

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: **Collin Sudden Booyen**

Signature:

CAPACITY (e.g. land owner, specialist): **Technical Official**.....

Date: 26 February 2020

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 R982, R983, R984 published in terms of the National Environmental Management Act No. 107 of 1998: EIA Regulations of June 2014 as amended.
2. To determine whether the project is subject to further licensing like the 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 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.**
- **This document is only valid for three (3) years from this document date.**

Methodology

- ❖ ***A GIS Desktop study and research on environmental aspects in the Jacobsdal area was done.***
- ❖ ***A site visit to the area under study was conducted.***
- ❖ ***The portions of the proposed route where access was possible were screened physically during the site visit.***
- ❖ ***Consultation with the CNC feeder custodian regarding environmental aspects on his property was made.***

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

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1. Project description

Project name/Survey

Area **Jacobsdal**.....

Project number File number

Rural scheme/
Feeder

JAPB Voltage: **22Kv**.....

Supply from **JAPB 232/24**.....

(Scheme name, pole numbers for tee-off)

Total length of line....**4.5km**

Supply to **JAPB256**.....

(Farm name, etc.)

2. Scope of Works

Power Plant

- 1) Build 4.5 km line between JAPB232/24 and JAPB256 that passes through JAPB241-6
- 2) Make every 10th pole an H-pole

3. Brief description of the surrounding area

The study area is located within the South Eastern side of Jacobsdal in the Free State and falls under the Letsemeng local municipality. The proposed study area fall within 1km from the Riet River, which accommodates a wide variety of biodiversity in the upper orange water management area. A portion of the proposed line is aligned through the Dornhoek game reserve which is declared as a national protected area. Area falls in the Nama-Karoo vegetation region. The predominant vegetation type found in the study area is the karoo shrubland vegetation which is made up of different grass species, short shrubs, trees and and geophytic herbs. The study area falls in an open space, which is in the catchment of the meandering Riet River that provides water for irrigation to surrounding cultivated lands.

Physical environments

4.1 Water: streams rivers dams wetlands springs floodplains OTHER

Present condition:

The area is characterized with vegetation growth, surface and subwater systems related to the nama-karoo vegetation region and the Riet-Modder river systems (See figure 1). The proposed project falls within the Upper Orange water management area and is aligned within the 2827AA quaternary drainage. The Riet River is flowing east of the study area with water flowing in it and highly dense with vegetation. The river has a floodplain wetland and the proposed power line route is generally within 1km from the river. There are areas where water dam due to surrounding landforms causing a low laying areas. The proposed power line is crossing streams along its route.

Potential impact (e.g. of erosion):

- ❖ Water bodies might be polluted by the leaking of oil from oil filled equipment and/or vehicles.
- ❖ Littering into streams and dams might take place during construction of the line.
- ❖ Affecting 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

Continuing without a general authorization water use license will lead to a legal contravention.

