2.7 Generic Mitigation Measures

2.7.1 Avifauna

CONSTRUCTION PHASE	ENVIRONMENTAL ISSUE	MITIGATION REQUIREMENTS
1. Access road selection and construction	Vehicles and machinery can impact on natural vegetation	Limit unnecessary driving and track 'creation' Make use of existing roads Do not drive machinery or vehicles through wetlands, pans, seep areas, streams or drainage lines No creation of roads along the servitude in pans, wetlands, seep areas, streams etc
2. Foundation, excavation and casting of concrete	Not applicable	
3. Delivery of steel for towers	See above road access	
4. Assembly of towers	Not applicable	
5. Erection of towers	Not applicable	
6. Cable stringing	As soon as cables are strung they pose a collision risk to birds	Anti collision marking devices must be installed as described below, as soon as cables are strung
7. Rehabilitation	Not applicable	
OPERATIONAL PHASE	**ENVIRONMENTAL ISSUE**	**MITIGATION REQUIREMENTS**
1. Maintenance of avifaunal mitigation aspects	Bird interactions with the power line may occur during the operational phase, such as collisions, nests, bird related faulting	Eskom's standard line monitoring will be sufficient to detect any problems and allow evaluation of the success of mitigation measures

2.7.2 Ecology

CONSTRUCTION PHASE	ENVIRONMENTAL ISSUE	MITIGATION REQUIREMENTS
1. Access road selection and construction	Erosion can become a problem especially during and after rain	No unnecessary off-road driving, keep to existing road infra-structure Pylons listed with additional access roads or access problems must be subjected to the following criteria: 1. Access to the pylon must be achieved from the nearest road access point 2. Construction sites/camps need a detailed ecological assessment prior to construction 3. Plant rescue operations are needed prior to access roads being constructed
2. Foundation, excavation and casting of concrete	Disruption of soil and seedbed	Topsoil should be removed and used for top soiling after construction has been completed
3. Delivery of steel for towers	See above road access	
4. Assembly of towers	Not applicable	
5. Erection of towers	Not applicable	
6. Cable stringing	Removal of woody components	Only woody species within the servitude should be removed, if woody species are declared invaders such as *Prosposis* species, they should be treated according to the guidelines within the Conservation of Agricultural Resources Act, No. 43 of 1983 Protected trees, whether national or provincial, e.g. *Acacia Karroo* to be cleared only in servitude area. No collection of fire wood
7. Rehabilitation	Disturbed soil potentially colonised by weeds and invaders	Use stored topsoil for top soiling and the introduction of local, indigenous species
8. Plant rescue operations	Rescue all geophytes, succulents and *Boscia albitrunca* trees that will be damaged or destroyed due to construction of pylons, roads or any other permanent or temporary infrastructure	Contact the South African Botanical Society or similar botanical organisation in order to plan and coordinate the successful rescue and relocation of the listed plants
OPERATIONAL PHASE	**ENVIRONMENTAL ISSUE**	**MITIGATION REQUIREMENTS**
1. Maintenance of ecological	Increase in weeds and invader species,	Towers and servitude should be monitored for the sprouting

CONSTRUCTION PHASE	ENVIRONMENTAL ISSUE	MITIGATION REQUIREMENTS
mitigation aspects	erosion of the maintenance road	and establishment of declared weeds and invaders, especially in areas that have been disturbed during the construction phase. The current procedure i.e. not driving the maintenance road (servitude) after rains, unless in case of emergency, should be continued
2. Invasive alien plant species	Introduction and spread of invasive alien plant species	Eradicate all declared alien invasive plant species through use of a specialist group, such as Working for Water

2.7.3 Heritage

CONSTRUCTION PHASE	ENVIRONMENTAL ISSUE	MITIGATION REQUIREMENTS
1. Access road selection and construction	Damage to artefact scatters on landscape (open sites)	Use existing infrastructure (tracks and farm roads) where possible New roads only to be constructed where unavoidable. These preferably to be surveyed In the majority of cases no mitigation will be required as artefact scatters are sparse and will not be damaged by machinery
2. Foundation, excavation and casting of concrete	Buried archaeological material may be accidentally unearthed during the course of construction	If this occurs, all construction activities are to be halted immediately and SAHRA (Cape Town) must be informed
3. Delivery of steel for towers	Damage to artefact scatters on landscape (open sites)	Use existing infrastructure (tracks and farm roads) where possible New roads only to be constructed where unavoidable. These preferably to be surveyed In the majority of cases no mitigation will be required as artefact scatters are sparse and will not be damaged by machinery
4. Assembly of towers	Construction teams on site collecting archaeological artefacts	The environmental officer should ensure that this does not occur
5. Erection of towers	Construction teams on site collecting archaeological artefacts	The environmental officer should ensure that this does not occur
6. Cable stringing	Damage to artefact scatters on landscape (open sites)	Use existing infrastructure (tracks and farm roads) where possible New roads only to be constructed where unavoidable. These preferably to be surveyed In the majority of cases no mitigation will be required as artefact scatters are sparse and will not be damaged by machinery
7. Rehabilitation	Surface scatters of artefacts will be moved	No mitigation required, as these are open sites and not

