IMPACTS THAT MAY RESULT FROM THE PLANNING AND DESIGN, CONSTRUCTION, OPERATIONAL, DECOMMISSIONING AND CLOSURE PHASES AS WELL AS PROPOSED MANAGEMENT OF IDENTIFIED IMPACTS AND PROPOSED MITIGATION MEASURES

Impacts Resulting from the Planning and Design Phase

Direct Impacts:

Employment Creation

The planning and design of the proposed development requires input from various individuals, resulting in the employment opportunities for such persons. This additional employment would include both direct (e.g. Environmental Consultants, Engineers, Project Managers, Planners, etc.) and indirect (e.g. reviewing and commenting authorities such as the local authority planning authorities and the environmental authorities). The extent and magnitude of this impact is relatively low compared to the other economic impacts, and is typically restricted to a limited number of professionals. All the identified alternatives are likely to result in the same level of significance for this impact. The No-go Alternative would differ in that this impact would not occur.

Issue	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
Employment Creation	No	Positive	3	2	8	4	52 Medium
	Yes	N/A	N/A	N/A	N./A	N/A	
Corrective Actions	• No mitigation measures have been identified.						

Indirect Impacts:
None Identified.

Cumulative Impacts:
No cumulative impacts were identified.

Alternative 1

Impacts Resulting from the Construction Phase

Direct Impacts:

Soils and erosion

The loss of topsoil in South Africa is a national concern and thus erosion control should be taken seriously. Ineffective storm water management systems can result to soil erosion. Where soils are highly erodible, adequate measures must be implemented to prevent undue soil erosion.

Extensive soil erosion is not expected during the construction of the activities, however, it is anticipated that occurrence of such might occur during wet seasons especially on the stockpiles (Topsoil and Subsoil).

Issue	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
Soils and erosion	No	Negative	2	2	4	3	24 Low
	Yes	Negative	1	1	2	1	4 Low
Corrective Actions	• Stockpiles should be piled up to 2m or less. • Stockpiles should not be piled within a 32m distance from any river bank or within wetlands. • Foundation excavations for each structure must be inspected by a competent person during construction. • Excavation must not be left open for longer than three weeks. • Construction must be preferably during the dry season • In the event of significant erosion occurring, adequate corrective measures must be implemented to prevent any further soil loss. • Proper storm water management measures must be put in place.						

Impact on Traffic

During construction, increase in traffic is likely to result from delivery of construction materials to and from the construction works. The impact of increased traffic can be considered local in extent, short term in duration with the overall impact been *negative with low significance*. However with implementation of proper mitigation measures, it can be reduced to low significance.

Issue	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
Traffic	No	Negative	3	3	6	4	48 Medium
	Yes	Negative	2	2	4	2	16 Low
Corrective Actions	• The delivery of construction material and equipment should be limited to hours outside peak traffic times (including weekends) prevailing on the surrounding roads. • Delivery vehicles must comply with all traffic laws and bylaws.						

Air pollution

Construction activities on the site will lead to land clearing and disturbance of the soil resulting in dust generation. During construction, movement of construction vehicles will present temporary, but important sources of respirable particulates and dust deposition. Given the nature and magnitude of the proposed project it is anticipated that very little dust will be generated from the construction activities. The potential impact on air quality will be short term and can be controlled. Proper implementation of recommended corrective measures will reduce the impact to *low significance*.

Issue	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
Air pollution	No	Negative	2	1	4	4	28 = Low
	Yes	Negative	2	1	3	3	18 = Low
Corrective Actions	• Unnecessary clearing of vegetation must be avoided. • All exposed surfaces subjected to dust generation must be managed with appropriate dust suppression methods including amongst others, the use of water tankers etc. • Vehicles travelling on the site should not be allowed to reach sufficient speeds so as to cause dust to rise from the roads. • Unnecessarily exposed surfaces should be rehabilitated after the construction period. • The amount of exposed soil at a particular time must be limited.						

Surface and groundwater pollution

There During construction there is a risk that construction material may pollute the surface and/or ground water on site. The closest water source is a perennial river which is approximately 680m from the proposed site. Substances such as cement residue, bio fuels, and paints must be adequately controlled. In addition exposed surfaces during construction would provide a source of sediments to be taken up by storm water and resulting in down-stream sedimentation of water resources. Care must be taken during construction to prevent leaks and spillage of materials that may detrimentally affect water quality (especially fuels and chemicals). Adequate measures must be put in place to prevent runoff of construction debris to nearby streams or water bodies. If construction takes place during the rainy season, storm water will have to be managed appropriately to reduce the opportunities of construction debris being washed off. This impact is of *medium negative significance* and can be reduced to a *low significance*.

