

The assessment of impacts will largely be based on the Department of Environmental Affairs and Tourism’s (1998) Guideline Document: Environmental Impact Assessment Regulations. The assessment will consider impacts arising from the proposed decommissioning activities of the project both before and after the implementation of appropriate mitigation measures.

The impacts will be assessed according to the criteria outlined in this section. Each issue is ranked according to extent, duration, magnitude (intensity) and probability. From these criteria, a significance rating is obtained, the method and formula is described below. Where possible, mitigation recommendations have been made and are presented in tabular form.

The criteria given in the tables below will be used to conduct the evaluation. The nature of each impact was to be assessed and described in relation to the extent, duration, intensity, significance and probability of occurrence attached to it.

Table 1: Methodology Used in determining the significance of potential environmental impacts

<p>Status of Impact The impacts are assessed as either having a: negative effect (i.e. at a `cost' to the environment), positive effect (i.e. a `benefit' to the environment), or Neutral effect on the environment.</p> <p>Extent of the Impact (1) Site (site only), (2) Local (site boundary and immediate surrounds), (3) Regional (within the City of Johannesburg), (4) National, or (5) International.</p> <p>Duration of the Impact The length that the impact will last for is described as either: (1) immediate (<1 year) (2) short term (1-5 years), (3) medium term (5-15 years), (4) long term (ceases after the operational life span of the project), (5) Permanent.</p> <p>Magnitude of the Impact The intensity or severity of the impacts is indicated as either: (0) none, (2) Minor, (4) Low, (6) Moderate (environmental functions altered but continue), (8) High (environmental functions temporarily cease), or (10) Very high / Unsure (environmental functions permanently cease).</p> <p>Probability of Occurrence The likelihood of the impact actually occurring is indicated as either: (0) None (the impact will not occur), (1) improbable (probability very low due to design or experience) (2) low probability (unlikely to occur), (3) medium probability (distinct probability that the impact will occur), (4) high probability (most likely to occur), or</p>
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(5) Definite.
Significance of the Impact
 Based on the information contained in the points above, the potential impacts are assigned a significance rating (**S**). This rating is formulated by adding the sum of the numbers assigned to extent (**E**), duration (**D**) and magnitude (**M**) and multiplying this sum by the probability (**P**) of the impact.
 $S=(E+D+M)P$
The significance ratings are given below
 (<30) low (i.e. where this impact would not have a direct influence on the decision to develop in the area),
 (30-60) medium (i.e. where the impact could influence the decision to develop in the area unless it is effectively mitigated),
 (>60) high (i.e. where the impact must have an influence on the decision process to develop in the area).

The impacts of the proposed project were assessed and rated as follows:

Impacts Associated with the Decommissioning Phase							
Alternative 1							
Direct Impacts							
Waste							
The decommissioning of the proposed project will contribute to large amounts of waste material that will be produced. The waste will be in the form of solid waste, hazardous liquid waste from the transformers, concrete rubble and general from the inhibition of the site by contractors. The impact of waste on the environment can be considered to be of negative and of medium significance.							
Issue	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
Waste	No	Negative	2	2	4	5	40 = Medium
	Yes	Negative	2	1	2	5	25 = Low
Corrective Actions	<ul style="list-style-type: none"> Disposal of waste at a registered waste disposal site. Non-hazardous material should be recycled and utilised at other construction sites. An appropriate rehabilitation plan should be in place. Waste must be recycled, reused and reduced as far as practically possible. Waste must not be left unattended for long than 14 days. Waste must be properly stored, particularly hazardous waste. No burning or burying of waste material in any form on site. Safe disposal of hazardous waste is encouraged despite the quantity. 						
Dust generation							
Decommissioning of the facility and other infrastructure may lead to an increased amount of airborne particles in the local atmosphere as the structures are demolished. It is anticipated that there would be more dust generated during demolition of the substation and the control house as compared to the power line. The significance of this impact will be of low negative significance if proper mitigation measures are implemented.							

Issue	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
Dust Generation	No	Negative	2	1	4	4	28 = Low
	Yes	Negative	1	1	4	3	18 = Low
Corrective Actions	<ul style="list-style-type: none"> Dust suppression techniques to be put in place, e.g. spraying the ground with a water bowser. Avoid working during windy season. 						

Noise

Decommissioning and remediation activities at the site will entail the use of heavy machinery and equipment. These activities would generate noise. Due to the nature and positioning of the site, it is anticipated that the impact will be negative, local, short and low in significance.

Issue	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
Noise	No	Negative	2	1	4	4	28 =Low
	Yes	Negative	1	1	4	3	18 = Low
Corrective Actions	<ul style="list-style-type: none"> It must be ensured that all vehicles used during decommissioning activities are appropriately maintained. Surrounding residents should be notified in advance of construction schedules. Working hours must be restricted to daytime only (8am – 5pm). Selecting equipment with lower sound power levels which is in accordance with the Health and Safety Regulations 						

Soil and Groundwater

The clearing of vegetation as well as the uncovering of soil during the demolition of the facilities may lead to erosion due to rain and wind if not properly managed. Groundwater and soil contamination associated with incorrect decommissioning activities and remediation procedures may occur. It is anticipated that the significance of this impact can be reduced from medium negative to low negative significance with the implementation of the recommended mitigation measures.