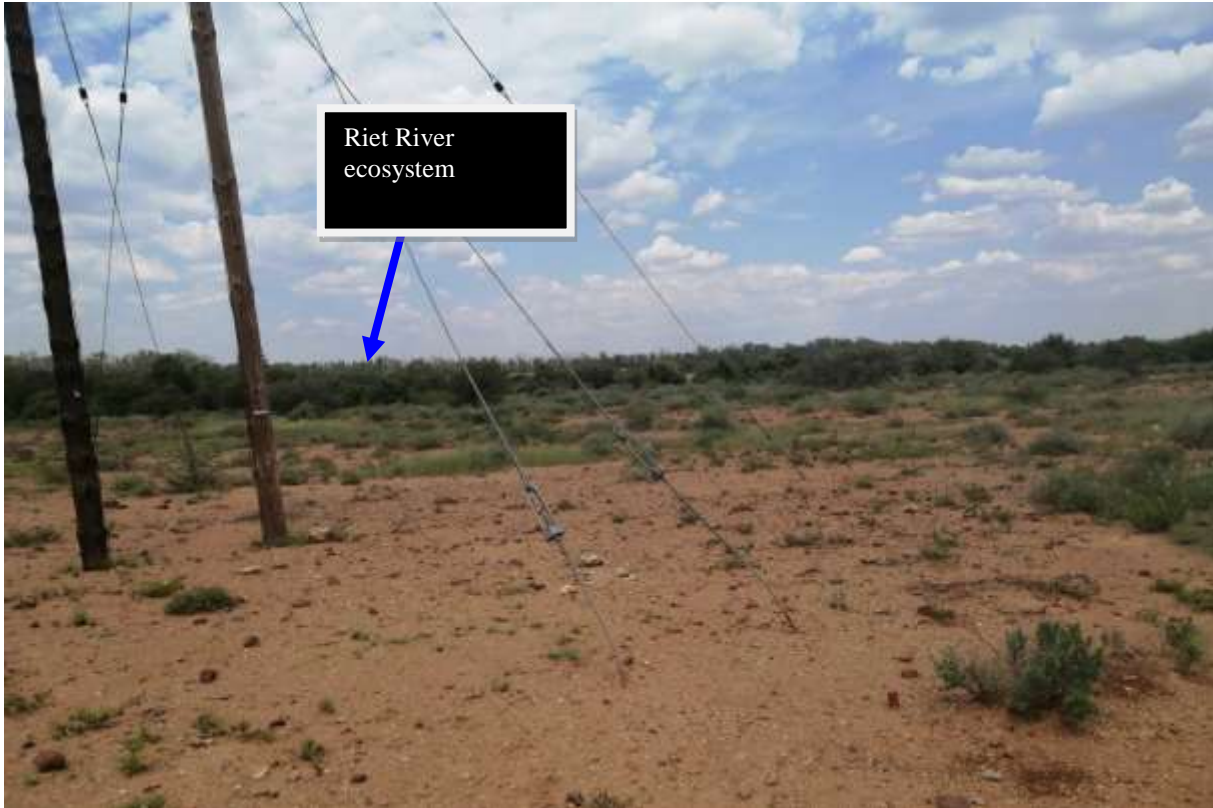


Figure 1: Riet river ecosystem

Mitigation measures:

- ❖ No vehicles or construction trucks should be driven over natural streams and channels.
- ❖ The excavation should not take place within 50 meters from a stream bank.
- ❖ Structures should not be erected within the riparian habitat or DIRECTLY on the floodplains of the streams.
- ❖ 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.
- ❖ **MAKE USE OF HIGH STRUCTURES TO GET THE LONGEST POWER LINE SPAN OVER THE WATER BODIES.**
- ❖ Do not disturb the banks or beds of the water bodies.
- ❖ Do not REMOVE any tree next to streams (Riparian habitat)

4.2 Soil: sandy rocky clayey OTHER...Loam soil.

Present condition:

There are soils with minimal development that are usually shallow and lay on hard or weathering rock. There are intermittent diverse soils. The landscape is generally underlain with limestone. The plain is rocky with a medium clay content that has a low potential for swelling and shrinking. There is also fertile sandy-loamy soil that support a vast ecological area through healthy vegetation growth and cycle (See figure 2).

Potential impact (e.g. of erosion):

- ❖ The **loss of highly organic top soil** might occur due to the clearance of vegetation for the planting of poles and other construction processes.
- ❖ **The pollution of land and soil** may occur out of oil leaks from construction vehicles and oil filled equipment.
- ❖ **Littering**, this is a contravention of **section 26, 27 of the NEMA: Waste Act 59 of 2008**, which prohibits the unauthorized disposal of waste and littering, might take place during the project.
- ❖ Removing excessive vegetation will **increase the risk of erosion** in the area.
- ❖ Increase of soil sediment loads and dust generation and transportation into the wetlands
- ❖ The driving of heavy vehicles in the area might **compact soil to be impermeable which can lead to bare soil exposure.**

Comments/ Mitigating measures:

- ❖ 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.**
- ❖ 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 at end of working day during construction and site rehabilitation.
- ❖ **Compaction** should occur according to the type of soil found at pole position.
- ❖ Should signs of erosion appear then the area should be **rehabilitated immediately.**
- ❖ **Ripping of soil around the poles** should take place following construction.



