

ISSUE	DETAILS	GENERAL ASSESSMENT AND EMP REQUIREMENTS	
		COMMENT	EMP Requirements
1. ECONOMIC:			
1.1 National and Provincial Support	National and provincial importance of project in terms of promoting economic growth in the region and South Africa	<p>Phase of concern: Operation Intensity: Low Overall significance rating: High (positive)</p> <p>Continued national economic growth results in an associated increase in demand for electricity supply. The development of the proposed Braamhoek PSS is aimed at meeting critical peak demand that is expected to exceed existing supply capability by 2012. The associated Transmission infrastructure required to link the PSS to the National Grid is an integral part of the development. Hence the contribution to the national and provincial economy is seen to be significant.</p> <p>Mitigation/Optimisation: limited Significance after Mitigation: High (positive)</p>	

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1.2 Local Benefits <i>Also refer to: Job Creation EMP</i>	Economic benefits that the Transmission line will bring to local communities	Phase of concern: Construction (mainly) & operation Intensity: Low to Moderate Overall significance rating: Low to Moderate (positive) There will be little direct benefit to local communities from the line itself. However, indirect benefits are anticipated and include improved reliability of supply and greater supply capacity, limited job creation during construction & decommissioning, limited local economic growth during construction, etc. Indirect benefits will arise from the improved regional economic growth with which this Transmission line is associated. Mitigation/Optimisation: Maximise use of local skills and services. Significance after Mitigation: Moderate (positive)	Local municipalities, and Emnambithi in particular, are eager that local labour, skills and services are used where possible. They have offered to work with Eskom in identifying local skill and services that may be relevant. Hence the following measures are recommended: <ul style="list-style-type: none"> • Eskom and municipalities to identify key individuals who will co-ordinate these efforts. • Eskom to provide the various municipalities, district councils, etc., of skills and services required for powerline and substation construction. • These include: <ul style="list-style-type: none"> ○ materials, earth moving, concrete supplies ○ tourism (accommodation) ○ catering, ○ vehicle maintenance, ○ security services ○ bush clearing and vegetation rehabilitation • In turn, the authorities may provide lists of possible service providers. • Encourage contractor (by contractual conditions) to utilise local labour in unskilled and low skilled activities. • Eskom and municipalities to co-ordinate and provide training <p><i>See also below.</i></p>
1.3 Tariffs	Increase in electricity tariffs	Any new Transmission infrastructure does not infer a tariff increase to local electricity supply. These tariffs are set independently by the local distribution authority (e.g. municipality)	

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<p>1.4 Job Creation</p> <p><i>Also refer to: Local Benefits Validity of the EMP</i></p>	<p>Employment of local labour (South African citizens and people local to the area) and preference given to a local contractor</p> <p>Local people could be employed to do the following:</p> <ul style="list-style-type: none"> • waste removal • gate installation • bush clearing • catering <p>Local independent Environmental Officer.</p>	<p>Phase of concern: Construction (mainly) & operation Intensity: Low Overall significance rating: Low to Medium (positive)</p> <p>Local labour should be utilised where possible. Due to the specialised nature of the work required, there will be <u>limited</u> opportunity for job creation in the local market during the construction, operation and decommissioning. However, there will be some opportunity for the employment of skilled and unskilled labour during construction, and the contractors will be encouraged to recruit from the local communities. This will form part of the EMP, and therefore the construction contract documentation.</p> <p>In the past, Eskom Transmission Division has awarded the contract for the construction of its Transmission infrastructure to a single contractor and left it to the discernment of that firm to obtain the necessary sub-contractors. There is now, however, pressure from local stakeholders for Eskom Transmission Division to stipulate in the main contract that local contractors should be used.</p> <p>Training of labour is a responsibility of the contractor. Eskom Transmission Division will bring the issue of training to the attention of the contractor</p> <p>Mitigation/Optimisation: limited Significance after Mitigation: Medium (positive)</p>	<p>EMP requirements stated above apply here.</p> <p>In addition to the above:</p> <ul style="list-style-type: none"> • Utilise a local contractor to undertake erosion maintenance and rehabilitation (operations phase) • Encourage contractor (by contractual conditions) to utilise local labour in unskilled and low skilled activities. • Provide training <p>General recommendation: It is apparent that the local authorities view this as a high priority issue and have offered their support in giving effect to any initiatives to maximise local input and job creation.</p> <p>Key to maximising local input will be advanced warning of the need for skills and services. This will allow local capacity development and preparedness .</p> <p>It is worth re-emphasising that the EIA consultant still sees job creation to be limited within the Transmission infrastructure projects. Opportunities within other aspects of the Braamhoek PSS development have not been assessed here.</p> <p>See also other issues referred.</p>
<p>1.5 Local Opportunities for electricity supply</p>	<p>Opportunities for local distribution to farmers and landowners who want to draw directly from the Transmission line</p>	<p>Local supply direct to landowners, farmers etc., will not occur from this 400kV Transmission line. Local distribution is the responsibility of the local distributor or municipality. This project is focussed on power transmission rather than local power distribution.</p>	

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1.6 Tourism	The line will detract from the aesthetic appeal of the natural environment, and will therefore negatively impact on tourism activities.	<p>Phase of concern: Construction & Operation Intensity: Low Overall significance rating: Low to moderate</p> <p>The Turn-in area has a high scenic value and offers opportunity for eco-tourism. However, it is understood the area has a low tourist visitation. There are local outdoor & hiking opportunities advertised west of De Beers Pass, and it is known that bird watchers will visit the area, but tourism is seen to have secondary commercial status next to farming. Hence the impact is seen to be relatively low despite the potential of the area.</p> <p>Mitigation/Optimisation: see EMP requirements Significance after Mitigation: Low to moderate</p>	<ul style="list-style-type: none"> • Construction access roads to avoid these sites and the access to these sites unless agreed with the owners • Rehabilitation of the construction access roads and servitudes must be undertaken as a priority to minimise visual impact • Advise owners of construction programme and activities before construction starts • Advise and agree with owners servitude maintenance requirements.

