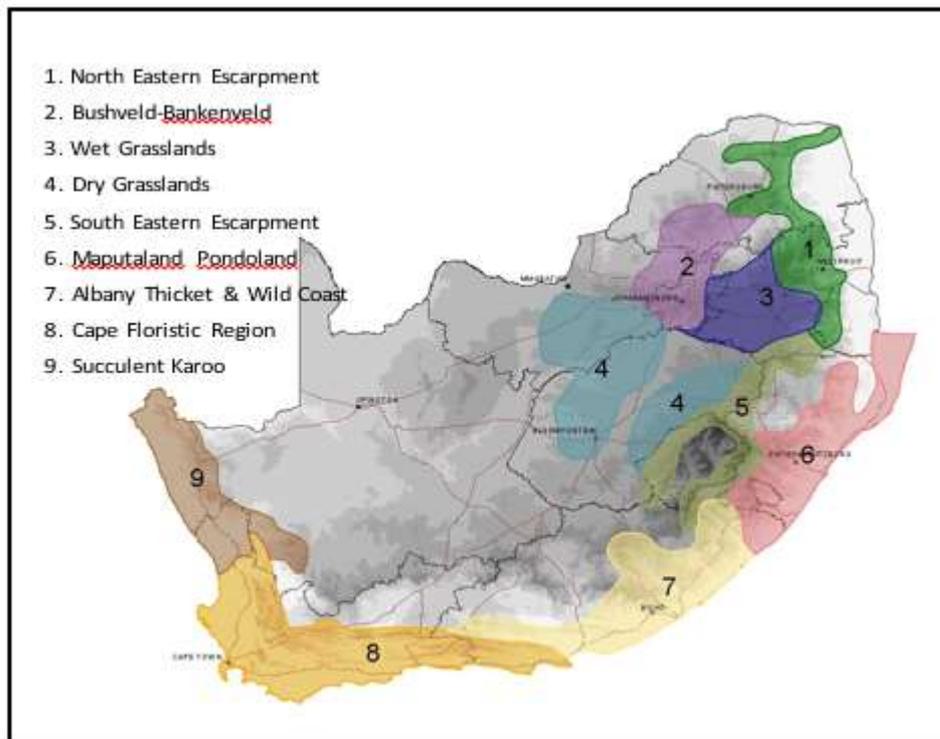


Figure 3: The Floristic Regions of South Africa.

A series of eight natural properties within the CFR was declared a World Heritage Site by the United Nations Education Scientific and Cultural Organisation (UNESCO) in June 2004. None of these natural properties falls within the Saldanha Bay Municipal area.

2.2.4 Current and Planned Land Use within the Area

2.2.4.1 Current Land Use

Most of the land within the study area is used for either agriculture, mining or the Air Force base. Homesteads of the farmers are located in the study area. The map beneath shows the extent of proposals for new development within the study area and the affected farming portions. The following projects are already underway in terms of various either EIA processes or negotiation and planning within the area:

- The Votem Energy CCGT Power Station (which has received environmental authorisation).
- The proposed Arcelor Mittal 1500MW LNG Power Plant (for which an EIA process is underway).

- The proposed Mulilo OCGT project which comprises 2 projects (for which an EIA process is underway) on Portion 1 of the Farm Uyekraal No. 189.

It is noted that Uyekraal property is earmarked for heavy industrial development and that an IPP solar facility is planned for the property located adjacent to the R27.

It must be noted that existing power lines and substations are already located within the area and that the new proposed activities of the Saldanha Network Strengthening Project are to strengthen the current network for future development within the surrounding area of Saldanha and Vredenburg.

The land owners of the affected properties were all informed of the proposed project and were part of the scoping and EIA phases of this study.

2.2.4.2 Future Planning of the Area

A small part of the Study Area falls within the Saldanha Bay Industrial Corridor as envisaged within the Saldanha Bay Spatial Development Framework. In this section of the Saldanha Bay SDF the area and the future planning is described as follows:

14.8 Industrial Corridor (refer Plan 45)



Situated approximately 120 km North West of Cape Town, with its natural deep water harbour and its associated development potential, Saldanha has been identified as a Presidential Development Growth Node. This view is strengthened by the principles contained in the National Spatial Development Perspective and reinforced by the approved Provincial Spatial Development Framework.

