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: Proposed Saldanha Bay Network Strengthening Project

1.1.2 Proposed Activity: Construction of a new dual 400kV power lines of approximately 35km as well as a new transmission substation and new distribution substation in the Saldanha Bay area of the Western Cape

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; and
- Establishing 2 x 132 kV feeder bays at Aurora Substation.

2. Scoping Report

The purpose of the Scoping Report is to determine the main issues and the potential impacts of the proposed project during the scoping phase at a desktop level based on existing information. This will be done in the following manner:

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

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 infrastructure upgrade 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.

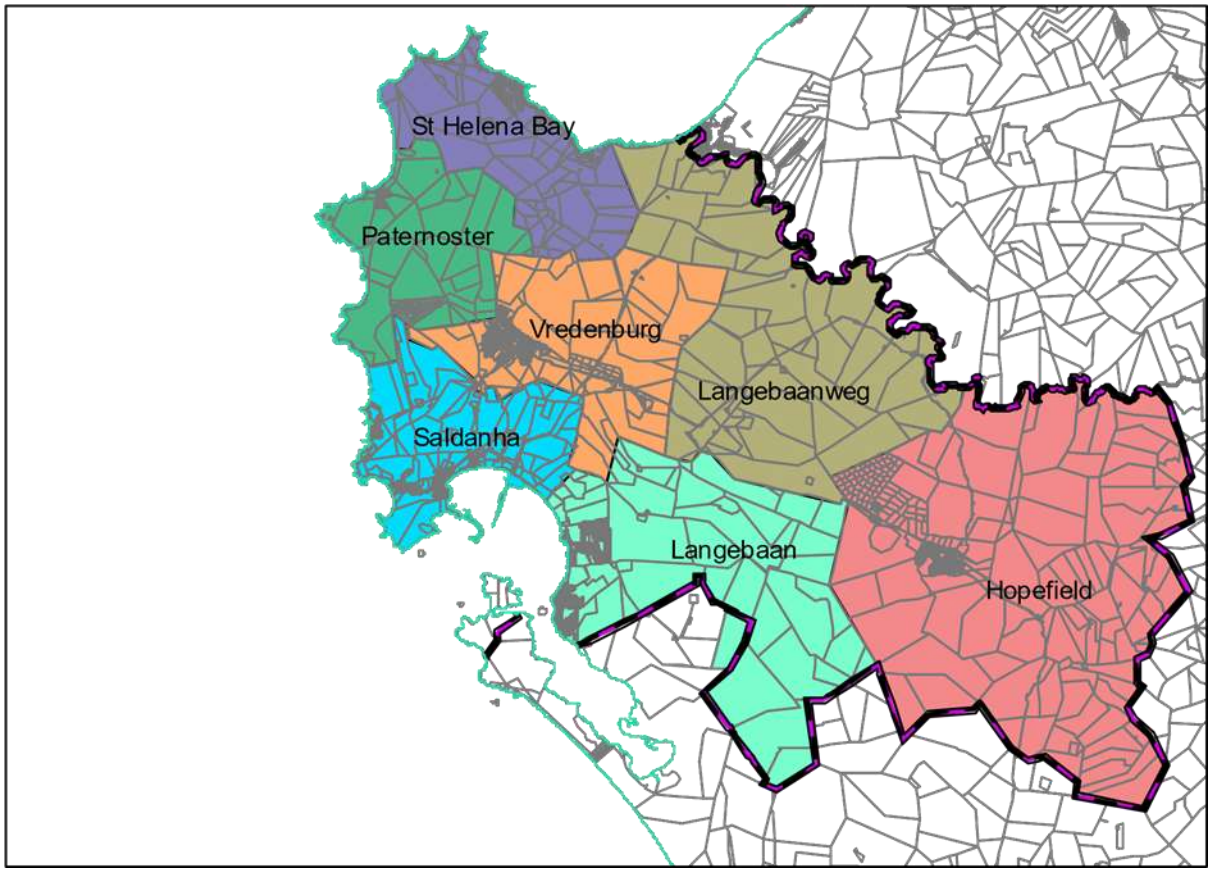


Figure 1: Saldanha Municipal Area and Planning Units.

