

PROCEDURE FOR ENVIRONMENTAL ASSESSMENT OF RETICULATION AND SUB-TRANSMISSION PROJECTS: ANNEX Q OF CAPITAL INVESTMENT IN THE DISTRIBUTION BUSINESS

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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, APHELELE TOMSANA Signature:
in consultation with: JOHAN GRIESEL S.T.O. (0824438426) Signature:
CAPACITY (e.g. land owner, specialist): ANDRIES BOTHA (Landowner farm Thornvale 147)
0827806667

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 R544, R545, R546 published in terms of the National Environmental Management Act No. 107 of 1998: EIA Regulations of June 2010.
2. To determine whether the project is subject to National water act 36 of 1998 section 21: water use licence.
3. Identify and firstly avoid or secondly mitigate the negative impact of Eskom's activities to a minimum in line with both Legislation and Eskom's Environmental Policies.
4. Guide Route Selection, Construction and maintenance of this power line.

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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Methodology

- ❖ *A GIS Desktop study and research on environmental elements in the Bothaville area was done.*
- ❖ *A site visit to the area under study has been conducted in which the proposed route of the line was followed in the veld.*
- ❖ *The portions of the proposed route where access was possible were screened physically during the site visit.*
- ❖ *Consultation with landowners regarding environmental elements on their property was made.*

1. Project description

Project name/Survey VM88-86-152-REFURBISHMENT
project.....
Area BOTHAVILLE
Project number BP (2013) File number
Rural scheme/
Feeder VM Feeder Voltage: 11Kv.....
Supply from... VM88-86-152... Total length.....7031.654m
(Scheme name, pole numbers for tee-off)
Supply to VM88-86-152-37-10-10.....
(Farm name, etc.)

2. Brief description of the surrounding area

There were grazing cattle and other livestock were seen on site. Birds associated with inland water bodies and grasslands were observed see section 5.2 below. There are also a few/a number of trees and dwarf shrubs present in the area. There is a game farming practice on the proposed route.

3. Physical environments

3.1 Water: streams rivers dams wetlands springs floodplains OTHER

Present condition:

The line between Pole number BW 510-73 and BW 510-73-6 is going to be dismantled at the **Vals River bank**. Pole number BW 510-73-8 is approximately 2m away from Vals River on the river bank. The proposed line is crossing a **non-perennial stream** (S 27° 26' 51.8"; E26°56'14.7") on Farm Thornvale 147 (See image 1). The proposed line is crossing a **dam** (S 27° 27' 18.2"; E26° 58'38.8") on farm Doordraai East 235 (See image 2). There is a **man-**

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made dam on the Eastern side of Transformer pole BW510-53-2 on farm Doorndraai East 235 (See image 3).

Potential impact (e.g. threat of pollution):

- ❖ Impacting on the banks of water bodies 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

A WATER USE LICENSE OR GENERAL AUTHORISATION APPLICATION WILL BE NEEDED IN THE EVENT WHEN THE BANKS AND/OR BEDS OF THE IDENTIFIED WATERCOURSES WILL BE ALTERED.

THESE APPLICATIONS ARE GOING TO DELAY THE PROJECT.

- ✓ The threat of water pollution and environmental degradation by the installation or decommissioning of pole mounted transformers, breakers and kiosk metres in close proximity to watercourses.
- ✓ Water pollution due to oil leaks from construction vehicles and oil filled equipment on site.
- ✓ The decommissioning of Pole Number BW 510-73-6 on the bank of Vals River might pose risk of water pollution and erosion.
- ✓ The construction of the dam crossing on farm Doorndraai East 235 poses a risk of erosion, water pollution and alteration of the banks.

Mitigation measures:

- ❖ In order to avoid the possible need for a Water use licence. **Poles should ideally be planted at least 100m away from the edge of a watercourse or out of the 1:100 year flood line.**
- ❖ No vehicles or construction trucks should drive within a water body or stream.
- ❖ Long powerline spans with higher pole structures must be used to cross the watercourses.
- ❖ 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.
- ❖ Ensure that Water bodies that serve as drinking water sources for animals are not polluted and impacted on by construction vehicles and other human activities.
- ❖ The soil shall be re-deposited in the same sequence as it was excavated in order to retain the top soil.
- ❖ Ensure minimal vegetation clearance within the 1:100 year flood line to minimize soil erosion.