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2. WELL BEING:			
2.1 Electromagnetic Fields	Impact of electromagnetic fields (EMFs) on animals, people and vegetation	<p>Phase of concern: Operation Intensity: Low Overall significance rating: Low)</p> <p>International research into this issue has been inconclusive and therefore Eskom Transmission adopts the precautionary principle in the control and restriction of activities taking place within a servitude. Outside the servitude the EMF levels drop to internationally accepted limits. Furthermore, this area has a low population density and animals are free ranging. Therefore impacts are seen to be low.</p> <p>Mitigation/Optimisation: monitor occupation of land around line during operation Significance after Mitigation: Low</p>	<ul style="list-style-type: none"> Monitor occupation/activity in the area within Eskom ownership around the line.
2.2 Dust & Noise	Dust & noise control during the construction phase.	<p>Phase of concern: Construction Intensity: Moderate to low Overall significance rating: negligible</p> <p>There is a risk of some dust and noise generation during the construction and decommissioning phases. These will be of a temporary nature, and can be controlled through good site management. However, there are no known locations where noise of dust emissions will affect people along the Turn-in route</p> <p>Mitigation/Optimisation: general site management Significance after Mitigation: negligible</p>	

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2.3 Corona (Noise)	The effect of the corona (low “buzzing” noise) may be noticeable in properties immediately adjacent to the servitude.	<p>Phase of concern: Operation Intensity: Moderate to Low Overall significance rating: negligible</p> <p>Houses adjacent to the servitude may experience some noise from the corona, usually during wet weather. As shown below the background levels will be below 40dBA (guidelines for residential areas is 45dBA at night). However, as there are no known dwellings near the proposed line and the overall impact is seen to be negligible.</p> <p>Mitigation/Optimisation: None Significance after mitigation: negligible</p>	
	<p style="text-align: center;">L50 Wet Audible Noise</p> <p style="text-align: center;">Audible Noise (dBA)</p> <p style="text-align: center;">Lateral Distance</p>		

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2.4 Use of creosote poles <i>Also refer to: Impact on fauna and flora</i>	Creosote poles may be used during the project and may have a negative health implications and an ecological impact Areas of storage for the creosote poles will need to be appropriately managed.	Phase of concern: Construction Intensity: low Overall significance rating: low Creosote is believed to have carcinogenic properties. Thus, it is possible that creosote may pose a health risk to the construction workers that handle the treated poles and to fauna and flora. However, the use of creosoted poles in construction is very low (stringing process where the transmission lines span roads). These temporary structures will be dismantled within approximately two weeks thus limiting potential for contamination Handling procedures, health and safety standards, pole specifications and ground remediation methods should be presented in the environmental management plan Mitigation/Optimisation: see EMP requirements Significance after Mitigation: Low	<ul style="list-style-type: none"> • Ensure proper handling procedures by the stringing team • Use of PVC sleeves on newly creosoted poles • Avoid use near watercourses and groundwater sources (though none of the latter noted in the study area)
2.5 HIV/Aids	<i>Refer to Immigration of construction workers</i>		

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<p>2.6 Fire</p> <p><i>Also refer to: Impact on flora Access roads Erosion</i></p>	<p>The construction and operation of the line may alter the occurrence and management of fires in the area. The change in the nature of fire hazards and events can have safety, economic and ecological implications.</p>	<p>Phase of concern: Construction and operation Intensity: Moderate to High Overall significance rating: Potentially High</p> <p>The route crosses an area of high fire risk. Landowners have expressed concern that both power lines and poor maintenance of servitudes increases the risk of fire hazard in the area. See Section 7.4 (Main Report) for detailed discussion on this topic. However, the following key points refer:</p> <ul style="list-style-type: none"> • Eskom maintains servitudes to protect electricity supply. • Veld management for fire hazard is the landowners responsibility. • However, Eskom's servitude maintenance must integrate with the landowners fire management requirements such that a mutually beneficial management programme is established. • Eskom does not maintain fire fighting capacity, but should participate in local fire fighting associations. • Eskom operates a fire warning system that would be beneficial to landowners with servitudes. <p>There is also fire risk associated with construction and maintenance teams working along the servitude and crossing private land. Strict control of smoking, fire making, welding, etc. is enforced by Eskom.</p> <p>Mitigation/Optimisation: liaise with landowners. Identify 'hotspot' areas during design and raise height of towers and line in these areas. see also EMP requirements</p> <p>Significance after Mitigation: Moderate to Low</p>	<ul style="list-style-type: none"> • Servitude maintenance activities may be farm specific and Eskom should agree activities with each landowner. • Eskom should therefore liaise with landowners and agree on servitude maintenance activities. • These agreements should be documented in a servitude maintenance EMP in accordance with Eskom guidelines. <p>Additionally, during construction</p> <ul style="list-style-type: none"> • Construction contractors to be trained in fire fighting in veld and woodland areas (fire beaters and backpack sprayers to be made available with each construction team) • Maintain vegetation in servitudes, particularly hotspot areas. • Contact telephone number and name of Eskom operations control room to be published for line management (eg switching off line) during extreme fire conditions. • Publish reporting procedures for fire fighting and line operations – eg names of local fire fighting representatives (eg conservancy and game farm representatives, farmers associations) and reporting of location by pylon number • Access routes to servitudes to be clearly marked with pylon numbers

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3. AESTHETICS:			
3.1 Visual impact	Visual impacts will be significant in the local area	<p>Phase of concern: Construction & Operation Intensity: High Overall significance rating: Moderate to high</p> <p>The Turn-ins occur in an area of high visual quality. The Visual Absorption Capacity of the area is considered to be low to moderate – ie the line will blend into the surrounds only to a limited extent. However, the main views of the Turn-ins are from the De Beers Pass and will be below the viewer and therefore be against a backdrop. This offers some reduction in the overall impact.</p> <p>The overall impact is rated as moderate to high as other routes will have similar or worse impact.</p> <p>The cross-rope tower structures that will be used for much of the route are less visually intrusive than the older and more common strain tower style of design. Nevertheless the new line will still be noticeable in the area.</p> <p>Some mitigation may be achieved in the construction phase, but these will not reduce the overall impact.</p> <p>Mitigation/Optimisation: construction methods only. Significance after Mitigation: Moderate to high</p>	<p>Construction Phase:</p> <ul style="list-style-type: none"> Follow least visually intrusive access routes. Do not scrape new roads where possible. Rather undertake bush clearing only. Siting of any borrow pits (few, if any, anticipated) to consider visual impact Rehabilitation to proceed as early as possible in the construction process. Rehabilitation of access roads, borrow pits, spoil storage areas and eroded areas to be addressed in particular.