Issue	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
Soil and groundwater	Negative	2	3	4	3	3	36 Medium
	Negative	1	2	3	3	2	18 Low
Corrective Actions	<ul style="list-style-type: none"> Re-vegetation of disturbed surfaces should be conducted as soon as reasonably possible. Areas that have not been allocated alternative uses following the decommissioning should be rehabilitated and re-vegetated. Adequate training of decommissioning contractor’s staff will ensure that this impact will be minimised and, should it occur, rapid action is taken to contain the spillage. Possible leaks and spills of hazardous substances into the ground should be avoided at all 						

	<p>times.</p> <ul style="list-style-type: none"> In the event of a spillage of a hazardous substance, the requirements of the EMPR must be implemented.
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Fire , Health and Safety Risk

Potential sources of the risk of fire during the demolition and decommissioning may include:

- Improper storage and handling of fuel and other flammable solvents on site,
- Fire risk associated with the use of any electrical construction equipment.
- Smoking and littering of un-extinguished cigarette stubs by contractors
- Unsupervised open fires on site

The extent of the impact will be local in the immediate vicinity of the site and short term, negative and of low significance. Should the recommended mitigation measures be implemented, the significance of the impact will be even lower.

Issue	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
Fire, health and safety risk	No	Negative	2	1	4	4	28 = Low
	Yes	Negative	1	1	2	3	12 = Low

Corrective Actions	<ul style="list-style-type: none"> • No burning or burying of waste material on site; • Well serviced fire extinguishers and fire beaters must always be available on site; • Areas where flammable substances are kept must have proper warning signs on display (“highly flammable”, “No smoking” etc.) to warn personnel on site of the risk associated with such areas; • No cooking is 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 officer and ensure that personnel are adequately trained regarding fire hazards and procedures; • Minimisation of hot work by using alternative methods and equipment such as air driven tools, cold cutting and pre-fabrication off site.
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<p>Potential impacts on the cultural-historical aspects:</p> <p>.</p>	<p>Not applicable as described there are no obvious cultural- historical sensitive receptors near the site.</p> <ul style="list-style-type: none"> • If during demolition any possible finds are made, the activities must be stopped and a qualified archaeologist be contacted for an assessment of the findings. • Sites outside the development footprint must be fenced off • Visible graves if any must be clearly demarcated
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	prior to commencement of any work.
Potential Impacts on Biological Aspects	<p>Not applicable as the site was an existing developed area. The site contains no natural environments and is completely transformed for industrial use. However, should any protected vegetation be identified the Environmental Control Officer must be immediately informed.</p> <ul style="list-style-type: none"> • The proposed activities must take place within the existing footprint. • All excavated areas must be properly barricaded to prevent animals and people from falling in.

Potential Employment and Income Opportunities (A Benefit, or Positive Impact)

Decommissioning activities could possibly have a small scale impact on local employment opportunities and income for labourers (positive). It is likely that the applicant will use an approved contractor to undertake decommissioning activities, although on a small scale, there could be an impact on employment opportunities and income for the preferred contractor. This impact will be positive, short terms in duration and highly localised, benefitting a single, approved decommissioning contractor only.

Issue	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
Employment and income opportunities	No	Positive	2	1	4	5	35 = Medium
Corrective Actions							

Indirect Impacts: None Identified.

Cumulative Impacts:

1. The impact of dust can be considered cumulative to the area, as there are other activities in the vicinity of the site which are sources of dust—areas with sandy surfaces; roads.
2. The impact of noise is considered to be cumulative, as there are other activities in the vicinity of the site contributing to the noise, such as the Afrisam Factory, the R21 road and other industrial activities including construction of the new substation.

Alternative 2

The impacts of this technology Alternative will be similar to those of Alternative 1, with the exception of Waste and potential impact on the ecosystem.

Waste

Given that excavation will be deeper to remove the entire foundation it is anticipated that more waste will be generated. This impact will be slightly higher in significance.

Biodiversity

The excavation of foundations will have an impact on the ecosystem as it has already adapted to the change. The impact will be low in significance.

No Go Alternative

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.

The option of not decommissioning would result in the site not being able to be used for an alternative purpose which is to make way for the construction of a new 400/132kV, 2 x 250MVA substation to integrate the existing Verwoedburg MTS into the 400kV network as part of the Tshwane Strengthening. It will further imply no improvement in reliability of electricity systems which would benefit electricity users in the various municipalities, the region and country at large. Should it be adopted the municipalities and communities will be deprived of a much needed essential service, particularly given the already existing problem with energy supply in the country.