CONSTRUCTION PHASE	ENVIRONMENTAL ISSUE	MITIGATION REQUIREMENTS
		stratified and sealed. Damage to artefacts will be most unlikely

OPERATIONAL PHASE	ENVIRONMENTAL ISSUE	MITIGATION REQUIREMENTS
1. Maintenance of heritage/archaeological mitigation aspect	Looting of sites by maintenance teams	The stone enclosures as described in this report should be demarcated and access denied to maintenance teams No collection of artefacts on any site

2.7.4 Visual

CONSTRUCTION PHASE	ENVIRONMENTAL ISSUE	MITIGATION REQUIREMENTS
1. Access road selection and construction	Cut and fill section of access road on sloping landforms have long term scars that visually alter the natural landscape character The painting or marking of rocks to identify locality or other information will disfigure a natural setting The cutting down of bushes and trees to gain line of sight will damage the visual character of the particular site	Select alignments of road that minimise adjacent landform change such as cut and fill sections In cut sections strip the top layer of soil (minimum 150 mm), stockpile upslope in windrows or in separate areas. This soil will include rock and vegetation Shape cut and fill slopes to blend with adjacent landform by rounding off top cut and fill slopes, re-spreading soil and the placement of rocks packed or randomly placed to hold the replaced soil Manage the surface runoff water from the road by not allowing its concentration. Provide regular diversion berms across the road to deflect water to undisturbed vegetated areas. The frequency, form and size of the berms will depend on the slope and material available. Material from the excavation for the foundations should be used to create the berms where possible. The excavation of material alongside the road for the berm formation shall not be allowed No rocks or trees shall be painted. Marking shall be done by steel stakes with tags, if required No trees or shrubs shall be cut. Offset stations / points shall be set to get around the line of site obstacle
2. Foundation, excavation and casting of concrete	The creation of platforms for towers on sloping landforms create scars that visually alter the landscape character	Remove and stockpile adjacent rock and the top 150 mm of soil on the upslope side of the excavation Shape cut and fill slopes to blend with adjacent landform by rounding off the top edge of each Re-spread stockpiled soil and pack rock on slopes to protect surface against erosion. This shall occur in all instances at the tower foundations Remove from site all waste concrete. Surplus other material shall be used to create berms in the access road where required

CONSTRUCTION PHASE	ENVIRONMENTAL ISSUE	MITIGATION REQUIREMENTS
3. Delivery of steel for towers	Visual degradation of areas caused by clearing vegetation for laydown of tower components. Long term visual scarring will result as vegetation is slow to re-grow in that environment	Select suitable level area with few rocks and large bushes Cut vegetation if required. No clearing of vegetation or soil by grading with machinery shall be done
4. Assembly of towers	Visual degradation by establishing level area for tower assembly	Select suitable level area free of rock and large bushes. Cut vegetation (grass and Karoo shrubs), if required. No clearing of vegetation or soil by grading machinery shall be done
5. Erection of towers	Visual degradation caused by cranes and associated equipment churning up the vegetation and soil in the area	Select suitable level area free of rock and large bushes. Cut vegetation (grass and Karoo shrubs), if required. No clearing of vegetation or soil by grading machinery shall be done
6. Cable stringing	Visual degradation of areas where stringing machinery operated. The results in severely disturbed vegetation as traction of machines tear up grass and vegetation	Repair disturbed areas as soon as operation is complete. This is to be done by cable stringing crew. Refer to specific rehabilitation requirements. Detail in the rehabilitation section of the EMP
7. Rehabilitation	General disturbance of land surface will degrade by erosion. Permanent visual scarring will result	Rip all areas compacted by machinery, smooth off and integrate disturbed areas visually into surrounding landform using spoil rock and stockpiled top layer of soil Seed with approved indigenous species using commercial and harvested seed from the locality Fence the area for two years to ensure game and livestock does not have access to areas that are on slopes and on erodible soils. Agree the fencing aspect with the landowner prior to erection

OPERATIONAL PHASE	ENVIRONMENTAL ISSUE	MITIGATION REQUIREMENTS
1. Maintenance of visual intrusion mitigation aspects	To ensure that all visual intrusion aspects dealt with during the construction stage are and remain effective. A quarterly assessment is required All of the visual mitigation methods also	Inspect all rehabilitated areas on a quarterly basis Immediately repair areas that show failure Monitor rehabilitation progress and, where necessary, apply different techniques until stability of land is achieved

CONSTRUCTION PHASE	ENVIRONMENTAL ISSUE	MITIGATION REQUIREMENTS
	relate to landscape impact mitigation such as erosion control, water runoff management. This is because, if these fail, they will have negative visual implications	