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Image 1: non perennial stream on farm Thornvale 147



Image 2: Dam on farm Doordraai East 235



Image 3: Man-made dam wall on farm Doorndraai East 235

3.2 Soil: sandy rocky **clayey** **OTHER Loam soil**.....

Present condition:

Black and red strongly structured clayey soils with a high base status (See image 4). The redness of the soils indicates a high content of iron (Fe) in the soil and the blackness indicates that the soil is fertile due to high carbon content in it.

Potential impact (e.g. of erosion):

Highly fertile top soil could be lost due to vegetation clearance and earthworks for site preparation and the planting of poles. The pollution of land and soil may occur from oil leaks by construction vehicles and oil filled equipment. The contravention of **Section 26, 27 of the NEMA: Waste Act 59 of 2008** might occur due to littering.

Comments/ Mitigating measures:

- ❖ The movement of vehicles should be kept to a minimum in and around wet areas, cultivated land and **on slopes**.
- ❖ Minimal vegetation removal should take place during site clearance for construction.
- ❖ Soil should be re-deposited in the same order as it is excavated in order to retain the fertile top soil.

- ❖ Soil stockpiles should be kept in a safe place for re-use and re-filling of holes. These stockpiles should be secured by packing or covering them with bricks or any other method that would prevent wind or water erosion.
- ❖ The vehicles must use existing access road to the proposed route and adhere to speed limit (60km/h) on the gravel roads and farm tracks.
- ❖ Vehicles and equipment to be used on site should be serviced regularly to avoid oil leaks.
- ❖ No littering should take place and all waste should be cleaned up and removed from site during site rehabilitation.



Image 4: Red strongly structured soils

3.3.Topography mountains ridges hills valleys ravines dongas OTHER

Present condition:

The plain is **gently undulating** along the route of the line. There is a **valley** (S27° 27' 18.2"; E26° 55' 38.8") at the dam on farm Doorndraai East 235. The proposed line is crossing a **donga** (S27° 27' 10.1"; E 26° 55' 36.6") on the North Western side of the dam on farm Doorndraai East 235 (See image 5).

Potential impact (e.g. of erosion):

Potential soil erosion by means of water, wind and other means may take place in the area. The **loss of top soil** due to excavations for pole holes on slopes where the vegetation cover is little. Construction vehicles and activities **de-compacts the soil and increase its porosity** and the infiltration of water which will ultimately decrease the run-off of water to other parts of the area. The high clay volume in soil might cause **the poles to stand skew over time**. **Access roads** to the proposed line are likely to be eroded as traffic in the area is going to increase.

Comments/mitigating measures:

- ❖ The current vegetation should be left as far as possible in its original state.
- ❖ The creation of multiple access routes to the construction point should be avoided.
- ❖ Vehicles must be driven at a moderate speed (max 60km/h) and steep slopes should be avoided as far as possible.
- ❖ Soil stockpiles should be kept in a place where it cannot be eroded away in order to preserve top soil. These stockpiles should be secured by packing or covering them with bricks or any other method that would prevent wind or water erosion.



Image 5: Dongas on the North Western side of the dam on farm Doorndraai East 235

4. Natural environment

4.1 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) (See image 6). Spikelets (**grass flower**) were also observed in the **grasslands**. **Bluegum and poplar trees** were also observed on farms (Image 7). There are **Pine trees** on the farm. **Dwarf shrubs**, Karoo bushes and Karee trees were observed in the area. There is a thorn bushveld present dominated by **sweet thorn trees (Acacia Karoo)** (See image 8). **Melia azedarach (China-berry)** trees are found in the veld and in farmhouse gardens. There is a 'greenbelt' (dense bushes and trees) which is part of the vegetation and ecosystem next

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to the Vals River where the proposed line is going to stand. **Weeping willows (Salix babylonica)** are present on the banks of the Vals River (See image 9)

Potential impact (e.g. permit applications)

Vegetation disturbance due to vehicle movement and other associated construction activities, which get conducted on grass plains and around water bodies, might **destroy habitat for mammals and birds**. The acceleration of **soil erosion** might occur due to the removal of vegetation. Grazing land for cattle might be disturbed by construction activities.