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3.2 Loss of sense of place	Negative impact on the spiritual, aesthetic and therapeutic qualities associated with the area in the vicinity of the line	<p>Phase of concern: Operation Intensity: Moderate to high Overall significance rating: Moderate to high</p> <p>The 'Sense of Place' along the Turn-in Route may be described as having a tranquil rural character against a dramatic backdrop of the Drakensberg Mountain range. There are also few distractions by human development , though the proposed N3 De Beers Pass and tunnel is planned and will pass under the proposed Turn-in route and this will further affect the Sense of Place of the area. It is understood the De Beers Pass has already been approved but the date of construction is unknown.</p> <p>Notwithstanding the above, the high visibility of the new line will still have a negative impact on the environment, particularly in the northern areas, and this is considered to be of moderate to high significance overall. Other options are seen to have a similar or worse impact.</p> <p>Mitigation/Optimisation: none Significance after Mitigation: Moderate to high</p>	

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4. SOCIAL:			
4.1 Relocation of people <i>Also refer to: Compensation</i>	Will there be a need to relocate people, and their property/houses? What are the likely impacts? Will they be compensated?	Phase of concern: Construction Intensity: low Overall significance rating: low There are no known properties in the route of the proposed turn-in. However, should any exist compensation is negotiated and paid to legal occupants on the route and to those who were present before the servitude was established. Each dwelling will be addressed on a case by case basis. Mitigation/Optimisation: see EMP requirements Significance after Mitigation: low	Design phase: <ul style="list-style-type: none"> • Compensation payments to give careful consideration to property values of traditional houses • Relocation and compensation to give account for disruption of access to transport, schools, clinics, etc. • All relocations to be undertaken with landowner support. • A formal relocation plan should be drafted and implemented. Construction Phase: Ensure necessary services (water, electricity, access, river crossings, etc) as appropriate are installed prior to the relocation of the families.
4.2 Disruption of social networks and daily movement patterns <i>Also refer to: Location of Construction Camps Traffic safety</i>	The social routine and social networks may be disrupted during the construction process.	Phase of concern: Construction Intensity: High Overall significance rating: Moderate to low The presence of construction teams, construction camps, traffic etc could have a significant impact on local community and farming routines. Interaction between the communities and the construction teams can be influential in disrupting local customs and structure (eg Bluebank area). The occurrence of this is unpredictable, but needs careful management during construction. Mitigation/Optimisation: see EMP requirements. Significance after Mitigation: low	<ul style="list-style-type: none"> • careful planning of construction camps (see below) • liaison with land owners and community leaders as appropriate • strict adherence to speed limits. Disciplinary action for reckless and drunk driving • avoid construction vehicle movements during peak hours, start and end of school time (students on the roads), cultural and worship periods, etc. • limitation on construction worker movements after hours, and particularly week-ends. • monitor local security (prevention of theft, etc.)

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<p>4.3 Location of construction camps</p> <p><i>Also refer to: Disruption of social network Impact on water sources Impact on fauna and flora Poaching of fauna Poaching of flora Impact of construction camps</i></p>	<p>The siting of construction camps in terms of:</p> <ul style="list-style-type: none"> Social issues Ecological issues Camps should be above any 1:100 year flood line. This refers particularly to the placement of toilets. Waste disposal management 	<p>Phase of concern: Construction Intensity: Moderate to High Overall significance rating: Potentially High</p> <p>It is anticipated the construction camps for the Braamhoek-Venus 400kV line will be used, or that for the substation. It's location is typically decided by the contractor who will negotiate land with the landowner. However, its location may have impacts on a number of issues:</p> <ul style="list-style-type: none"> disruption of the local communities (see above) traffic disruption (see traffic safety) security of local communities (see above) increase in the sex trade and sexually related diseases (see below) poaching of fauna and flora (see below) waste disposal (see below) pollution from spillages (fuel) <p>However there are, as discussed in the sections above, potentially positive impacts such as:</p> <ul style="list-style-type: none"> the support of local services, shops, etc. purchase of local materials use of local skilled and unskilled labour (albeit a limited opportunity given the specialised nature of the construction.) 	<p>Design Phase: Use the same camp as for the Braamhoek-Venus 400kV line.</p> <p>Each contractor will have different methods of dealing with site security, staff management, vehicle management, etc. Additionally the site selection will also be dependent on local aspects such as material availability, services required, and specific design criteria for the line. However, it is recommended that Eskom Transmission Division needs to be intimately involved in the site selection process with the contractor.</p> <p>It is suggested that the EMP should be developed to include a plan for the site selection of the construction camp. The plan will guide the contractor in the site selection, and must therefore set key objectives based on the items listed adjacent. The contractor will then indicate in his tender how he will achieve these objectives. The drafting of this element of the EMP therefore needs to be done prior to the tender process – ie during the design phase.</p> <p>It is also suggested to follow the recommendation of the local community and place the camp some distance away from existing residential areas.</p>