Leveraging the deep-water port, its proximity to Cape Town and large tracts of relatively cheap land, Saldanha is in a prime position to attract industry to the region. Already Saldanha is home to a large-scale mining concern, steel manufacturing and beneficiation plants and an oil and gas services fabrication yard financed through the national counter trade programme.

In realising its economic potential, services and infrastructure provision in Saldanha need to be planned, and then aligned and implemented in a manner that will facilitate the optimal development of the area's potential as a manufacturing and import / export destination.

Saldanha Port and the 'Back of Port' area are regarded as critical for the growth of the region and seen as major economic growth point in the Western Cape Province. The Port itself falls under the jurisdiction of the National Ports Authority, and as such is planned and managed by this authority.

Major provision has been made for the expansion of the port and in this regard, an extensive Port Development Framework has been prepared.

As an economic spin off from the proposed upgrading and expansion at the Saldanha Bay Port, major industrial development is anticipated within the Back of Port area. The industrial expansion is considered a catalyst for the growth of a major industrial corridor which is envisioned to link the southern part of Saldanha Bay with the Port and the Port with the south-western section of Vredenburg.

A major obstacle in realising the development potential of the Back of Port industrial corridor area is the provision of sufficient service infrastructure. Service infrastructure is regarded as a key investment which is of utmost importance as the availability and provision thereof can be the mechanism to unlock the development potential of the Back of Port area.

It is therefore recommended that a separate, detailed, development framework plan, be prepared to unpack the requirements for the development of the Back of Port Industrial Corridor taking cognisance of service provision, roads and current port planning.

14.8.1 Local Growth Management Strategy

The development edge of the industrial corridor for the purposes of this report, is broadly defined. In demarcating this area, careful attention was given to the physical and environmental attributes of the area. The existing north-south railway line provides the spine along which the industrial corridor is proposed. The railway line, together with the road that runs parallel to it, provides a structuring element that will form the growth spine of development within this future corridor.

In defining the preliminary development area, the following factors were considered:

- *The topographical feature south of Vredenburg and north east of Saldanha.*
- *The edge on the northern portion of the corridor extends beyond the Trunk Road 21/2. In order to maximise the use of this road and accommodate the planned Aluminium Smelter, as well as to indicate the logical northward extension of the corridor, it is proposed that the industrial corridor is integrated with the town of Vredenburg.*
- *The eastern edge is defined by the alignment of the Trunk Road 77/1 (R27).*

The Saldanha Bay SDF promotes the upgrading of services to accommodate the development of industrial activities within the Industrial Corridor.

3. Description of Project Activities

3.1 Proposed Project Activities:

The following Activities were identified as possible actions of Eskom, before, during and after the Construction period.

1. Determine technically feasible alternatives.
2. EIA input into alternative locations for substation and route alignments for the 400kV Transmission and 132kV Distribution power lines into the substation.
3. Negotiate with affected landowners, including Post-Authorisation negotiations.
4. Survey the sites.
5. Design the substation.
6. Issue tenders and award the contract.
7. Clear vegetation and construct access roads (where required).
8. Construct terrace and foundations, including the Transmission oil pond.
9. Assemble and erect equipment.
10. Connect conductors to equipment.
11. Rehabilitate any disturbed areas and protect erosion-sensitive areas.
12. Test and commission.
13. Continue maintenance.

a) Timing

- The construction of the Proposed Infrastructure will be undertaken over +12 months. The project is targeted to be operational by 2022.

b) Access/Service Roads

- Eskom requires access/service roads for the construction and maintenance phases. As the recommended project siting will be along existing road infrastructure, no new access roads should be required for this project.

c) Ongoing Maintenance

- The standard lifespan of Proposed Infrastructure Upgrade and its associated components is approximately 25 years.
- Continuous maintenance will be carried out (including the replacement of components).

4. Land use risks associated with the proposed project

Considering the alternatives proposed for the project, the following potential land use risks have been identified within the study area:

- The radar system used by Air Force is of National Importance. Power Lines and structures may have a negative effect on the effectiveness of the radar and thus place the country in a disadvantage in terms of defense. A close working relationship between those planning the power line route, the environmental practitioners and town planner, must be established when the final routes for the power lines are planned and before the final land use planning applications are submitted.