Comments/ mitigating measure:

- ❖ Minimal removal of vegetation should take place.
- ❖ No fires should be started in the veld or on cultivated lands.
- ❖ Use the existing roads and tracks and drive with the speed limit of 60km/h on gravel roads according to Eskom rules.
- ❖ Vehicles and equipment must be regularly serviced to avoid chemical fluid leaks in the veld.
- ❖ Refrain from littering at all times

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Image 6: Themeda tiandra in grassland



Image 7: Bluegum and Poplar trees along the route on farm Doordraai East 235

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Image 8: Sweet thorn trees (*Acacia karoo*)



Image 9: Weeping willow trees next to the Vals River

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4.2 Fauna: **mammals** **birds** OTHER

Brief description and conservation status:

(E.g. rare, protected, etc., mention giraffe, elephants, eagles, vultures, etc., mention migratory paths)

Guinea fowls were observed in the grassland. **Grazing cattle** were observed on farm Poortje 604 and Baden 1216 (See image 6). The **long-tailed widow bird** was spotted along the route of the line. Ground burrowing mammals i.e. **ground squirrels** are present in the area. There is a wildcamp with **blesbok, zebras, springbok, impala** on farm Doordraai East 235 and Thornvale 147(See image 10). The birds found in the area is **spur-winged goose** close to the river and in the dam on farm Doordraai East 235, **fish eagle, Cattle egrets, owls, korhaan, lanner valcons**. There are also **secretary birds** on farm Thornvale 147.

Potential impact (e.g. threat of electrocution, collision, etc)

The **destruction of natural bird and small mammal habitat** might occur during construction of the line. **Poaching** of guinea fowls and other animals might take place. Birds might **pollute the conductors and structures** through streaming and cause faults on the system. **Loss of prey for birds** as termites and anthills get impacted on during construction in dense grassy areas. **Birds might get electrocuted** on power lines. Bigger water birds in the area might collide with the powerline. **Vehicles accidents** involving livestock on farm tracks and gravel roads might occur during construction and maintenance. **The loss of livestock** due to farm gates being left open by Eskom or contractors might take place. Livestock and other animals might be disturbed by construction activities or **veld fires** caused by Eskom or contractor staff.

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 and bird flight diverters should be installed on the powerline from pole number VM88-86-152-37-10-4 to pole VM88-86-152-37-10-10 And from pole number VM88-86-152-158 to VM88-86-152-42**
- ❖ The bird friendly structures must be used on this refurbishment project as per the Eskom's Biodiversity Standard (32-815).
- ❖ Landowners must be informed of when construction is going to commence in order for them to relocate their livestock to another camp.
- ❖ Property gates should be opened and closed according to the landowner's request.
- ❖ No animal on the property should be disturbed.
- ❖ No fires should be started on any Eskom construction site.
- ❖ Vehicles should be driven at a speed limit of 60km/h on a gravel road according to Eskom rules.



Image 10: Wild camp with wild animals inside on farm Dorndraai East 235

5. Social environments

5.1 Restricted areas:	nature/game reserves	hiking trails	tourism routes	parks	recreational areas
residential-areas	green belts	sacred/holy grounds	OTHER ...Farm houses, Farm worker houses.		

Brief description

The proposed line in going to stand in close proximity to **farm houses and farm workers houses** on farms Thornvale 147 and Doorndraai East 235 (See image 11, 12). There is also a **footpath** along the Vals River that is used as a **hiking trail** (See image 13).

Potential impact e.g. threat of encroachment, etc.:

There is a risk of **noise pollution** and **dust** that can cause a disturbance of the household members. **Vehicle accidents** involving household members, farm workers and the public in the area might take place. The encroachment on safety clearances of the buildings present on the farms.

Comments/ Mitigating measures:

- ❖ Barricading of construction site to avoid the injuring of public.
- ❖ Vehicles must drive at a moderate speed.

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- ❖ Construction must take place during the day to avoid disturbance of residents at night.
 - ❖ The members of public should not be engaged with by contractor workers.
 - ❖ The landowner should be informed of when construction is going to start.
 - ❖ Gates should be opened and closed according to the landowner's request.
 - ❖ Do not touch or move any farm equipment or buildings without consultation with the landowner.
 - ❖ Keep the correct safety clearances from buildings



Image 11: Farm house on farm Thornvale 147

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Image 12: Farm workers houses



Image 13: Footpath next to Vals River

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5.2 Visual aesthetics: easily seen hidden partially.....

Brief description:

The line will be easily seen because there are no existing powerline and/or communication infrastructure along most parts of the proposed powerline route.