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<p>4.3 Location of construction campscontinued</p>		<p>Both the potentially positive and negative impacts are affected by the location of the construction camp, particularly its proximity to populated and economically active areas.</p> <p>With poor planning of the location, and in combination with poor site management, the net impact of all the above issues could be highly significant and negative. With careful planning and management, the outcome could be highly significant and positive.</p> <p>Consultation with the local community has identified that, they would prefer the construction camp to be placed away from existing residential areas. In doing so, negative impacts will be minimised. If effectively managed this impact may be changed to a low but potentially positive impact.</p> <p>Mitigation/Optimisation: see EMP requirements Significance after Mitigation: Potentially Low (positive)</p>	<p>Construction phase</p> <ul style="list-style-type: none"> • Close liaison with landowners on this matter • Acknowledge local community requirements and keep the construction camp away from residential areas. • Emnambithi Municipality has offered to assist in the locating of construction camps and Eskom should facilitate this. • Implementation of the EMP • Eskom Transmission Division to be part of the site selection process and to approve the final decision.
<p>4.4 Gravesites <i>Also refer to: Consultation</i></p>	<p>Protection of gravesites, disinternment of graves</p>	<p>Phase of concern: Construction Intensity: Low Overall significance rating: Low</p> <p>There is the potential for gravesites to be found within the servitude. They will be identified during the archaeological survey during the design phase of the project. These may be left untouched in the majority of cases as the tower may be moved up or down the centre line of the servitude. However, the cultural acceptability of this will need to be explored with the owners of the grave, if they can be traced. Management guidelines will be set up by the archaeologist on completion of the site survey.</p> <p>Mitigation/Optimisation: see EMP requirements Significance after Mitigation: Low</p>	<p>Design Phase:</p> <ul style="list-style-type: none"> • Survey preferred route and identify all grave sites • Adjust tower locations accordingly • Consultation with landowners and community representatives • Map location of all gravesites along the route <p>Construction Phase:</p> <ul style="list-style-type: none"> • Contractor to be informed of all gravesites • Access roads, camps, storage areas, etc to avoid gravesites – minimum 100m clearance is suggested. • Any damage to gravesites must be reported to the Environmental Officer and the 'owner' immediately.

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<p>4.5 Traffic Safety</p> <p><i>Also refer to: Access to Properties Location of Construction Camps</i></p>	<p>Road traffic safety, particularly relating to construction traffic.</p>	<p>Phase of concern: Construction Intensity: Moderate to high Overall significance rating: Low</p> <p>General traffic loads in the area are seen to be low and resulting disruption and safety issues should be similarly low.</p> <p>General maintenance and operation traffic will be limited and intermittent and is not expected to have any significant impact on local traffic. On private land, landowners should be advised before the time.</p> <p>Construction traffic will be greater in volume and it will be experienced in phases at any one point. Most of the construction traffic will use the servitude access roads, but use of the local farm and district roads will be required. Construction traffic will need to abide by the associated speed limits and traffic by-laws and regulations for the area. Abnormal loads will need the necessary authorisations. Particular care in the populated rural areas will be required.</p> <p>On private land, agreements for access must be secured with landowners before work on site starts.</p> <p>Mitigation/Optimisation: see EMP requirements Significance after Mitigation: Low</p>	<ul style="list-style-type: none"> • Construction traffic to comply with national traffic laws and local by laws. • All vehicles to be in good working order, particularly brakes as there are many pedestrians and animals in the area. • All drivers to have full drivers licences • Traffic movements for heavy and abnormal vehicles must be planned and agreed with the Environmental Officer(s). • Construction traffic to be confined to normal working hours. However, particular care to be given at school opening and closing times. • Damage caused by construction traffic to be repaired immediately to prevent damage/accidents to road users. • Traffic access routes on private land should be mapped, marked on site, and agreed with the landowner.
<p>4.6 Immigration of construction workers</p>	<p><i>Refer to Construction camps</i></p>		

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5. LAND ISSUES:			
5.1 Compensation	<p>Details about compensation</p> <p>If land is being leased, who is compensation paid to?</p> <p>Will Eskom compensate for cattle or other property that are stolen by workers residing in the construction camps?</p>	<p>Eskom Transmission Division will engage with each landowner and discuss any new servitude or widening of a servitude. This is a private matter between the two parties.</p> <p>Eskom Transmission Division negotiates directly with the Landowner and compensation is paid to him/her.</p> <p>Eskom holds the contractor responsible for proven theft. Eskom's site supervisor and environmental control officer will monitor site activities, and any cases of theft may be reported to them.</p> <p>An additional concern is that the construction camps could be seen as an ideal opportunity for locals to commit crime under the guise of it being the construction workers. The private contractor should have security mechanisms in place to cater for any such potential problems.</p>	<ul style="list-style-type: none"> The EMP should outline Eskom Transmission Division and Contractor responsibilities in these instances
5.2 Land evaluations	<p>How is land evaluated?</p> <p>How can the independence of the evaluator be guaranteed if Eskom is paying his fee?</p>	<p>An independent evaluator is appointed by Eskom. If there is a disagreement, a second opinion can be sought.</p> <p>The landowner can nominate an independent evaluator. Also, evaluators subscribe to a code of conduct</p>	

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5.3 Property value reduction	Negative impact on property values	<p>Phase of concern: Operation Intensity: High (along entire route) Overall significance rating: Moderate (perceived)</p> <p>The valuation of the land takes into account current landuse and approved plans for development. Land values and their fluctuation are dependent on many variables and market conditions, many being area specific. However, it is understood that the negotiation process should address the issue of loss of value, and it is dependent on the landowner and Eskom Transmission Division to ensure this is covered in any agreed compensation.</p> <p>Mitigation/Optimisation: none anticipated Significance after Mitigation: Low (positive)</p>	

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6. FARMING RELATED ISSUES:			
<p>6.1 Access to properties</p> <p><i>Also refer to: Poaching of fauna and flora EMP and process</i></p>	<p>The creation of new or improved access to properties, for access to the line, brings potential associated issues that need to be considered.</p> <p>Minimising on the use of access gates.</p> <p>Gate security</p> <p>Maintenance of assess roads</p> <p>Stock theft, especially free roaming livestock not monitored by herdsman.</p>	<p>Phase of concern: Construction and Operation Intensity: Moderate to High Overall significance rating: Moderate to High</p> <p>Access to properties is established in agreement with landowners. The problems associated with this issue include:</p> <ul style="list-style-type: none"> • Unauthorised access to private land (leading to poaching, stock theft, damage, etc.) • Poor gate management • Access road degradation and maintenance • Uncertain responsibilities (between landowner and Eskom Transmission Division) <p>The resulting theft or damage can be significant and expensive.</p> <p>Mitigation/Optimisation: see EMP requirements Significance after Mitigation: Low</p>	<ul style="list-style-type: none"> • Farm gates need to remain closed unless agreed with the landowner. • Where possible, current Eskom gates should be used rather than establishing new gates • Security control of gates must be agreed with the landowner (dual locks, etc) • During construction, the landowner needs to know who will be gaining access to his/her property. Contact details need to be provided. • The local farming association and affected landowners should be informed of the timing of construction activities and/or movement through farm gates • Requirements for access control should be set out in the EMP. Special conditions set by the landowners in the land negotiation process will be incorporated in the EMP • Responsibilities during construction and operation must be clearly set out in the EMP (including contact details)

