Distribution environmental *screening document (DESD)*
Reticulation Powerlines and Ancillary Services

Ratified and accepted by
Environmental Practitioner
Environmental Specialist
Head of Engineering Survey .....
(one signature please)

Accepted by Land Owner/s/Users .....
I have seen the completed document and accept the
recommendations made

Assessor/s

Form completed by: EARL DANIELS..... Signature: .....

in consultation with: ..... Signature: .....

CAPACITY (e.g. land owner, specialist): .....

Instructions

1. Fill the report in as neatly and completely as possible.
2. Where the question / statement is not applicable mark N/A.
3. The form must be completed in consultation with someone who knows the area well and who can also predict if any future development is envisaged (e.g. a land owner, land user, specialist, etc.).
4. Indicate sensitive areas on a map and/or spanning plans.
5. When in doubt, consult the Environmental Practitioner in your region.

The purpose of this *DESD* is to:

1. Determine whether or not the project should be subject to R386 or R387, published in terms of the National Environmental Management Act No. 107 of 1998.
2. Identify and mitigate the negative impact of Eskom's activities to a minimum in line with both Legislation and Eskom's Environmental Policies.
3. This report is a guide to Route Selection, Construction and Field Services.

NOTE Complete the report before the survey!!!

This is not an office exercise.

Extra sheets of paper may be added and referenced if insufficient space has been provided.

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1 Project description

Project name/Survey .....

Area ..... Bethlehem .....

Project number NW-STM-1209-1876-00004..... File number .....

Rural scheme/
Feeder Lindley Munic-De-load Bruwerskraal 22kV Feeder from Burma Rural and refurbish.

Voltage: 22kV

Supply from .....
(Scheme name, pole numbers for tee-off)

Supply to .....
(Farm name, etc.)

2 Properties traversed

Farm name .....

Registration number and Division ..... Sub-division .....

Compilation number ..... Line length/Site area (m^2) .....

From new feeder bay at Lindley build 4km of hare conductor to pole BBK178-7

Farm name .....

Registration number and Division ..... Sub-division .....

Compilation number ..... Line length/Site area (m^2) .....

Build a new 2.5km interconnector from BBK116-45 to SRF471-143-50-74

3 Brief description of the surrounding area

Undulating plain covered with grass and grass flower. There were marshes, vleis and streams present at certain points with birds around. Cattle grazing and cultivated land is present on some of the farms where line is crossing. Highly eroded areas are also present. Buildings and farm houses were observed along the proposed route .....

Could the proposed project have an impact on or be constrained by any of the following environmental aspects?

Encircle the appropriate aspect, giving a description of the present state as well as an indication of the possible negative impact. **Note that mitigating measures for these impacts are to be included in the Environmental Management Programme.**

4 Physical environments

4.1 Water: streams rivers dams wetlands springs floodplains OTHER Marsh and Vlei……..

Present condition:
The line crosses the perennial Valsriver at farm Brandhoek erf 20 (See image1). There is a non-perennial stream on farm Klipdrift 580 (See image 2). The line also crosses the non-perennial stream on farm Yeomanrykop jes 579. The perennial Tweespruit is present on farm Zaaiplaatje 440. There is a non- perennial Herbstspruit and a marshy area on the farm Zaaiplaatje 440. The line crosses two non-perennial streams on farm Grootkraal 41 portion 1 and a vlei which has water on it.There is a non-perennial stream present on the farm Verval 427. Two non- perennial streams were observed on farm Bloemhoek 306 and farm Henniesrust 853 where the line will be crossing through. A Perennial stream was observed on farm Burma 1040 where the line will go through.

Potential impact (e.g. threat of pollution):
Impacting on the river and stream banks and natural flow of water can occur, which can trigger the need for a water use license if activities listed under section 21 of the National water act 36 of 1998 are carried out. The relevant activities include:

c) Impeding or diverting the flow of water in a watercourse
i) Altering the bed, banks, course or characteristics of a watercourse

Secondly construction of infrastructure covering 50 square metres or more that occurs within 32metres of a water course can trigger the need for a Basic Assessment according to the EIA regulations.