Potential impact:

The biggest part of the powerline is proposed next to the fence along the gravel road between farms Thornvale 147 and Doorndraai West 154, where there is no existing infrastructure. It will have a visual impact on public members and wildcamp visitors who are travelling on the road. The proposed line will have a visual impact at the dam and Vals River bank on farm Doorndraai East 235 as the line is crossing over the dam and standing along the Valsriver next to the hiking trail.

Comments/ Mitigating measures:

- ❖ Make use of wooden poles on the project.
- ❖ Line should be kept close to the fences as far as possible.
- ❖ Line should go parallel with other existing infrastructure where possible.
- ❖ Reduce clearance of vegetation along the proposed route.
- ❖ Make use of non-reflective materials where possible.
- ❖ Camouflage the poles into the vegetation along the Vals River where applicable.

5.3 Sensitive areas: historical sites archaeological monuments natural heritage sites
 graves landmarks ruins OTHER... Provincial heritage site.....

Present condition:

There is a **Farm house** which was built in 1905 and a **Cooler** (S27° 26' 58.6"; E26° 56' 20.5") built before Anglo Boer War on farm Thornvale 147 that is declared as a provincial heritage site in the Free State (See image 14, 15). These heritage resources are occupied by the farm workers. The cooler are used for storage of household goods.

Potential impact:

Disturbance of heritage resources during dismantling associated activities on FarmThornvale 147. Legal contravention of the **National Heritage Resources Act 25 of 1999 section 3(2)(a)(National real estate)** might occur if the farm house and cooler are to be damaged or altered on.

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Comments/ mitigating a measure:

- ❖ Ensure that dismantling of powerline does not destruct the structures of heritage important.
- ❖ Do not disturb the heritage resources during construction activities.



Image 14: Provincial heritage site on farm Thornvale 147 (Farm house)



Image 15: Provincial heritage site on farm Thornvale 147 (Cooler)

6. Economic environments

6.1 Land use:	crops	orchards	grazing	crop spraying
	game farming	forestry areas	mining	OTHER

Brief description:

There is grazing land present along the proposed line (See image 16). Game farming practices takes place on farm Thornvale 147 and Doordraai East 235 (See image 17)

Potential impact:

Grazing land for cattle and wild animals might be impacted on negatively by construction activities. The disturbance and/or pouching of wild animals on the game farms might take place. The loss of land use cover due to development processes.

Comments/ Mitigating measures:

- ❖ Minimal removal of grassland should take place.
- ❖ Littering and land pollution must be prevented at all times.
- ❖ 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 60km/h on gravel roads according to Eskom rules.

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Image 16: Grazing land for cattle

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Image 17: Game farming on farm Thornvale 147 and Doorndraai East 235

6.1.1 Commercial: factories shops OTHER

Brief description: NONE.....

Potential impact: NONE.....

6.1.2 Infrastructure: roads railways communications power lines air fields
 pipelines sewage OTHER

Brief description:

There are portions of the proposed line that crosses existing **gravel roads on farm Doorndraai East 235, Thornvale 147** (See image 18). There are numerous **farm tracks** along the route of the line. There is existing **powerlines** on farm Doorndraai 730 portion 2, Thornvale 147 and Doorndraai East 235 which is going to be dismantled (See image 8). A Telkom **communications line** on farm Doorndraai East 235 is present in close proximity to the proposed powerline. The proposed line is crossing the **R 727 secondary road** at farm Rustpan 1147. There are **water pipelines and a manhole** (S27°26'56.1"; E26°56'22.0") on farm Thornvale in close proximity of the proposed transformer pole (See image 19).

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Potential impact:

The **encroachment on safety clearances** of roads and communication line servitudes might occur. The excessive driving might accelerate **erosion on the gravel roads**. The earthworks during construction might damage/disturb the drainage system at the manhole and the pipelines.

Comments/mitigating measures:

- ❖ Ensure correct clearances clearance from communication- and pipe lines are adhered to.
- ❖ Comply with way leave conditions and landowners requests to promote healthy relationships with customers and stakeholders.
- ❖ Be alert for loose structures, hanging conductors and conductors lying in the veld because it might be live.
- ❖ Keep to safety clearances of roads, manholes, communication lines and pipelines.



Image 18: Gravel road along the proposed route of the line in farm Doorndraai East
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Image 19: Pipeline on farm Thornvale 147 in close proximity of proposed transformer pole number VM88-86-152-44

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7.1 Impact criteria

The criterion below was used to assess the significance of the impacts. The significance ratings in relation to characteristics of powerline rebuilding activities are determined. These ratings are defined in terms of the magnitude, Likelihood, Business risks, Regulatory scrutiny and Stakeholder interest.