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 indicate all the proposed upgrading, as well as the locations of alternatives as a whole.

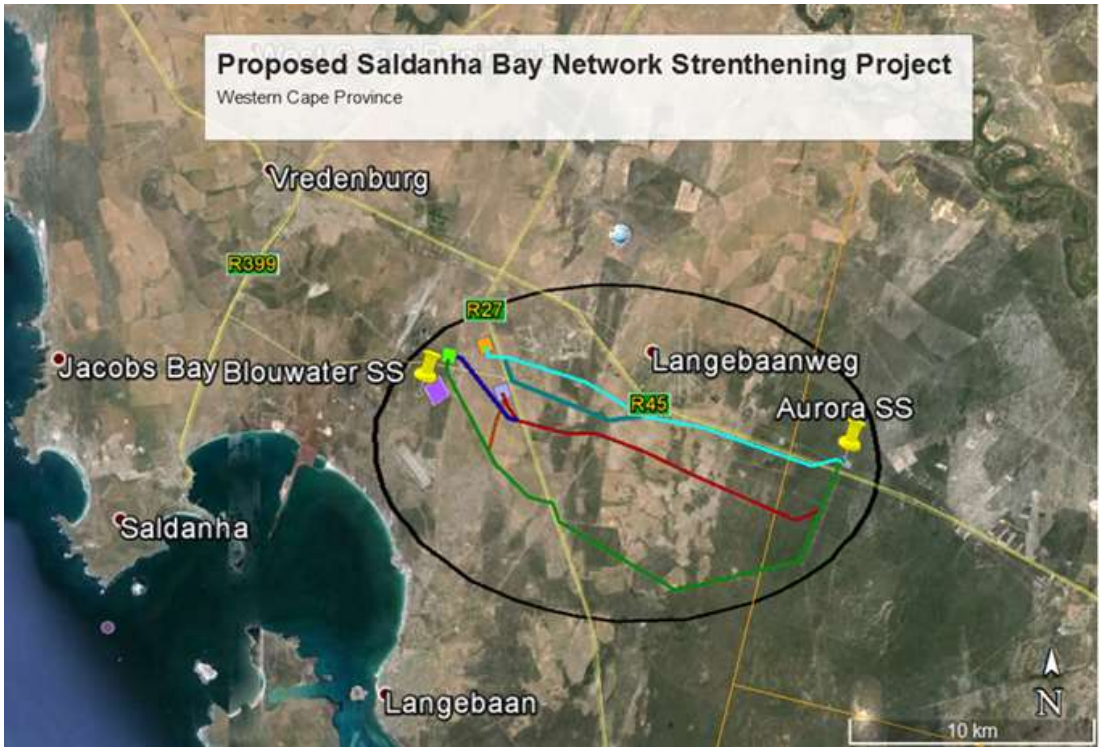


Figure 2: The Proposed Infrastructure Upgrade and Alternative locations / routes .

2.1.1.3 The Study Area:

The Study Area for the Proposed Project and thus for the Scoping Report is located very near three towns in the West Coast District Municipality. Saldanha is to the West, Langebaanweg 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 Scoping 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 is 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.