Comments/ mitigation measures

In order to avoid the possible need for a Basic assessment or Water use licence POLES SHOULD IDEALLY BE PLANTED ATLEAST100M AWAY FROM THE EDGE OF A WATERCOURSE OR OUT OF THE 100 YEAR FLOODLINE.

No vehicles or construction trucks should drive within a waterbody or stream. Long powerline spans with higher poles i.e. 11m H-pole structures must be used to cross rivers/streams or vleis. The natural flow of water should not be interrupted without a water use license. Vehicles and oil containing equipment should be serviced to avoid oil contamination of water during construction and maintenance of the powerline.

Water bodies that serve as drinking water sources for animals might be polluted and impacted on by construction vehicles and other human activities. The destruction of habitat of water animals and mammals living close to water or wet areas.

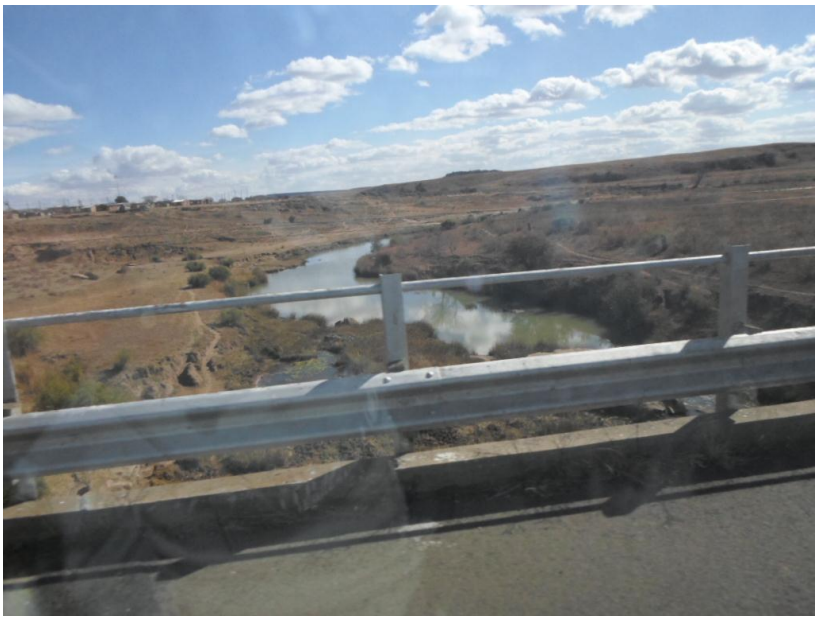

Image 1: The Valsriver crossing

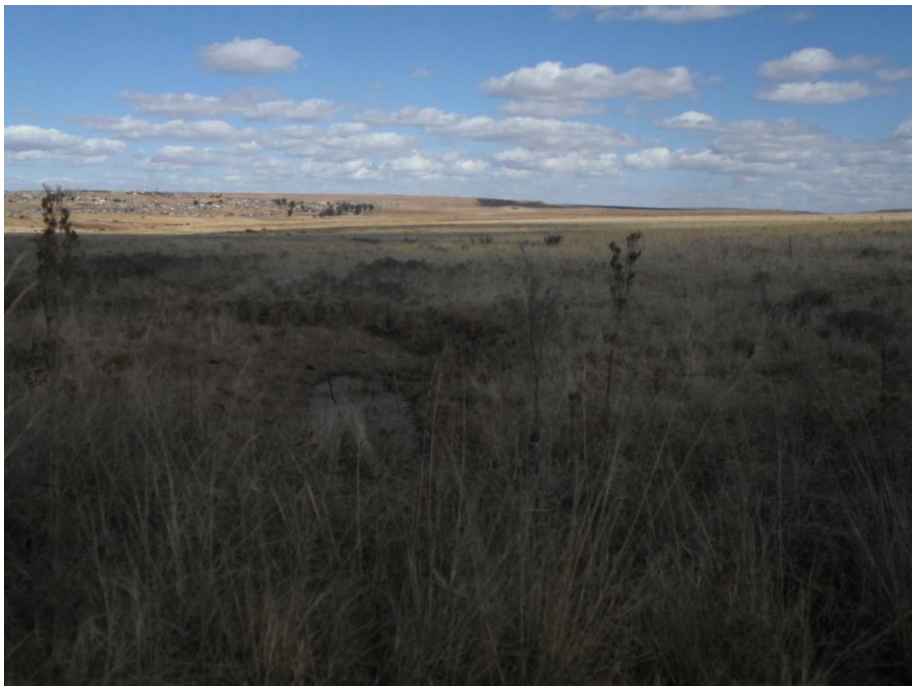

Image 2: Small spruit and wet area at farm Klipdrift 580

4.2 Soil: sandy rocky clayey OTHER Loam soil……