LIKELIHOOD	MAGNITUDE
<p>High (3):</p> <p>Routine or ongoing activity or impact. Is known to have occurred on routine basis in the past. Impacts associated with the aspects are likely to emerge soon. Impacts are known.</p> <p>Medium (2):</p> <p>Periodically occurs once or twice a year. Impacts that are likely to occur within one year.</p> <p>Low (1):</p> <p>Very infrequent, every several years. Impacts associated with the aspects are several years away</p>	<p>High (3):</p> <p>Aspect has a recognized global environmental impact. Widespread or permanent ecological damage locally. Remediation would take longer than one year. Could result in a major public health hazard.</p> <p>Medium (2):</p> <p>Aspect could result in a major uncontained or sustained environmental release impacting on a regional or local environment only. Ecological damage can be remedied within one year. Health hazard to humans in the immediate vicinity, but not resulting in .critical or fatal.</p> <p>Low (1):</p> <p>Little or no ecological effect and no measurable impact on human health.</p>

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BUSINESS RISK/ BENEFITS	REGULATORY SCRUTINY	STAKEHOLDER INTEREST
<p>High (3):</p> <p>Aspect poses significant risk. Early response necessary. Industrial initiatives underway/developed. May have major impact on competitive position. May have a significant impact on value of Eskom's assets.</p> <p>Medium (2):</p> <p>Aspect is likely to pose risk.</p> <p>Low (1):</p> <p>Aspect does not pose significant risk. No need for early response. No industry initiative associated with aspect. Does not threaten competitive position. Does not affect values of Eskom assets</p>	<p>High (3):</p> <p>Regulated by Legislation. High potential for regulatory action or limitations to operate (subject to regulatory inspections & historical compliance problems)</p> <p>Medium (2):</p> <p>Regulated & Legislated, however not a priority in terms of enforcement</p> <p>Low (1):</p> <p>Relatively unimportant, Little or no potential for regulatory action (e.g. not regulated; not a target of enforcement).</p>	<p>High (3):</p> <p>Very important to public and customers. Aspect has the potential to cause damage to corporate reputation. Ongoing dialogue has begun; negative perception, possibility for third party lawsuits. Customers expect superior performance by Eskom in managing this aspect.</p> <p>Medium (2):</p> <p>Important to the public and customers. The aspect is likely to cause damage to corporate reputation.</p> <p>Low (1):</p> <p>Relatively unimportant; the public is unaware or is aware but it is not an issue. No threat to corporate image. It is not an issue with customers.</p>

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SIGNIFICANCE OF THE IMPACTS:

The significance of the unmanaged and managed impacts has been assessed through consideration of the likelihood of the impact occurring, the magnitude over which the impact will be experienced, and the level of business risk, regulatory scrutiny and stakeholders interest the impact will have on the environment.

The formula for calculating the significant environmental impacts score is:

(Likelihood X Magnitude)

+ Regulatory scrutiny

+ Stakeholder interest

+ Business risk/benefit

The significant rating, as determined by the Operating unit, is as follows:

- 0 – 5: Low
- 6 -10: Medium
- 11 – 18: High

Impacts with a value greater than or equal to 11 will be considered as significant.

7.1 Impact before mitigation

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

1. Physical

Low impact (0-5) Medium impact (6-8) High impact (11-18)

2. Natural

Low impact (0-5) Medium impact (6-8) High impact (11-18)

3. Social

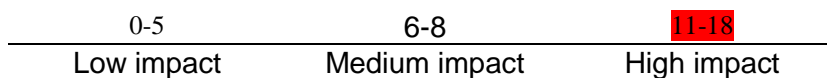
Low impact (0-5) Medium impact (6-8) High impact (11-18)

4. Economic

Low impact (0-5) Medium impact (6-8) High Impact (11-18)

Overall impact before mitigation:

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



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7.2 Impact after mitigation

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

5. Physical

Low impact (0-5) Medium impact (6-8) High impact (11-18)

6. Natural

Low impact (0-5) Medium impact (6-8) High impact (11-18)

7. Social

Low impact (0-5) Medium impact (6-8) High impact (11-18)

8. Economic

Low impact (0-5) Medium impact (6-8) High Impact (11-18)

Overall impact after mitigation:

0-5 6-8 11-18
Low impact Medium impact High impact

IF THE OVERALL IMPACT IS BETWEEN 11 AND 18, CONTACT THE ENVIRONMENTAL PRACTITIONER OR SPECIALIST.