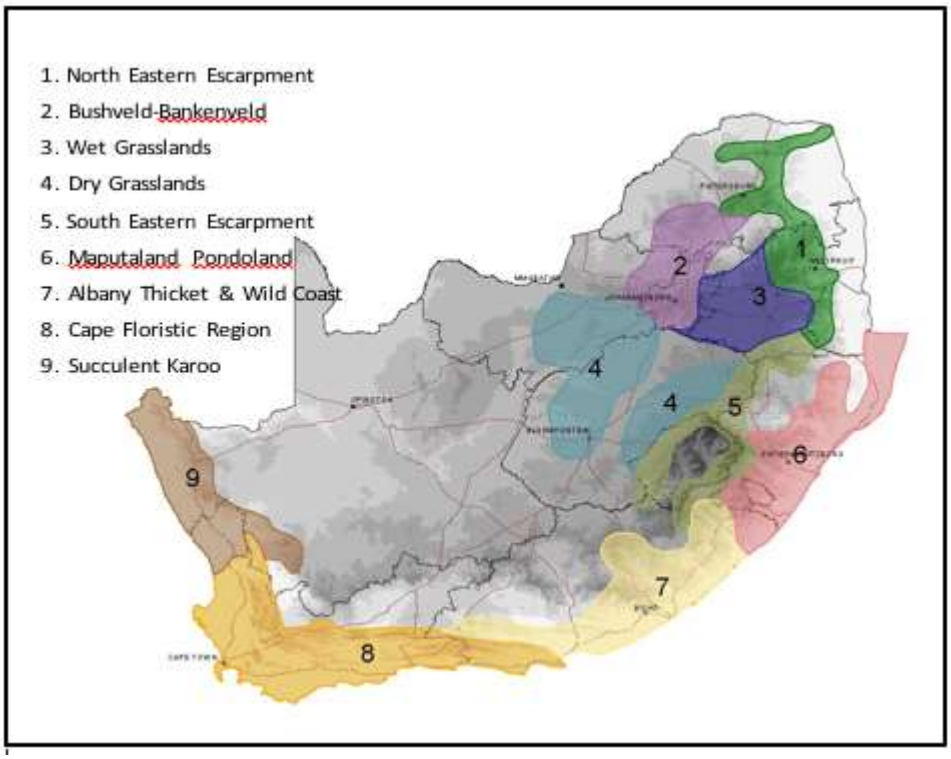


Figure 3: The Floristic Regions of South Africa.

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.

3. Description and Evaluation of environmental issues and potential Impacts:

3.1 Proposed Project Activities:

The following Activities were identified as possible actions of Eskom, before, during and after the Construction period. The relevance in terms of this, is that each will have an impact on the Natural Environment.

3.2 The minimum Activities are:

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 the Proposed Infrastructure Upgrade will be undertaken over +12 months.

b) Access/Service Roads

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

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. Direct, indirect, cumulative impacts and residual risks of Identified Issues:

Impacts:
Description of the expected impacts. Areas anticipated to be affected.

Desktop Sensitivity Analysis of the Site:
Sensitivity analysis in terms of the impacts expected. Discuss areas of high concern.

Issue	Nature of Impact	Extent of Impact	No-Go Areas
Visual Impact on Natural Area - New High Voltage Lines in low laying areas	Over time people get used to new infrastructure and start to see these intrusions as part of the landscape.	Local Impact Only.	Near the coast line and on the boarders of Conservation Areas.
Visual Impact on Natural Area - Steel Structures in Natural Areas	This Area is known for its Nature and Tourist Attractions. Steel Structures should thus rather following the existing lines than new lines being drawn across the landscape.	Local Impact Only.	Near the coast line and on the boarders of Conservation Areas.
Noise Pollution - Construction in Remote Areas	This part of the country is still seen as rural, only with some development near the coast line and then Vredenburg and smaller towns around the area. It is a tranquil environment and noise levels travels far because of the flat landscape. The "humming" noise from the high voltage lines should not be near intensive farm breeding or dairy farms, as this may cause to loss of production.	Local Impact.	Near the residential Areas, Biosphere and Nature Reserves in the Area. Away from Intensive farm breeding and dairy operations.
Loss of High Potential Agricultural Land - Agricultural Land being used or invaded.	Loss of Agricultural Land and Food Security is of high importance for the National and Provincial Departments of Agriculture. Lines should thus rather stick to the existing distribution and transmission servitude lines within the area, and not "invade" new or additional properties. Eskom policy in terms of Agricultural use under Electrical lines should also be encouraged.	Regional and National Impact	High Potential Agricultural Land or land currently under irrigation.
Additional Electrical Currents in Environment - Interference with the Radar Systems and Air Force Activities	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 route, the	National Impact.	Place needs to be decided with the relevant South African Air Force Personal. Electrical lines not within 2km from Airforce Base. Away from Private airfield / airstrip.