- Different aircraft (air force and light private air craft) use the two facilities that will be impacted on by the Power lines. It is advisable that no power lines should be in the approach and take off strip of any airfield or airstrip. In this regard, power line alternatives 2, 3 and 5 are not considered feasible from a land use perspective (refer to Section 4.1 below for more detail).
- Goods are transported in South Africa by either rail or road. Road is currently the most used alternative. Within the Western, Northern and Southern Cape Regions the port in Saldanha Bay is of vital importance in terms of the handling of abnormal equipment which needs to be transported by road. This must be considered in the final planning and design of the power lines in order to ensure adequate clearance heights are implemented where lines cross major routes.
- Because of the nature of land use associated with power lines and substations which is only really compatible with industrial use, like industrial parks and railways the future use will limit the long term potential of the area to that of Industrial use, or commercial as a buffer for future residential developments. However, because of the slower growth in terms of development the negative effect will or may not be experienced before 20 – 30 years from now. As in terms of the Industrial Development hub (Saldanha Industrial Development Zone) declared by the National Government in the area, the development of power for the region is of very high importance. The proposed development must form part of the Future Planning of the Area. In this regard the proposed development must be expressed within the Spatial Development Plan (SDP) and Framework of the Local Municipality or at least it must be mentioned that upgrading of services (including electrical) are required. The land use of the properties mentioned after the proposed development must also be incorporated within the SDP or it should allow for rezoning to the required land use.
- There is a risk of conflict with planned developments in the area, particularly with regards to Transmission Substation Site A. This property is already earmarked for industrial development, including a CCGT Plant. Placement of the substation on this site will hinder this planned development, which could have knock-on effects in terms of other future development in the area. This alternative is therefore not considered feasible from a land use perspective.

4.1. Evaluation of the Identified Alternatives (as detailed on Figure 2) in terms of Land Use Issues:

Two of the alternative Power Line routes (Alternative 1 and 2) will cross the main West Coast Road, making transportation of heavy and abnormal loads more difficult if the power line placement and crossing is not planned well. To cross a road at an angle is not desired in terms of transportation of heavy goods.

Various power lines are already present within the study area. It is more advisable to follow existing lines then to plan new routes because the effect is potentially less if they are grouped together.



The Airforce Base at Langebaanweg is within the Study Area. As can be seen below, the Alternative route 1 (and also possibly Alternative Route 3) indicated on the image is very near (1.2km) to the approach and take off in terms of the layout of the air force and training center. Any high structure or power line should be at least 2km away from such facility.



The power line alternative 2 will cross the R27, just as busy and of potential as the R45.



Again two power line routes (Alternatives 1 & 5) have to cross a local road to form a ring feed.



Although next to the road, no access road is currently available to link up with the substation, and the distance to the main electrical infrastructure in the area is again to the south of this proposal.

The proposed Substation Site A (Dx Substation) is next to the existing Blouwater Substation, which makes this site much more desirable than the



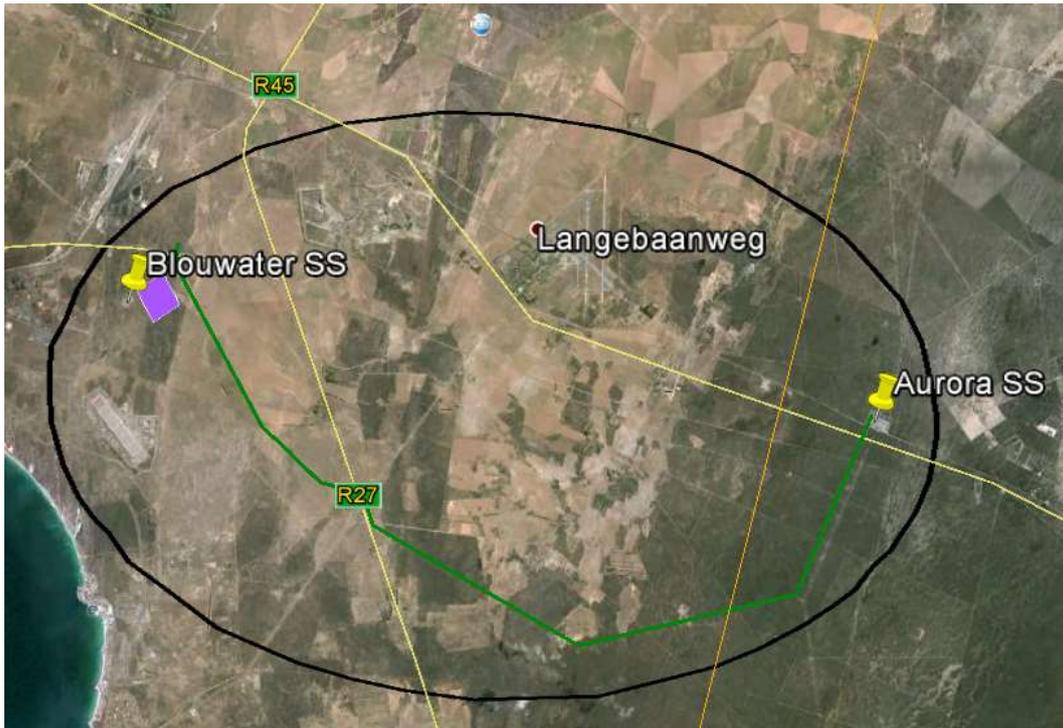
other alternatives presented. Existing road network and other services are already existing for this option which would reduce the impact.