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<p>6.2 Access roads</p> <p><i>Also refer to: Access to properties Erosion Fire fighting Visual impact</i></p> <p>EMP</p>	<p>The physical creation and use of new roads, or increased use of existing roads will also have associated impacts</p>	<p>Phase of concern: Construction & Operation Intensity: High Overall significance rating: potentially High</p> <p>This issue shall be addressed in the agreements between Eskom Transmission Division and the affected landowners for the life of the Transmission line. Eskom Transmission Division undertakes to maintain roads and access routes used for maintenance and access of the line.</p> <p>Mitigation/Optimisation: see EMP requirements Significance after Mitigation: Moderate to low</p>	<p>Construction Phase:</p> <ul style="list-style-type: none"> • Use existing roads where possible • Establish maintenance responsibilities and inform landowner • All erosion and water damage on access roads to be rehabilitated before construction is complete. (it may be required that interim damage will also need to be repaired – to prevent stock losses, etc – this will need to be monitored by the Environmental Officer and landowner and the necessary repairs undertaken. • Access roads through wetland areas to be avoided • Eroded areas to be avoided unless proper erosion management is put in place <p>Operation Phase:</p> <ul style="list-style-type: none"> • Responsibilities for maintenance to be clearly set and recorded in the EMP. • The Eskom Transmission Division regional offices must keep a record of all visits to work or inspect the roads. • The Environmental Officer for the Operations Phase to undertake spot checks on access road conditions. • It is recommended that the Environmental Officer for the Operations Phase is an independent person with knowledge of the area, and preferably locally based. • It is recommended the national office representative carries out an annual audit of the regional office with particular attention to road and erosion maintenance.

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6.3 Loss of agricultural potential	Restrictions on landuse and activities will impact on the agricultural potential of the land.	<p>Phase of concern: Construction & operation Intensity: moderate Overall significance rating: Low to Moderate</p> <p>It is expected that all current landuses within the study are will be able to continue with the new line in place. In most cases the pylons can be moved to avoid certain activities. It is understood that any loss of economic potential had been addressed via the servitude negotiation process.</p> <p>Mitigation/Optimisation: none anticipated Significance after Mitigation: Low</p>	
6.4 Season for construction activities <i>Also refer to: Impact on flora and fauna Erosion Fire</i>	Certain activities (construction and operation) may have greater impacts on the environment and agricultural activities at certain times of the year.	<p>Phase of concern: Construction Intensity: High Overall significance rating: Moderate to high</p> <p>The critical seasons are seen to be the end of the dry season July – September (fire risk), and the wet season November – March (erosion and waterlogging)</p> <p>This is sometimes a complex issue as the limited timeframe available before start of operation would mean that there will be limited flexibility in the construction programme. However, good site management during construction should minimise much of the damage and effective rehabilitation will mitigate most of the remaining damage.</p> <p>Mitigation/Optimisation: see EMP requirements Significance after Mitigation: Moderate to low</p>	<p>On the assumption that construction will be continuous for at least 12 months it will be difficult to avoid the critical seasons. Hence the following are recommended for application via the EMP:</p> <ul style="list-style-type: none"> • Liaison with landowners to determine critical seasonal activities. • Training of construction teams regarding sensitive areas and critical seasons • Undertake rehabilitation as soon as possible • No fires on site • Construction team members are not to disturb fauna and flora, but particularly in the critical seasons • Avoid wetlands and water logged areas • Use track vehicles (earth moving, cranes, etc) in wet conditions to minimise surface damage. • Avoid eroded areas.

ISSUE	DETAILS	GENERAL ASSESSMENT AND EMP REQUIREMENTS	
		COMMENT	EMP Requirements
7. NATURAL ENVIRONMENT:			
7.1 Erosion <i>Also refer to: Access roads Auditing of EMPs</i>	Erosion on access roads may become a problem.	Phase of concern: Operation and construction Intensity: Moderate Overall significance rating: Moderate to low The soils in the area and the generally undulating terrain result in a relatively moderate risk of water or wind erosion. Steeper slopes in the middle of the route (near the De Beers Pass road) are at more risk of erosion. Erosion due to heavy traffic in wet or waterlogged conditions is a potential problem if the main access road is not well constructed (eg vehicles create new paths around waterlogged areas). Wetlands are particularly sensitive areas in this respect. Any draining of wetlands (eg created by vehicle tracks) could result in permanent damage to wetland habitat and result in the development of erosion gulleys. Upland and hillslope wetlands are particularly sensitive to vehicle track disturbances. Careful planning and management can avoid damage and construction monitoring will enable rapid rehabilitation to limit damage. Mitigation/Optimisation: see EMP requirements Significance after Mitigation: Low	Construction Phase: <ul style="list-style-type: none"> All access roads to be carefully planned and selected – where possible use existing access roads A soils specialist should be consulted during this exercise. All upland and hillslope wetlands near the route to be mapped. Rehabilitate all existing erosion areas along access routes used for construction and operation Avoid all wetland areas Crossing of all streams and drainage lines to be stabilised immediately. Rehabilitation to take place as soon as possible. Environmental Officer to inspect all roads with landowner before contractor leaves site. A revisit before the end of the 12 month contract period is also recommended so that the contractor can repair any unstable areas. Operation Phase <ul style="list-style-type: none"> An independent Environmental Officer should be employed to monitor the environmental status of the line. Agreements for maintenance between Eskom Transmission Division and the landowner must be clearly stated Due to the nature of this area, the new line and access roads should be inspected twice in the wet season. Any necessary repairs to be effected by the Eskom Transmission Division regional office immediately