	environmental practitioners and town planner, must be established when the final plans for the routes are planned and before the final environmental assessment report land use planning applications are finalized.		
Biodiversity Under Threat - Industrial Type Development near Biosphere	As more infrastructure is future needed to satisfy the development of industrial and residential developments more land will be required in the long term. This will add an additional need for more electricity to be distributed within the area and to be brought from elsewhere to this region, thus putting pressure the current undeveloped, but protected areas. Thus it should always be made sure that there is a transitional sphere of land use between the Biosphere and Nature Reserves in the area.	Regional, National and International Impact.	Near the residential Areas, Biosphere and Nature Reserves in the Area.
Loss of Bird Life - High Powerlines across land	Power Lines are one of the most common causes of vitality amongst bird life. What is found in literature is that how bigger and higher the lines are the less bird vitalities will be experienced. A specialist should work with Eskom during and after the construction of the power lines.	Local Impact	Directly next to the coast line, dams or nesting places.
Airforce Base Operational readiness, Safe Landing and Taking off of Aircraft (Air Force and Private) - High Wires across land	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 powerlines should be in the approach and take off strip of any airfield or airstrip.	Local, Regional and National Impact.	At least a 2km radius of no power line construction of high steel structures.
Electrical Wires across Transportation Networks - National Road and Transportation of Heavy Industrial Equipment	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.	Local, Regional and Provincial Impact, small possibility of National Impact.	National and or Provincial Routes identified for transportation of heavy and abnormal goods and vehicles.
Renewable Energy Projects Underway - Grid Connectivity from Renewable Energy	The placement or development areas for wind farms will be impacted upon in this area, due to the density of existing and	Local, Provincial and National Impact.	Within 1.5 x the tip height of nearest planned wind farm.

Developments	new lines, so well as the new substations. In terms of the legislative requirement of distances from power lines, towers, roads and other facilities, the placement within the study area will be severely affected. Also the lines from these renewable energy plants may also have the same effect when grid connectivity is required.		
Land Use Planning and Management – **Future Developments will be "forced" in terms of land that can be used due to the lines and Placements of Substations.** **Compatibility with Municipal Planning for Area.**	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. But, 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.	Local and Regional Impact	Next to Housing Developments (residential zones), Airfields, Nature Conservation Areas
Property Value – servitudes of powerlines reduce the value of any property in terms of the future selling and	Any servitude that gets registered against a property, which is not beneficial to that property, reduce the value of such a property, even if the	Local Impact.	Land Parcels without any servitudes registered on or against it.

commercial value of the land.	current owner is compensated as such for the servitude. Other servitudes are already registered in the area, thus it would be advisable to ensure that no new land parcels become burdened with servitudes if it could have been avoided in the long term planning of the area or power lines of Eskom.		
Storm Water Drainage for Hard Surfaces at the Substations	Due to the landscape which is relatively flat, the drainage of any construction will be problematic and contamination of agricultural land and or natural areas must be safe guarded.	Local Impact	Natural Areas and Land under Irrigation.
Servitudes already registered other than Electrical Power Lines and not in the name of Eskom.	Other servitudes may already been registered on land parcels within the study area that is currently not being used or visible. This may have an impact on the alternatives being presented and the final outcome.	Local Impact	Already registered servitudes in terms of any service where the power lines and or substations will have a negative impact on the service delivery and or maintenance.

Gaps in knowledge & recommendations for further study:

- The EIA process is multi-disciplinary, which is informed by the project team. It is thus necessary to assume that the information provided by the project team will be accurate and true, at the time. Data shown in the maps were supplied by various sources and was used as received. The data was not verified.
- A preliminary site investigation was undertaken to identify the alternative sites and transmission lines alignments and consider which alternatives to be considered within the EIA process.
- The pylon positions for the Transmission power line and the Distribution power line have not been determined thus far. Exact measurements in terms of the Substation were also not yet provided, thus area of location identification may be too big our out of proportion to the real construction site.
- Assumption is made that Eskom will obtain the Servitude and Zoning rights for the lines and obtain the land for the building of Substations.

Ecological Assessment:

- In-depth surveys of the study area were not undertaken for this SR, but the sensitive sections were examined in more detail.
- Accurate development footprints (e.g. actual footing positions) were not provided by Eskom for the power line routing as this will come later, but as this is one of the primary development impacts this means that from a vegetation point of view only an overview is appropriate at this stage.
- Many plants are only seasonally evident or identifiable, and it is thus best to use a habitat approach, where habitat type (e.g. rarity, threat, etc.) and quality is used as a surrogate for species data.
- There are a number of limitations imposed by Eskom, such as a pre-defined alien clearing methodology, and very often a non-negotiable construction period and physical envelope

(i.e. substations are extant and therefore there is limited potential to change turn-in layout for the lines).