Present condition: The geology falls under the Karoo supergroup which consists of sediments, like sandstone, shale, siltstone and dolorite. The soil type that was observed is wet sandy and rich loam soil, especially where cultivated land were found. The soil is very prone to erosion (as can be seen by dongas in the area) where line goes through farm Brandhoek 20 next to the main tar road 707 (See image3). .....

.....

Potential impact (e.g. of erosion): The loss of highly organic top soil due to vegetation clearance for the planting of poles. Erosion might increase as more human activity occurs on the sand and loam soil. .....

Comments/ Mitigating measures: Vegetation clearance should be kept to a minimum. The movement of vehicles should be kept to a minimum in wet areas and the eroded area on farm Brandhoek 20 next to the main road 707.

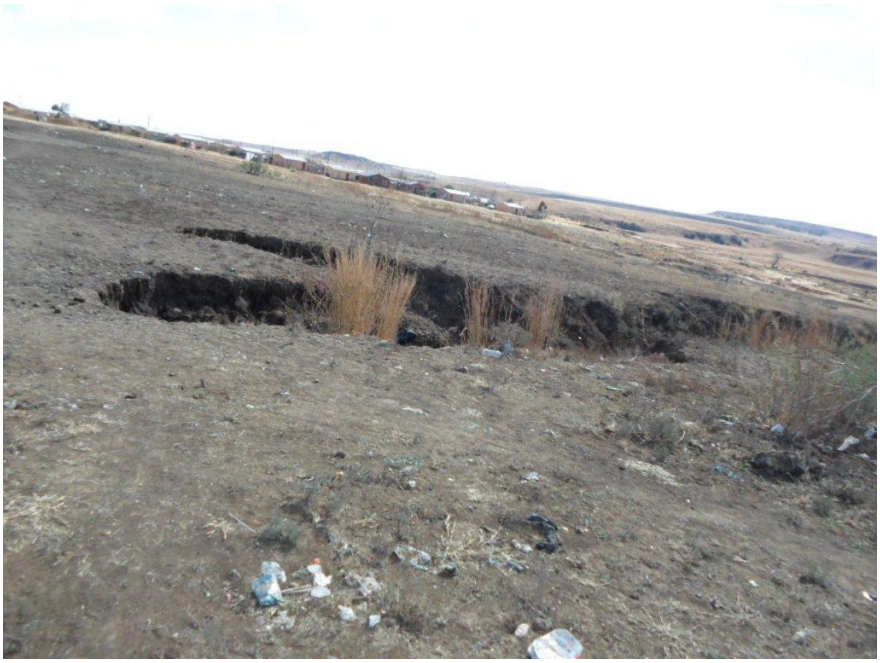

Image 3: Gulley erosion on farm Brandhoek 20

4.3Topography mountains ridges hills valleys ravines dongas OTHER Erosion gully ……

Present condition: The topography is deeply undulating with hills and ridges are present along the proposed route. Erosion gullies are present where the line goes through farm Brandhoek 20 close to the Valsrivier (See image 3). Small valleys were observed at rivers and steep slopes. Ant hills of termites present in most areas along the proposed powerline route.....