ISSUE	DETAILS	GENERAL ASSESSMENT AND EMP REQUIREMENTS	
		COMMENT	EMP Requirements
<p>7.2 Impact on fauna</p> <p><i>Also refer to: Season for construction activities Erosion Fire Impacts on flora</i></p>	<p>Impacts on the natural fauna in the area</p>	<p>Phase of concern: Construction and Operation Intensity: Moderate to low Overall significance rating: potentially high</p> <p>A number of Red Data fauna may occur in the corridor of the proposed line. These include Dobson's golden mole, two frog species and a number of butterfly species. Particularly sensitive habitats include:</p> <ul style="list-style-type: none"> • rock outcrops • Watercourses • Wetland areas <p>It has been determined that the habitat of these Red Data species should not suffer permanent damage if a detailed survey of the route is carried out once a preliminary design of the line and tower structures has been done. These habitats may be avoided by careful placement of towers and access roads.</p> <p>Mitigation/Optimisation: see EMP requirements Significance after Mitigation: Low</p>	<p>Design Phase:</p> <ul style="list-style-type: none"> • Undertake a walk-through ecological survey during the detailed design phase and review placement of towers and access roads • See recommendations under 'Impacts on flora' <p>Construction Phase</p> <ul style="list-style-type: none"> • Avoid wetlands and watercourse crossing with access roads • Minimise cutting of bushveld areas inside the servitude. • Keep activities within the servitude during construction. • Spoil storage areas outside the footprint to be carefully selected with the assistance of an ecologist (see 'Impact on flora'). • No open fires on site • All workers to be aware of fire risk. Provide a 'smoking area' on site for better control. • Rehabilitation to begin as early as possible. • No cutting of trees or collecting of firewood. • Rehabilitate potential erosion sites immediately during wet season. <p>Operation Phase</p> <ul style="list-style-type: none"> • Monitor site rehabilitation <p>See also rehabilitation opportunities under 'Impact on flora'.</p>

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		COMMENT	EMP Requirements
<p>7.3 Impacts on Avifauna (birds)</p>	<p>Impacts on birds.</p> <p>Particular concern regarding impacts on birds attracted to the waste dump site.</p>	<p>Phase of concern: Operation Intensity: Moderate Overall significance rating: Potentially high</p> <p>The wider area supports a number of power line sensitive birds, Blue and Grey Crowned Cranes in particular. Running the new line immediately adjacent to an existing 400kV line will minimise the additional risk of collision with the lines, and by marking the line it may reduce the current risk of collision on the existing line.</p> <p>There is risk of habitat damage, particularly in the wetland areas along the route. Efforts have been made to minimise the crossing of wetlands, but care will still be required on those sections that are crossed.</p> <p>Furthermore, the design of the cross rope suspension towers does not provide for good perching sites, resulting in less likelihood of electrocution.</p> <p>Mitigation/Optimisation: Mark the lines at critical locations, but see EMP requirements. Significance after Mitigation: Moderate</p>	<p>Construction</p> <ul style="list-style-type: none"> • Monitor collisions • Contractor and his staff to be made aware of surrounding environment and prevented from raiding nests etc. • Construction work to be confined to servitude • Avoid all wetland areas • Install bird guards and bird flaps on the tower structures and lines where applicable (see Appendix 7). <p>Operation phase</p> <ul style="list-style-type: none"> • Establish monitoring programme.

ISSUE	DETAILS	GENERAL ASSESSMENT AND EMP REQUIREMENTS	
		COMMENT	EMP Requirements
<p>7.4 Impact on flora</p> <p><i>Also refer to: Season for construction activities Erosion Fire Impacts on fauna</i></p>	<p>General impacts on flora. (for impacts on wetlands, see below)</p>	<p>Phase of concern: Construction and operation Intensity: Moderate Overall significance rating: Moderate</p> <p>The route crosses Highland sourveld, tall grasslands and wetlands. There are stands of Moist tall grassveld that are still undisturbed by farming landuses, and in general agricultural practices and development have had limited impact on the natural state of the flora in the study area.</p> <p>The vegetation in the area is therefore seen to be low to moderately sensitive to development disturbance. Significant damage by scraping the surface material (eg for access roads) may permanently affect the grasslands as they are difficult to rehabilitate back to their original state, but these grasslands are fairly robust and can withstand temporary vehicle passage during construction.</p> <p>It is expected there will be limited need for the cutting of trees within the servitude as there are few along the route and most of the natural species are sufficiently low in height.</p> <p>There are a number of possible Red Data species that may exist along the route. These would need to be identified in a walk through survey during detailed design, but are understood to be relocatable if they cannot be avoided during construction.</p> <p>Mitigation/Optimisation: refer to EMP requirements Significance after Mitigation: Moderate to low</p>	<p>Design Phase:</p> <ul style="list-style-type: none"> • Ecologist must undertake a ‘walk through’ survey to assist in selection of tower placements. • Ecologist to assist in preparation of a rehabilitation plan for the site, including: <ul style="list-style-type: none"> ○ consideration of most suitable locations for temporary spoil storage, ○ protection of indigenous species for re-establishment and propagation within the site ○ removal of alien species ○ rehabilitation programme • A map is to be prepared showing the critical areas and any specific management interventions. <p>Construction Phase</p> <ul style="list-style-type: none"> • Ensure the bush clearing contractor is qualified to identify protected species and is able to remove the appropriate trees from the servitude site. • It is recommended that, where bush clearing is necessary, the bush be cleared to a width of 4m. Trees damaged by the pilot cable during stringing will be preferable to the loss of the entire tree. • As far as possible, protected species are to be left in the servitude unless they threaten the operation of the power line. • The construction programme should address programmed rehabilitation throughout the construction phase. This should be updated as the construction progresses. Rehabilitation should be implemented as soon as possible. • Wetland management – see below.