Alternatives

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

Yes (as part of survey) _____

No _____

Detailed study

Is an environmental scoping required in terms of regulation 544 or 546?

Yes _____

No _____

SAHRA

Should SAHRA be notified according the proposed construction?

Yes _____

No _____

Annex A

Environmental Management Plan

1 General conditions

- 1.1. The Eskom project manager or coordinator 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.

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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.

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).

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2 Special recommendations

(Specific issues identified during the scoping as needing attention i.e. erosion berms, bird flappers, protected trees. etc.).

- ❖ **BIRD FLAPPERS AND BIRD FLIGHT DIVERTERS SHALL BE INSTALLED ON THE POWERLINE FROM POLE NUMBER VM88-86-152-37-10-4 TO POLE VM88-86-152-37-10-10 AND FROM POLE NUMBER VM88-86-152-158 TO VM88-86-152-42**

- ❖ **THE FARM HOUSE AND COOLER ON FARM THORNTVALE 147 SHALL NOT BE DISTURBED OR DAMAGED IN ANY WAY POSSIBLE.**

- ❖ **BARRICADE THE CONSTRUCTION SITE EFFECTIVELY DURING CONSTRUCTION AND DECOMMISSIONING OF LINES IN CLOSE PROXIMITY OF THE FARM HOUSE AND COOLER (S27° 26' 58.6"; E26° 56' 20.5") WHICH ARE ON FARM THORNTVALE 147.**

- ❖ **KEEP THE POLES MORE THAN 32 METERS AWAY FROM THE EDGE OF WATERCOURSES ALONG THE PROPOSED ROUTE OF THE LINE.**

TYPICAL MITIGATION MEASURES

ENVIRONMENTAL CONCERNS	MITIGATION MEASURES
AGRICULTURE	
Loss of standing crop due to access road and tower work site.	<ul style="list-style-type: none"> - 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	<ul style="list-style-type: none"> - 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	<ul style="list-style-type: none"> - locate access roads along existing traffic routs.
Topsoil – subsoil mixing/soil rutting	<ul style="list-style-type: none"> - 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	<ul style="list-style-type: none"> - maintain contact with landowner/tenant regarding preferences.
Loss of livestock	<ul style="list-style-type: none"> - 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	<ul style="list-style-type: none"> - limit this type of work to daylight hours. - observe protocol or applicable municipal by-laws. - use of appropriate methods where available.
Mud and Dust	<ul style="list-style-type: none"> - wetting down dry soils. - chemical control of dust. - cleaning roads to remove mud. - temporary planting of grasses.
Aesthetics	<ul style="list-style-type: none"> - 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.

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	<ul style="list-style-type: none"> - installation of landscaping in advance of site completion.
Inconvenience	<ul style="list-style-type: none"> - select route and method of installation to suit landowners' conditions. - select timing of activity.
Heritage resources	<ul style="list-style-type: none"> - 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	<ul style="list-style-type: none"> - design measures to make facility less obtrusive or 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.	<ul style="list-style-type: none"> - minimise use of slopes adjacent to streams during soils testing, construction and maintenance. - maintain a cover crop. - retain buffers.
Stream bank erosion.	<ul style="list-style-type: none"> - 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.	<ul style="list-style-type: none"> - use and maintenance of appropriate stream crossing device.
Ponding or channelization of surface waters due to rutting.	<ul style="list-style-type: none"> - timing activities to stable ground conditions. - use of gravel roads.
Contamination of surface or ground waters through spills or leaks of toxic substances.	<ul style="list-style-type: none"> - spill control material and procedures readily available. - site selection where possible.
Soil compaction/topsoil-subsoil mixing.	<ul style="list-style-type: none"> - 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.	<ul style="list-style-type: none"> - avoidance of areas with high erosion potential. - timing activities to the most stable ground conditions. - slope stabilisation.

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	<ul style="list-style-type: none">- mechanical erosion control.- vegetation erosion control.- recompaction of trenches.- avoid trenching parallel to the fall of a slope.
Contamination by petrochemicals.	<ul style="list-style-type: none">- spill control material and procedures made readily available.- restoration methods investigated.