Although the Alternative 1 crosses the R27 and a small trunk road, it follows the current alignment of power lines and servitudes already



registered. The angle of the crossing of the road needs to be addressed in the final planning phase.

4.1.1 *Dx Substation and Power Line Alternative 1:*



Power line corridor **Alternative 1** follows the existing Eskom Power Line Servitudes throughout the study area. Road network in terms of maintenance is thus mostly existing and the current land owners of the Eskom Power Line Servitude registered against their property title deeds, will have a clear understanding in terms of what is allowed and what not.

Although it does cross the R45 and R27, this alternative seems to follow the principles of keeping infrastructure and maintenance as near as possible to existing similar facilities to minimise impacts and share most of the required resources to its maximum.

Further, this option will have less impact on the Air Force Base Operations as well as the private airstrip located in the north of the study area. Other land uses will not be directly impacted on, as most of the properties seem to be used for agricultural activities. However, having stated that, the impact on the planned (and some already approved projects) makes this Alternative less attractive than Alternative Route 6. The crossing of the R27 should be at 90 degrees to limit any impact on the transport of heavy and high goods delivered at the Saldanha Bay Harbour.

4.1.2 *Power line Alternative 2*

Alternative two (2) runs from the Aurora SS to the new proposed Alternative Site C. This line crosses the R45 at an undesirable angle, and runs for a few kilometers next to the R45. It impacts on agricultural land which is currently under cultivation and irrigation. It also crosses the R27 at an undesirable angle. Grid connection to the Blouwater SS is further apart than that of Alternative 1 and the proposed DX site next to the afore-mentioned Substation. Alternative connection lines may be required.

This alternative may have a negative effect on the operations of the Langebaanweg Air Force base, because it is directly impacting on the landing and take-off routes of military aircraft.

A further negative point is that it also crosses the airstrip of the private airfield located just next to the R45, impacting on the operation of the airstrip if approved.



4.1.3. Power line Alternative 3

This alternative is more likely in terms of the crossing at the R45 as it crosses the road at a 90-degree angle. This Alternative runs along the existing Eskom lines for some time and then deviates across agricultural land. It crosses the R27 at an undesirable angle to connect with Site Alternative A, which is next to the R27 road. It is further away from the Dx substation in terms of grid connection and additional lines will be required.



4.1.4 Power line Alternative 4

This alternative is a combination of Alternative 1 and Alternative 3, as it follows the route of Alternative 1, but then deviates to enter the proposed substation Site A. Comments are the same as in terms of Alternative 1.



4.1.5 Alternative 5

This alternative is a deviation of Alternative 3. The same comments apply as per alternative 3. Access should be obtained very easily. Crossing angle of both main roads is not desirable.