- The study area as shown above is shown to be accurate to within approximately 200m.

5. Evaluation of the Identified Issues in terms of Direct, Indirect, Cumulative Impacts and Residual Risks):

Two of the alternative Power Line routes 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 alternative power line route along the R45 cross the runway of the only private air strip in the area. It should be avoided or the air strip

and infrastructure need to be relocated as this is a potential tourist facility as well as a commercial asset. . Any high structure or power line should be at least 2km away from such facility.

The Airforce Base at Langebaanweg is within the Study Area. As can see, the alternative routes indicated on the image are very near 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.

Again the power line alternative will cross the

R27, just as busy and of potential as the R45.

After crossing the R27, the substation is not near

any other infrastructure, thus future proposals will then include the lines to join up with this substation to form a ring feed of electricity. This situation is less desirable.

Again two powerline routes have to cross a local road to form a ring feed. Although nest 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.

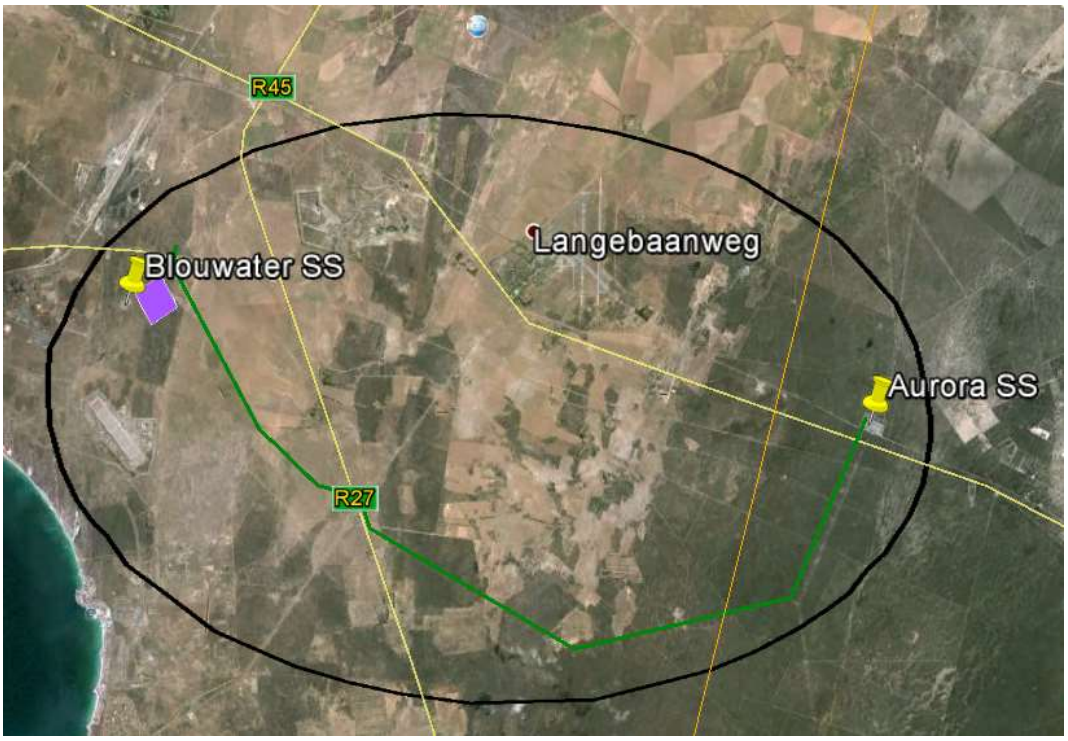
The proposed Substation is next to the existing Blouwater Substation, which makes the feeding to and from each other much more desirable

than the other alternatives presented. Existing road network and other services could be shared between the two facilities.

Although the Alternative cross 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 need to be addressed in the final planning and scoping phases.