Issue	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
Surface and ground water pollution	No	Negative	3	3	6	3	36 = Medium
	Yes	Negative	2	2	4	2	8 = Low
Corrective Actions	• Adequate measures must be taken during construction to manage storm water runoff. • Storage of fuel on site must not be stored on site. Should the need arise to store fuel on site, it must be stored in bunded and caged areas. • Care must be taken not to spill fuels or oil during service or re-fuelling of construction equipment. During refuelling drip trays must be placed under the machinery or vehicle to prevent contamination of soil in case of spillages. • In the event of a spillage of a hazardous substance the requirements of the EMP must be implemented. • Attempt should be made to schedule construction during the winter months (dry season). • Possible leaks and spills of hazardous substances into the ground should be avoided at all times. • In the event of a spillage of a hazardous substance the requirements of the EMP must be implemented.						

Waste generation

During the construction phase there will be a variety of waste material produced. The building contractors must adhere to all proposed measures and provide adequate waste skips and bins around the site. Waste must be regularly removed from site and disposed of at appropriate waste disposal sites. The impact may be *negative, site specific, low in significance* and will last the duration of the construction and rehabilitation phase.

Issue	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
Waste generation and management	No	Negative	2	3	8	2	26 = Low
	Yes	Negative	1	2	6	2	18 = Low

Corrective Actions	• No waste will be buried on site or incorporated into the foundation trenches. • The work force must be encouraged to sort waste into recyclable and non-recyclable waste. • No burning of waste will be allowed on site. • Waste must be regularly removed from site and disposed of at a registered waste disposal facility.

Flora and Fauna

The development of the site would not generate any impacts of broader significance and as a site is already disturbed, the loss of the disturbed natural vegetation from the site is not deemed to be significant. No species of conservation concern were observed in the development footprint and it is highly unlikely that any such species would be affected by the development. Similarly, the site is not of importance for fauna as a result of regular human activity along the railway servitude as well as the disturbed nature of the site. As a result, it is highly unlikely that any fauna would be significantly impacted by the development and as a result, no faunal impacts are assessed.

Issue	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
Impact on fauna and flora.	No	Negative	1	2	4	4	28 = Low
	Yes	Negative	1	2	2	2	10 = Low
Corrective Actions	• The proposed development area should be demarcated and cordoned–off using construction tape, fencing or similar structure. • Cement mixing, cleaning and similar 'dirty' activities should take place within a designated area with appropriate runoff control. • All contaminated soil, litter and building rubble should be cleared from the site at the end of construction. • If the substation must be lit at night for security reasons, then the lighting should be downward-directed and utilise low-UV emitting bulbs such as most LEDs which attract less insects. • Any fauna disturbed or encountered during construction activities should be removed to safety by the ECO or other suitably qualified persons.						

Noise pollution

At present the land-use in the area is predominantly agricultural and partly commercial land uses. The ambient source of noise in the area is presently generated by traffic along the access road. There will be an increase in noise levels during the construction period emanating from construction vehicles, machinery and workers, which can be a nuisance during construction but it will be a manageable noise. The level of noise and extent will depend entirely on the prevailing construction activities within the site. The impact of noise will also be reduced to almost insignificant levels given the

small scale of the development, the proposed locality which is far removed from other land owners as well as the short span of the construction period.

Issue	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
Noise pollution	No	Negative	2	1	4	3	21 = Low
	Yes	Negative	1	1	2	2	8 = Low
Corrective Actions	• It must be ensured that all vehicles used during construction are appropriately maintained. • Working hours must be restricted to daytime only (7am – 6pm). • Noise levels should conform to the bylaws.						

Fire hazards

Onsite storage of fuel and other flammable solvents, during construction, increase the risk of fire. It is anticipated that the uncontrolled fires on site could cause damage to infrastructure and the biophysical environment and impact on the social environment. This impact is considered to be of medium significance. Should the recommended mitigation measures be implemented, the significance of the impact will remain *negative but low in significance.*

Issue	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
Fire hazards	No	Negative	2	2	6	3	30 = Medium
	Yes	Negative	2	1	4	2	14 = Low
Corrective Actions	• Areas were flammable substances are kept must have proper warning signs on display (highly flammable, No smoking etc.) to warn personnel on site of risk associated with such areas. • No burning of waste or cooking will be allowed on site. • Contracting personnel must be well versed in the relevant existing fire and safety management procedures and activities on site. • Implement fire hazard sensitive on- and offloading procedures. • Designate a site safety official and ensure that personnel are adequately trained regarding fire hazards and procedures.						