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Potential impact (e.g. of erosion): Potential soil erosion by means of water, wind and other means. The loss of top soil due to excavations for pole holes on slopes where the vegetation cover is little. Construction vehicles and activities de-compact the soil and increase its porosity and the infiltration of water. .....

Comments/mitigating measures: The current vegetation should be left in its original state. The creation of multiple access routes to the construction point should be avoided. Vehicles must drive at a moderate speed and avoid driving on steep slopes.

5 Natural environment

5.1 Flora: indigenous protected exotic OTHER ..……

Brief description and conservation status (e.g. rare, etc., mention trees/bush/grass) ...

The vegetation cover is mainly moist cold Highveld grassland with *Themeda thiandra* (red grass). Spikelets (grass flower) were also observed in the grasslands (See Image 4). Bluegum trees were also observed on farms Grootkraal 41 portion 12, 8, Gilead 40 and Burma 1040 (See image 5). A weeping willow tree (Salix babylonica) was observed on farm Zaaiplaatsje 440 on the bank of the Herbstspruit. There are also dense bushes on farm Gilead 40 along the stream where the line will be crossing the farm. There is cultivated land with mielie crops on farms Yeomanrykopjes 570, Sunnyside 581, Grootkraal 41 portion 13, 5, Verval 427. .....

Potential impact (e.g. permit applications): Destruction of natural habitat of mammals and birds that nest in the grass might occur. The acceleration of soil erosion due to the removal of vegetation. The removal of grazing land .

Comments/ mitigating measure: Minimal removal of vegetation. No fires should be made in the veld or on cultivated lands. .....