ISSUE	DETAILS	GENERAL ASSESSMENT AND EMP REQUIREMENTS	
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7.5 Impact on wetlands	Potential damage to wetlands in during construction and maintenance	<p>Phase of concern: Construction & Maintenance Intensity: Moderate Overall significance rating: Moderate to potentially high</p> <p>There are many wetland areas along the length of the proposed route. Wetlands are generally seen to be sensitive habitats that should be avoided. This is true if the water regime of the wetland is altered (eg by drainage). Vehicle tracks across a wetland can create preferential flow paths that may result in drainage and erosion is likely to follow. Hillslope and upland wetlands are the most sensitive to these disturbances, and there are many of these along the study route.</p> <p>Where the water regime is not affected, wetlands are robust environments and are among the quickest and easiest to rehabilitate. Placement of towers in wetlands will not necessarily affect the stability or function of the wetland if properly designed and constructed. There may be instances in this project where towers in wetlands may be required. Provided other environmental issues are adequately addressed, construction in a wetland may be done with minimal impact.</p> <p>Mitigation/Optimisation: refer to EMP requirements Significance after Mitigation: Moderate</p>	<p>Design phase:</p> <ul style="list-style-type: none"> • Review preliminary siting of towers. If possible move them outside of wetland areas. • Plan access roads to avoid wetlands, especially hillslope wetlands. Unavoidable wetland crossings must be engineered for stability. • Map wetlands along the route of the power line and all access roads. • Prepare a management plan for the wetlands along these routes for implementation in construction. <p>Construction:</p> <ul style="list-style-type: none"> • Monitor and update all wetlands in contact with the project. • Undertake rehabilitation as soon as damage occurs. Temporary measures to be undertaken if further impact is likely. • Review construction programme from a seasonal perspective. It is better to undertake work on wetlands during the drier winter periods.

ISSUE	DETAILS	GENERAL ASSESSMENT AND EMP REQUIREMENTS	
		COMMENT	EMP Requirements
7.6 Importation of alien vegetation	Importation of alien vegetation through building materials	<p>Phase of concern: Construction Intensity: Moderate Overall significance rating: Moderate to high</p> <p>This is seen to be an issue that can be minimised through careful management during the construction and rehabilitation process. This should therefore be addressed in the EMP. Enhancement may be achieved through the eradication of existing alien species with the area of ownership.</p> <p>Mitigation/Optimisation: refer to EMP requirements Significance after Mitigation: low</p>	<p>Construction Phase:</p> <ul style="list-style-type: none"> Contractor to be made aware of invader species in the area. Operation in these areas to include the eradication of the alien plants and treatment of stumps, etc. Importation of materials that may be contaminated by alien plant seed etc. is to be obtained from controlled sources. Storage/stock piling of materials should not be in alien plant areas for fear of disturbance and spreading. <p>Operation phase:</p> <ul style="list-style-type: none"> Monitor alien plant areas and control further spreading.
7.7 Impact of herbicides <i>Also refer to: Impact on wetlands</i>	Herbicides will be used during the construction and operation phases of the project to clear and potentially manage the line.	<p>Phase of concern: Operation Intensity: low Overall significance rating: Moderate</p> <p>Herbicides may be used to keep the servitude clear of weeds and vegetation growth as necessary for line operation, or for fire management as agreed with the landowner. Despite the potential for the impact on surrounding vegetation, it is recognised that Eskom Transmission Division has strict management and operational guidelines as to the use of herbicides on its sites.</p> <p>It is Eskom Transmission Division's policy to only use herbicides where necessary and only after site investigation. No specific herbicides are prescribed. The most appropriate will be selected. Monitoring is undertaken and impact on adjacent plant life and water resources are carefully investigated.</p> <p>Mitigation/Optimisation: see EMP requirements Significance after Mitigation: low</p>	<p>Operation phase:</p> <ul style="list-style-type: none"> As required by the Eskom guidelines for vegetation management in servitudes, and EMP should be drafted setting the specific maintenance activities required for the line. This should include a monitoring programme and responsibilities of the use of herbicides.

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<p>7.8 Impact of construction camps</p> <p><i>Also refer to: Location of construction camps</i></p>	<p>The construction camps may have an impact on the natural environment</p> <ul style="list-style-type: none"> should be at least a hundred meters away from any water source should be above the 1:100 year flood line. This refers particularly to the placement of toilets. 	<p>Phase of concern: Construction Intensity: High Overall significance rating: Potentially High</p> <p>The location of the camp is normally at the discretion of the contractor who will reach an arrangement with a landowner. This issue is discussed in more detail above in <i>Location of Construction Camps</i></p> <p>Impacts on the physical environment will be focussed on</p> <ul style="list-style-type: none"> drainage (stormwater) erosion wastewater (vehicle washing, etc.) sewage solid waste – wind blown and litter (rubble, plastic, steel, etc.) fire (spreading from camp fires) pollution – fuel spillages, broken cement bags, etc. <p>The impact of all the above can be highly significant dependent on location, but all can be managed and mitigated.</p> <p>Mitigation/Optimisation: see EMP requirements Significance after Mitigation: moderate to low</p>	<p>Design phase Eskom Transmission Division to be actively involved with the contractor in the selection of the construction camp. Refer to <i>Location of Construction Camp</i> for more detail. It is recommended that an ecologist and soils specialist be consulted at this stage.</p> <p>Construction phase</p> <ul style="list-style-type: none"> site to be located above the 1:100 year floodline and at least 100m away from a watercourse or borehole a formal stormwater drainage system to be put in place (can use infiltration methods) erosion protection and sediment traps to be placed at stormwater outfalls from the camp wastewater needs to be treated before discharge to any water source (settlement treatment may suffice dependent on initial water quality) Use of detergents, chemicals, etc to be avoided. Chemical toilets to be provided if waterborne services not available. A solid waste service must be put in place. Disposal of solid waste at licensed waste dumps only. Wind blown waste to be controlled Open camp fires to be avoided if in sensitive areas. Fuel storage and material storage areas to be secure from unauthorised access. Provision of spillage bunds or sumps for fuel spillage or leakage. Environment Officer to be appointed to monitor construction camp and to implement EMP. Contact details to be made available to general public. Camp site to be rehabilitated after completion of construction.