Impact on cultural and heritage resources

No heritage resources were recorded on the site. The potential impact of the proposed project on cultural heritage sites is considered to be low and therefore insignificant.

Issue	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
Cultural and heritage resources	No	Negative	2	1	2	2	10 = Low
	Yes	Negative	1	1	0	1	2 = Low
Corrective Actions	• Should there heritage or archaeological artefacts be discovered during construction or operational phase, all works must be stopped at the affected area and SAHRA must be contacted.						

Indirect Impacts: **None**

Cumulative Impacts:

Socio-Economic Impact

This phase will also result in a positive socio-economic impact as the demand for equipment, building material and labour. Equipment and building material should be sourced locally as far as possible. Secondary service provision such as food supply, toilet hire, equipment maintenance etc. would also stimulate the local economy during the construction phase. This is a positive impact of a short duration.

Issue	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
Cultural and heritage resources	No	Positive	3	4	8	5	75 = High
Corrective Actions	• Contractors should by all means practise the localisation matrix while seeking for construction equipment or building materials. • For minimal jobs, the appointed contractor should by all means consider the local residents for jobs that do not need any skill transfer.						

Alternative 2

Environmental Impacts for this alternative during the construction phase will be similar to the impacts of the preferred alternatives.

No go Alternative

Direct Impacts: Should the proposed development not continue, none of the identified impacts would result.
Indirect Impacts:
Cumulative Impacts: None identified

IMPACTS ASSOCIATED WITH THE OPERATIONAL PHASE

Alternative 1: Site A

Impacts Associated with the Operational Phase

Direct Impacts:

Improved energy supply

In the short and longer term, the proposed Traction Feeder Substation supports the proposed Eskom Garona substation ugrade and powerline that will ensure reliable power supply to meet future demands and Transnet's supply need. This is a positive impact long term impact

Issue	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
Cultural and heritage resources	No	Positive	3	4	8	5	75 = High
Corrective Actions	• Regular maintenance of the facility should be done continuously to ensure uninterrupted supply of energy.						

Employment creation

The proposed development will have the capacity to produce considerable opportunities of employment mainly during the construction phase. During operation, employment opportunities will arise as a result of the actual maintenance work required to keep the facility running. The significance of this impact is anticipated to be *positive and medium in significance.*

Issue	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
Cultural and heritage resources	No	Positive	3	4	6	3	39 = Medium
Corrective Actions	• No mitigation						

Indirect Impacts: None identified.

Cumulative Impacts: None identified.

Alternative 2:

Impacts Associated with the Operational Phase
Same Impact as Alternative 1.

No-go alternative

Direct Impacts: None of the impacts identified for the proposed activity will occur (including positive and negative impacts) if the proposed activity does not proceed.

Indirect Impacts: None identified

Cumulative Impacts: None identified

IMPACTS ASSOCIATED WITH THE DECOMMISSIONING PHASE

At present it is not anticipated that the proposed infrastructure will ever be decommissioned. On-going maintenance and upgrades, where necessary will be carried out. In the unlikely event that decommissioning is necessary it is recommended that the potential impacts identified below are reviewed and a detailed decommissioning strategy and rehabilitation plan is prepared and implemented. **Impacts for decommissioning phase are similar for all three alternatives.**

Impacts Associated with the Decommissioning Phase

Direct Impacts

Waste

The decommissioning of the proposed project will contribute to large amounts of waste material that will be produced. The decommissioning will contribute to a large portion of bare soil being exposed to erosion if not rehabilitated properly. This waste material should be disposed of in an appropriate manner.

Issue	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
Employment creation	No	Negative	3	4	8	4	60 = Medium
	Yes	Negative	3	2	6	3	33 = Medium
Corrective Actions	• Disposal of waste at a registered waste disposal site. • Non-hazardous material should be recycled and utilised in other construction processes. • An appropriate rehabilitation plan should be in place.						

Dust generation

Decommissioning of the facility and other infrastructure may lead to an increased amount of airborne particles in the local

atmosphere as the infrastructure is dismantled and transported to the disposal site. The significance of this impact will be of low negative significance.

Issue	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
Employment creation	No	Negative	2	1	4	4	28 = Low
	Yes	Negative	2	1	4	3	21 = Low
Corrective Actions	Use of dust suppression techniques to reduce the dust.						

Indirect Impacts: None Identified.

Cumulative Impacts: None identified.

No-go alternative

Direct Impacts: None of the impacts identified for the proposed activity will occur. If the proposed infrastructure is not to be decommissioned, it will require continuous maintenance and the measures identified for the operational phase must be continued. Efforts for continual improvement must be encouraged.

Indirect Impacts: None identified

Cumulative Impacts: None identified