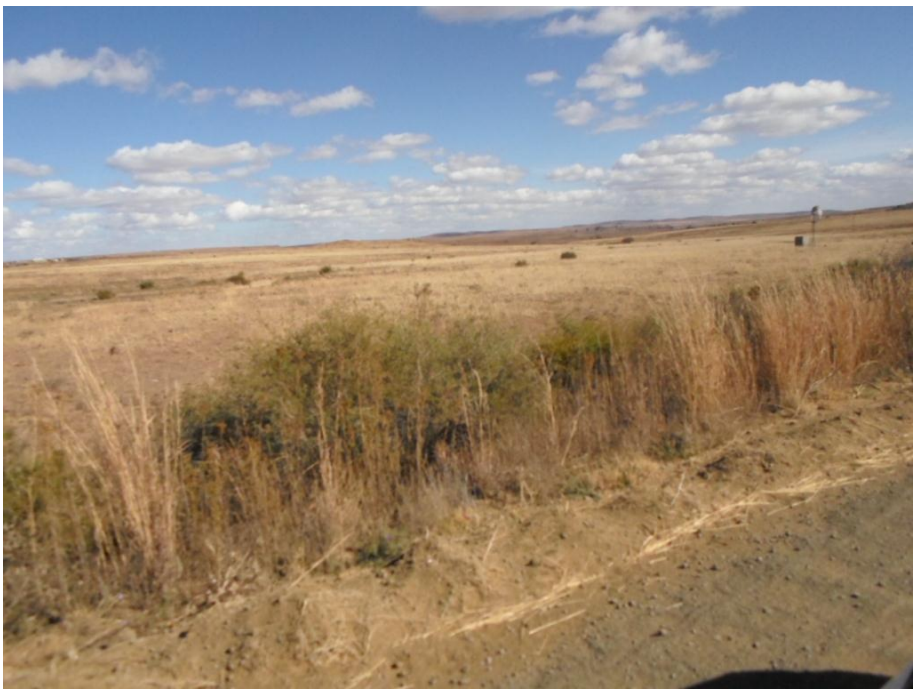

Image 4: Grassland with red grass and grassplants

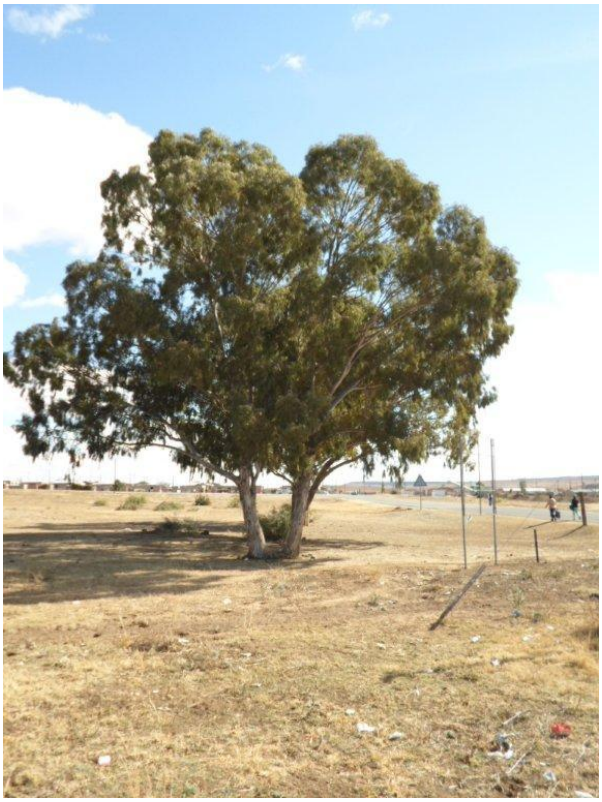

Image 5: Bluegum tree on Brandhoek 20 close to the township and next to the main road.

5.2 Fauna:

mammals birds OTHER …Cattle……..

Brief description and conservation status:
(E.g. rare, protected, etc., mention giraffe, elephants, eagles, vultures, etc., mention migratory paths)

Small weavers were seen on farm Klipdrift 580, a flock of Guinea fowls was observed on the grassland on farm Smaldeel 492 (See image 7).

Potential impact (e.g. threat of electrocution, collision, etc)
The destruction of natural bird habitat. Poaching of guinea fowls. Infrastructure pollution by streaming of birds. Loss of prey for birds as termites and anthills get impacted on during construction.

Comments/mitigating measures: Minimal vegetation clearance in this area should take place. No poaching of guinea fowls or any other bird species should take place. Bird flappers should be installed on the powerline where it crosses wet areas and/or where collision/electrocution prone birds were observed.

Image 6: Guinea fowls in the area

6 Social environments

6.1 Restricted areas: nature/game reserves | hiking trails | tourism routes | parks | recreational areas

residential-areas | green belts | sacred/holy grounds | OTHER …Nature conservancies……, Farmers union building…..

Brief description
The line passes by a township along the main road 707. There is a pedestrian subway that crosses underneath the main road 707 for pedestrians going to the Lindley town along the route of the line next to the township where the line is crossing the township. There are farm union buildings on farm Henniesrust 853 where the proposed line is crossing the farm.

Potential impact e.g. threat of encroachment, etc.: There is a risk of noise pollution and dust that can cause a disturbance of the public and township residents. Safety risk is posed to community members as construction and vehicle movement is going to occur in close vicinity.

Comments/ Mitigating measures: Barricading of construction site to avoid the injuring of public. Vehicles must drive at a moderate speed. Construction must take place during the day to avoid disturbance of residents at night.

6.2 Visual aesthetics: easily seen | hidden | partially……..

Brief description: The line will be partially seen because there are Telkom telephone lines and existing powerlines along the same route at certain portions. The line is mostly kept along the roads next to the fences of farms.