ISSUE	DETAILS	GENERAL ASSESSMENT AND EMP REQUIREMENTS	
		COMMENT	EMP Requirements
8. CULTURAL AND ARCHAEOLOGICAL SITES:			
8.1 Palae-ontological Sites	Impact on fossils.	No fossil sites have been identified in the study area	
8.2 Archaeology	Impact on late stone age and possible iron age sites.	<p>Phase of concern: Operation Intensity: moderate Overall significance rating: Moderate to low</p> <p>There are possible Late Stone Age and even Iron Age sites in the study area, though the latter are understood to be less likely. However, these are likely to be small in area and easily avoided by careful placement of the towers.</p> <p>Mitigation/Optimisation: see EMP requirements Significance after Mitigation: Low</p>	<p>Design Phase:</p> <ul style="list-style-type: none"> • Appoint archaeologist to carry out a survey of the preferred route, giving attention to proposed tower locations. • Report back to SAHRA/AMAFSA and agree way forward. • Shift tower locations where necessary • Update EMP requirements for the construction phase <p>Construction phase</p> <ul style="list-style-type: none"> • If any sites are found, undertake site excavations by an approved specialist at tower locations as required prior to excavation of the foundations. • Log results and send data back to SAHRA • Follow requests by specialist archaeologist.
8.3 Cultural, Historical and National Heritage Sites	De Beers Pass.	<p>Phase of concern: Construction Intensity: Low Overall significance rating: moderate</p> <p>The historic route off the De Beers pass will be affected in terms of the cultural landscape. However, given the proposed N3 De Beers Pass highway and tunnel, the significance of this impact is somewhat reduced.</p> <p>Mitigation/Optimisation: see EMP requirements Significance after Mitigation: Moderate</p>	<ul style="list-style-type: none"> • Review construction traffic access routes. • Mark sensitive sites. • Instruct construction traffic drivers on the sensitivities of these areas. • Monitor the sites and surrounding roads on a regular basis.

ISSUE	DETAILS	GENERAL ASSESSMENT AND EMP REQUIREMENTS	
		COMMENT	EMP Requirements
9. MANAGEMENT RECOMMENDATIONS:			
Environmental control officer	Appointment of environmental control officers (or Environmental Officer)	An environmental control officer should be appointed for the construction phase and a regional environmental manager should be appointed for operation. The roles, responsibilities and contact details should be set out in the EMP	Further to the points adjacent, it is recommended that the EMP is developed and implemented to cover the life of the project from environmental authorisation to decommissioning. Hence the EMP should cover: <ul style="list-style-type: none"> • Design • Construction • Operation • Decommissioning
	Liaison with Landowners	Landowners should have access to an environmental control officer with whom they can lodge grievances during construction.	The EMP is a working document, and need only address the current phase in any detail. It will therefore evolve and need to be reviewed at regular intervals.
	The environmental liaison officer must have a formal education.	As above.	The role of the Environmental Control Officer will form an important part of the development of the document, and different officers may be involved for each phase, or just over time. The contact details of the Environmental Control Officer needs to be published to all affected parties.

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		COMMENT	EMP Requirements
10. CONSTRUCTION CAMP ISSUES:			
10.1 Inmigration of construction workers <i>Also refer to: Compensation Location of construction camps, Fire Poaching of fauna and flora</i>	Inmigration of construction workers may lead to: <ul style="list-style-type: none"> Increased theft and poaching – fruit, stock, farming implements, irrigation pipes due to improved access to farms Increased social problems – drinking, violence, prostitution and HIV/Aids 	Phase of concern: Construction Intensity: High Overall significance rating: Potentially moderate to high The specialised skills required for the construction of a transmission line will mean that most of the construction workers will be brought in from outside the local area, and quite possibly outside the region. The social implications of this can be significant and is discussed under the issues mentioned above. An associated issue is the possibility of a sharp increase in the sex trade and the associated risk of sexually transmitted diseases, including HIV/AIDS. It is reported that prostitution is present in the area and control will need to be given to the involvement of construction workers in the local communities. There issue needs to be given particular attention in the selection of a camp site. It is recommended that community officials be consulted of the intended location of the camp as part of the construction planning process. Mitigation/Optimisation: see EMP requirements Significance after Mitigation: Moderate to low	<ul style="list-style-type: none"> Eskom Transmission Division to be involved in the planning of the location of the construction camp. Movements of construction workers to be carefully monitored, especially after hours and week-ends Information and education relating to sexually transmitted diseases to be made available to both construction workers and local community. This programme to be repeated during the construction programme. Medical support to be available (sensitivity to local customs to be upheld) Contractor and Environmental Officer to maintain contact with community representatives (eg regular/scheduled meetings) to monitor conditions.

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11. PROCESS:			
11.1 Consultation prior to construction <i>Also refer to: Management Recommendations EMPs</i>	Landowners should be consulted prior to construction.	The principle of landowner liaison is a common theme in Eskoms guideline documentation for the management of servitudes. Applying this principle to the construction phase is seen as an extension of this process.	It is recommended that the EMP should detail a communication plan that will be effected prior and during construction. The Environmental Control Officer should accept responsibility for giving effect to the communication strategy.
12. GENERAL			
12.1 Potential temporary and long-term disruption of infrastructure and services <i>Also refer to: Traffic safety Safety during construction</i>	Potential disruption of: <ul style="list-style-type: none"> Local services (water, electricity) The local irrigation canal network. Local traffic Waste dump site 	<p>Disruption of local services (water, electricity, etc.) due to the construction process is expected to be of low probability as most of the construction activity will be away from most services and will remain 'off-line' from the local electricity network until start of operation.</p> <p>Eskom should negotiate with the Dept of Transport in terms of registration of road servitudes and access points.</p> <p>Permission is required from the Dept of Transport to:</p> <ul style="list-style-type: none"> Access off existing provincial roads Cross existing provincial roads <p>For impacts on local traffic see 'Traffic Safety' above</p> <p>A Petronet pipeline passes through the study area, but is not seen to affect the construction approach or programme. However Petronet should be advised of the proposed route and construction programme.</p>	<p>Eskom Transmission Division to contact the Dept of Transport and local Irrigation Board to get the necessary permits for access.</p> <p>A wider services search will need to be undertaken by the design team.</p> <p>Any likely crossing of the canals in the area should be first reported to the Eskom Transmission ECO.</p> <p>Eskom Transmission designers to liaise with the local authority regarding the tower locations and line height at the dump site.</p>