5.1 Dx Substation and Alternative 1 of Power Lines:



Alternative 1 follow the existing Eskom Power Line Servitudes throughout the site. Road network in terms of maintenance is thus less of an issue 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 seem to follow the principles of keeping infrastructure and maintenance as near as possible to existing similar facilities to ease access roads 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. Other land uses will not be directly impacted on, as most of the properties seems agricultural used. The crossing of the R27 not at 90degrees is problematic, as it may impact on the transport of heavy and high goods delivered at the Saldanha Bay Habour.

5.2 Alternative 2

Alternative two (2) runs from the Aurora SS to the new proposed Alternative Site C. This line cross the R45 at an undesirable angle, and run for a few kilometers next to the R45. It impacts on agricultural land which is currently under cultivation and irrigation. It cross again 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 last said Substation. Alternative connection lines may be required.

This alternative may have a negative effect on the operations of the 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 cross the airstrip of the private airfield located just next to the R45, rendering the relocation of the airstrip if approved.

5.3 Alternative 3

is more likely in terms of the crossing at the R45 and because it cross the road at a 90degree angle. This Alternative runs along the existing Eskom lines for some time and then deviate across use agricultural land in terms of weed or grain. It cross the R27 also at an undesirable angle to connect with Site Alternative A, which is next to the R27 road and access road will be easy to acquire. It is further away from the other substation in terms of grid connection and additional lines will be required.

5.4 Alternative 4 is a combination of Alternative 1 and Alternative 3, as it follows the rout of Alternative 1, but then deviate to enter the proposed substation Site A. Comments are the same as in terms of Alternative 1, except the grid connection is still not to clear.

5.5 Alternative 5 is a deviation of Alternative 3. Same comments apply as per alternative. Access should be obtained very easily. Crossing of both roads is not desirable, especially the angle of

the lines crossing.

5.6 Alternative 6's evaluation is nearly the same as alternative 2, and further the crossing the line is again problematic. The rest of the Evaluation is the same as identified during that of Alternative 3.

6. The following potential significant impacts were identified during the Specialist Input phase, for further investigation in the EIA Phase:
   - The critical biodiversity of the natural areas that may exist within the Study Area.
   - Proclaimed or Protected Nature Reserves in the Region must be protected.
   - Ecological Impacts related to the critically endangered vegetation types within the study area. This includes the nature reserves and the areas with high botanical and avifaunal sensitivity.
   - Freshwater ecosystems within the study area.
   - Underground water sources.
   - Visual sensitivity of the study area, which relates to heritage and social aspects as well.
   - The proposed developments are located on agricultural land, which could also relate to the geotechnical viability of the site. A study in terms of the productivity of the farms must be done as part of the EIA process to access the impact on the farming operations.
   - The visual integrity of the proposed developments in relation to their mountainous surrounding environment.
   - The presence of farms and homesteads in the vicinity of the proposed developments as well as the impacts of these developments on the social fabric of Saldanha Bay Municipal Area (Saldanha, Vredenburg and Langebaan).
   - The cumulative impact of the proposed Substations and Line Network on the surrounding land uses.

- The need for Traffic Impact Assessment study to determine the effect of the proposed infrastructure upgrade on the transport of heavy (industrial) goods to and from the area.
- The need for a Town Planning Land Use Management Applications for Rezoning, Subdivision and servitude registration applications to the Local Council. Rezoning from Agricultural Zone to Either Special or Industrial Zone in terms of SPLUMA and Saldanha Bay Integrated Zoning Scheme.
- The need for this EIA process to consider the existing electrical and road infrastructure within the study area.
- Farm Potential Study to ensure the proposed developed will not negatively impacted on the farming potential in the surrounds.
- The Impact of the power lines on the two air fields and their take-off and approach paths, as well as the radar that may be influenced.
- The possible effect of the direct and related infrastructure of the proposed infrastructure upgrade on the surrounding commercial operations and if there would be a conflict of land use and or potential.

7. Preferred Power Line Route and Substation Location:

When the above information and issues are taken into consideration, and with the experience of the writer in terms of Town and Regional Planning, it is stated that:

7.1 Preferred Power Line Route:

- That Alternative 1 as indicated and illustrated in this report be recommended as the Preferred Power Line Route, and
- That Site A in terms of the Substations be indicated as the preferred location of the proposed Substations.

Report Dated: 21 October 2015

Drafted: Jan A. Visagie

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