Potential impact: The impact is low because the proposed infrastructure will be placed mostly where existing infrastructure is next to the road thus it will contribute as a cumulative impact

Comments/ Mitigating measures: The usage of wooden poles. Line should be kept close to the fences as far as possible. Line should go parallel with other existing infrastructure where possible.

6.3 Sensitive areas: historical sites | archaeological | monuments | natural heritage sites
graves | landmarks | ruins | OTHER……..

Present condition:

NONE.....
.....

Potential impact: NONE.....
.....

Comments/mitigating a measure: NONE .....
.....
.....

7 Economic environments

7.1 Land use: crops | orchards | grazing | crop spraying
game farming | forestry areas | mining | OTHER …….

Brief description: There were grazing cattle on farm Klipdrift 580, Yeomanrykopjes 579, Smaldeel 492, Grootkraal 41, Gilead 40, Henniesrust 853 and Burma 1040. Mielie crops were observed on farm Grootkraal 4. There is also cultivated land for future planting on farms Bruwerskralen 18 portion 1, dense bushveld was observed on farm Gilead 40 where the proposed route crosses.

Potential impact: Destruction of grazing land for cattle and disturbance of cattle due to construction and human activity in the area. The destruction of cultivated land during construction activities on site might occur. Loss of other livestock through collision or electrocution.

Comments/ Mitigating measures: Minimal removal of grassland. Littering and land pollution must be prevented. Construction should take place when there are no crops in the field. Gates should be left as it was found and landowner must be informed when construction is going to take place so he/she can relocate his/her livestock. Livestock should not be disturbed and vehicles must drive at a moderate speed which is 60 on a gravel road according to Eskom rules.

7.1.1 Commercia: factories shops OTHER …….

Brief description: NONE .....

.....

.....

Potential impact: NONE .....

.....

.....

7.1.2 Infrastructure: roads railways communications power lines air fields

pipelines *sewage* OTHER …….

Brief description: The line mainly goes along existing roads. It is next to the main tar road from farm Brandhoek 20 portion 26, pass the Township, till farm Klipdrift 580. There are numerous small gravel roads and farm entrance tracks along the route of the line. The line makes road crossings at farm Yeomanrykopjes 579, Grootkraal 41, Zaaiplaatje 440, Gunstvlakte 439, Langland 364, Verval 427, and Gilead 40. The proposed line crosses a railway twice on farm Brandhoek 20. Telkom telephone lines goes parallel with the proposed line route. The proposed line crosses the existing Eskom 22kV powerlines at farm Yeomanrykopjes 579, Grootkraal 41, Zaaiplaatsje 440, Gilead 40 and a 765kV Transmission powerline at farm Dai 964. ……..

Potential impact: Encroachment on safety clearance of railway, road and telephone infrastructure. Damage to the new powerline's infrastructure might occur by falling poles or conductors. .....

.....

.....

Comments/mitigating measures:

Ensure clearance from other powerlines and communication lines. Research regarding servitudes and deeds is recommended before commencing on the project in order to comply with servitude conditions and landowners requests to promote healthy relationships with customers and stakeholders. Be alert for loose structures and hanging conductors. .....

7.1.3 Impact

What impact will this project have on elements 4 to 7?

1. Physical

No impact (0) Medium impact (2) High impact (4)

2. Natural

No impact (0) Medium impact (2) High impact (4)

3. Social

No impact (0) Medium impact (2) High impact (4)

Overall impact:

This section addresses the overall environmental impact of the project. The impacts as assessed in the above three spheres (physical, natural and social) need to be considered to determine the overall impact

0	2	0
No impact	Medium impact	High impact

If the overall impact is between 2 and 4, contact the Environmental Practitioner or specialist.

Alternatives

Have alternative routes been discussed with the relevant land owner/s or users?

Yes __X (as part of survey)_____
No _____

Detailed study

Is an environmental scoping required in terms of regulation 544?

Yes _____

No ____X_____

SAHRA

Should SAHRA be notified according the proposed construction?