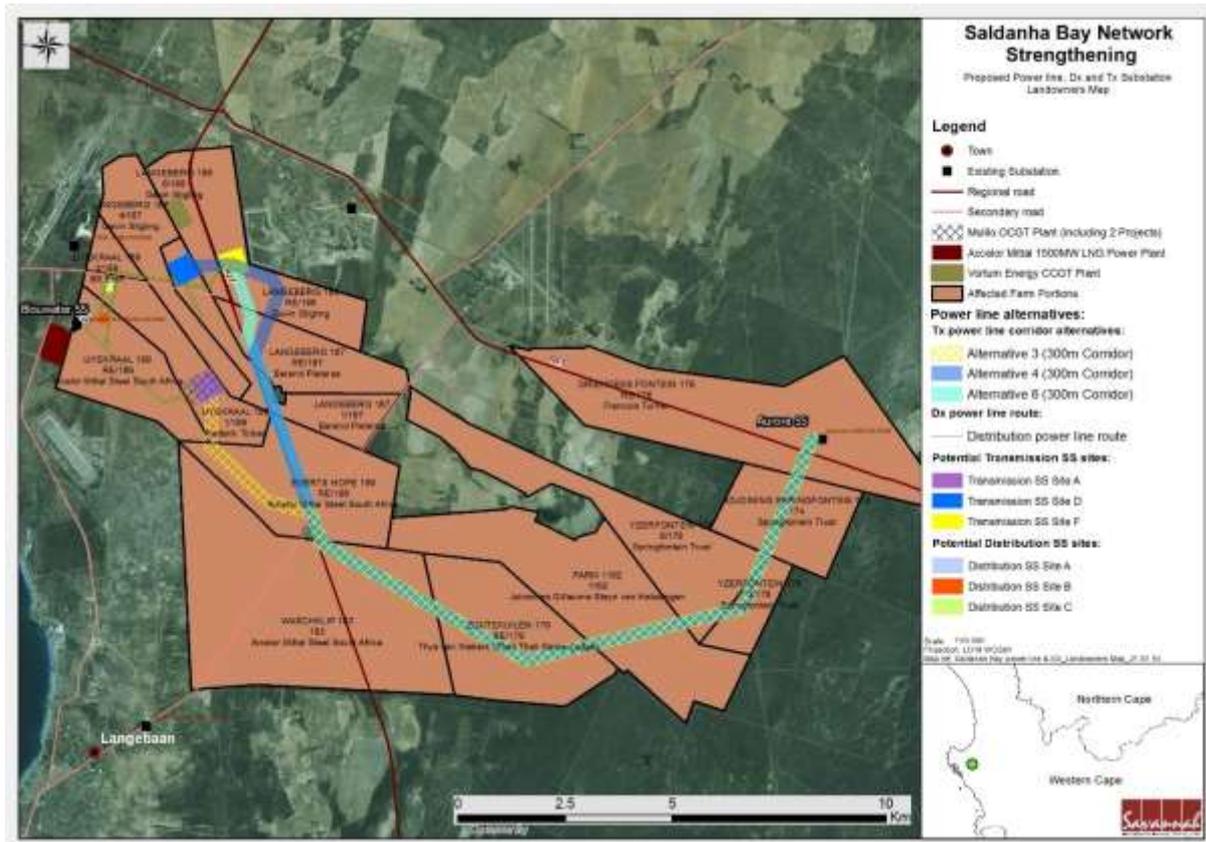


4.1.6 Alternative 6

The evaluation of this alternative is nearly the same as alternative 2. Further the crossing angle of the R27 is again problematic. The rest of the Evaluation is the same as identified during that of Alternative 2. However, the impact of this alignment is less on the future development of the area and would be recommended as the preferred option for the Tx Route.

5. Preferred Power Line Route and Substation Location

Based on land use considerations and stakeholder inputs, the alternatives indicated on the map below were put forward for consideration in the detailed studies.



Considering the information presented in Section 4 of this report, inputs from landowners and stakeholders in the area, and with the experience of the writer in terms of Town and Regional Planning, it is stated that in relation to the map below that the following recommendations are made:

5.1 Preferred Tx Power Line Route:

- The Preferred Tx Power Line Route is Alternative 6, due to less impact on current and future planning within the area.

5.2 Preferred Transmission SS Site:

- Transmission Site F is the preferred option from a Town and Regional Planning perspective as this site reduces the potential for any land use conflict with planned developments in the area.

5.3 Preferred Distribution SS Site:

- The preferred distribution SS Site is Distribution Site A because of its close proximity to the Blouwater Substation and less impact from a Future and current Town Planning Perspective.

Report Dated: 11 November 2016

Drafted: Jan A. Visagie