Yes ____X_____
No _____

Annex A

Environmental Management Plan

1 General conditions

1.1 The Eskom project manager or co-ordinator shall be responsible for ensuring that the land owners have been informed before any work is carried out on site. Contractors shall find out if the land owners have been informed before moving onto site.

1.2 No fences, gates or locks shall be damaged to obtain access onto a line route. Arrangements shall be made in advance to obtain permission for access.

1.3 Use of private roads shall be arranged in advance. Any damage to private roads shall be repaired at the contractor's expense and to the satisfaction of the land owner. This shall be the responsibility of the project manager or co-ordinator.

1.4 Gates shall be left as they are found, i.e. closed gates shall be kept closed and open gates shall be left open. Gates to adjacent properties or onto public roads shall be closed at all times. Any Eskom gates installed on the line route shall be kept closed and locked except while stringing is taking place. Open gates shall be guarded to prevent animals straying and unauthorized persons and vehicles entering into adjacent camps or properties.

1.5 Permission shall be obtained from land owners before any water is used.

1.6 No fires shall be lit on private property. If fires are lit on Eskom's property or in the construction camp, provision shall be made that no accidental fires are started. No fire wood shall be collected in the veld.

1.7 If activities that can cause a fire are carried out, fire extinguishers shall be available on site and in the construction camp.

1.8 No property may be accessed after normal working hours except with the permission of the land owner. Privacy shall be respected at all times.

1.9 Eskom, Eskom's contractors and their employees shall at all times be courteous towards land owners, tenants and the local community.

1.10 Eskom, Eskom's contractors and their employees shall not cause damage to property, crops or animals. Activities that may cause conflict with land owners, tenants, the local work force or the local community shall be avoided. Should conflict arise it shall be immediately reported to the Eskom project manager or coordinator.

1.11 Vehicles shall be driven at a moderate speed on private roads and stay within the statutory speed limit on public roads.

1.12 All movement of vehicles shall take place on the established Eskom servitude road or on private roads as agreed in advance. Keep to existing tracks. No movement shall take place through the veld. Special care shall be taken to prevent excess damage during wet weather.

Annex A
(concluded)

1.13 If any vehicle should get stuck, the damage shall be repaired immediately so that no deep ruts remain.

1.14 Any damage to private property shall immediately be reported to Eskom and the owner. The damage shall be rectified immediately if possible and/or appropriate compensation shall be paid to the owner at the discretion of the project manager/co-ordinator in consultation with the property owner. A record of damages and rectifying action shall be kept. The land owner's satisfaction with the outcome of rectifying action shall be obtained in writing.

1.15 A proper system of waste management shall be instituted in the construction camp. This entails that sufficient waste bins are available on site and in the construction camp. The waste shall be dumped at an approved waste disposal site. No containers, scrap metal, conductor etc. shall be left on site. All scrap shall be removed and taken to an appropriate disposal site. No oil, diesel or other chemicals shall be spilled or discarded anywhere. If an accidental spill occurs, it shall be reported immediately and cleaned to the satisfaction of Eskom and the land owner. No waste shall be left in the veld or on the line route.

1.16 Washing and toilet facilities shall be provided on site and in the construction camp. The facilities shall comply with Eskom standards and shall have the approval of the land owner.

1.17 No human excrement shall be left in the veld. If no toilet facilities are available such waste shall be buried immediately.

1.18 Herbicides shall only be applied with Eskom's permission and in accordance with the Eskom Policy on Herbicides ESKPBAAD4.

1.19 Camp and office sites shall be dismantled and removed after completion of the construction phase of the project. The site shall be rehabilitated to as close as possible to its original condition to the satisfaction of the land owner which shall be in writing.

1.20 All excavations shall be enclosed to prevent animals or people from accidentally falling into excavations.

1.21 No trees shall be cut or removed without prior permission from the landowner. Permits shall be obtained for the cutting and removal protected trees (protected trees shall be dealt with in 2, Special conditions).

2 Special conditions

(Specific issues identified during the scoping as needing attention i.e. erosion berms, bird flappers, protected trees. etc.). Bird flappers will be need where line is crossing the river or streams on farms Verval 427, Pretoria 1038, Zaaiplaatsje 440. Structures not to be used anymore should be removed from site.

TYPICAL MITIGATION MEASURES

ENVIRONMENTAL CONCERNS	MITIGATION MEASURES
AGRICULTURE	
Loss of standing crop due to access road and tower work site.	- limit width of access and size of tower site. - avoidance of crop areas. - monetary compensation for crop loss. - time construction to avoid growing season.
Soil Compaction	- scheduling activities to times of the year when soils are least susceptible to compaction. - stop activities when ground conditions are poor. - use of equipment with low bearing capacity. - chisel ploughing.
Construction of new lines	- locate access roads along existing traffic routs.
Topsoil – subsoil mixing/soil rutting	- scheduling activities. - stop activity when ground conditions are poor. - use of equipment with low bearing capacity. - use of gravel roads. - addition of manures to offset fertility loss. - compensation for reduced soil productivity. - removal of spoil and/or bentonite from foundation operations. - Segregation of topsoil and subsoil.
Disturbance to farm operations	- maintain contact with landowner/tenant regarding preferences.
Loss of livestock	- employ noise control measures near sensitive livestock. - Construction of farm gates. - Securing farm gates. - Clean-up construction materials which could be ingested. - Compensation for lost, injured livestock.
SOCIAL IMPACTS	
Noise and Vibration	- limit this type of work to daylight hours. - observe protocol or applicable municipal by-laws. - use of appropriate methods where available.
Mud and Dust	- wetting down dry soils. - chemical control of dust. - cleaning roads to remove mud. - temporary planting of grasses.
Aesthetics	- screen with natural of planted vegetation restoration.

	- avoid linear access down the right-of-way. - addition of topsoil to gravel access roads. - hoarding construction sites. - installation of landscaping in advance of site completion.
Inconvenience	- select route and method of installation to suit landowners' conditions. - select timing of activity.
Heritage resources	- avoidance/isolation. - design measures to make facility less obtrusive. - screening. - alternate methods of equipment. - protection by use of enclosures, barrier fencing, covering. - salvage in conjunction with SAHRA. - relocation in conjunction with SAHRA.
Tourism and recreation resources	- design measures to make facility less obtrusive of disruptive. - screening and restoration. - minimise noise and dust. - safety precautions to protect the public. - scheduling to avoid peak use periods.
WATER QUALITY	
Sedimentation of streams due to erosion from the right-of way.	- minimise use of slopes adjacent to streams during soils testing, construction and maintenance. - maintain a cover crop. - retain buffers.
Stream bank erosion.	- mechanical erosion control. - retain shrubby stream bank vegetation and selectively cut or prune trees during line clearing/maintenance. - selective spraying of herbicides. - Mechanical erosion control.
Impedance of natural flow streams/others surface waters.	- use and maintenance of appropriate stream crossing device.
Ponding or channelization of surface waters due to rutting.	- timing activities to stable ground conditions. - use of gravel roads.
Contamination of surface or ground waters through spills or leaks of toxic substances.	- spill control material and procedures readily available. - site selection where possible.
Soil compaction/topsoil-subsoil mixing.	- avoidance of rutting by vehicles where possible. - construction timing. - use of gravel roads. - use of vehicles with low bearing pressures. - stop activities when ground conditions are poor.
Wind/water erosion.	- avoidance of areas with high erosion potential. - timing activities to the most stable ground

	conditions. - slope stabilisation. - mechanical erosion control. - vegetation erosion control. - recompaction of trenches. - avoid trenching parallel to the fall of a slope.
Contamination by petrochemicals.	- spill control material and procedures made readily available. - restoration methods investi-gated.