Figure 2: Sandy-loamy soil on farm Doornhoek 139

4.3. Topography mountains ridges hills valleys ravines dongas OTHER Slopes, gullies, trenches

Present condition:

The proposed site is on a slightly undulating plain, which is sloping down towards lower plains. Some parts in the study area are **elevated** and cause depressions in the surroundings. The small hills and koppies are highly rocky with boulders present on the surface (See figure 3). Erosion gullies and dongas is prevalent on farm Doornhoek 139 from pole number JAPB 232-23-13 to JAPB 232-23-18 (See figure 4).

Potential impact (e.g. of erosion):

- ❖ Potential soil erosion by means of water, wind and other means may take place in the area as excavation and traffic increase is going to take place.
- ❖ 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.

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.

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- ❖ 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 by covering it up with stones or other construction materials.
 - ❖ Minimal excavation should take place on steep slopes.
 - ❖ Minimal structures, if not any, should be erected on slopes in order to minimize erosion
 - ❖ The construction of the line through erosion area should mainly take place by man power.



Figure 3: Hills and koppies present in the area



Figure 4: Erosion gullies on site

4. Natural environment

5.1 Flora: **indigenous** protected **exotic** OTHER.....

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

The proposed project is located in the cymbopogon grassland type (Grassland overlapping with Nama-Karoo) is evident in the area with intrusion of the Nama-Karoo vegetation of succulent plants and shrubs (See figure 5). The plains are mainly covered with different grasses, low shrubs and small trees (Mucina and Rutherford, 2006). The trees mainly seen along the route of the proposed line are the **sweet thorn tree (Acacia Karoo)** (See figure 6). Various species of **candelabra plants** were observed to be present during the site visit close to the areas of a high water table. There are also alien trees present in the grassland biome like bluegum-, poplar trees and also indigenous trees like karee and pepper trees.

One Species of Conservation Concern (SOCC) found, is the ***HYPOXIS HEMEROCALLIDEA* (AFRICAN STAR GRASS OR AFRICAN POTATO)** (See figure 7). Raimondo et al. (2009) indicates that the African Potato should be conserved because it is declining exponentially in population in South Africa. The plant importance stems from its usage as medicinal plant by rural communities to treat headache, dizziness, mental disorder, cancer and even HIV symptoms, according to Pooley (1998).

The *Opuntia spinulifera* (Saucepan cactus, **LARGE ROUND-LEAVED PRICKLY PEAR**) is declared as a Category 1 invasive plant species in the Conservation of Agricultural Resources Act 43 of 1983 amended 2001 (CARA) and the National Biodiversity Act (NEMBA). These plants have a high potential to spread in unwanted areas and overwhelm indigenous vegetation.

Potential impact (e.g. permit applications)

- ❖ Construction processes and vehicular movement might disturb vegetation. .
- ❖ Veld fires may also pose a risk of vegetation disturbance.
- ❖ The acceleration of soil erosion might occur due to the removal of vegetation.
- ❖ Trees might be cut and removed without the land owner's consent
- ❖ Birds that nest in trees might lose habitat due to removal of trees.
- ❖ Tree debris and other vegetation waste might be left on the property and lead to land owner complaint and alien invasive species might propagate to inappropriate locations.
- ❖ Fuel leaks and excessive dust particles falling on the land might affect the land ability to revegetate.
- ❖ Siltation and sedimentation into the wetland might affect the potential for hydrophytes to grow.

Comments/ mitigating measure:

- ❖ Minimal removal of vegetation.
- ❖ No fires should be started in the open grasslands.
- ❖ Use 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 and/or the burning of waste at all times.
- ❖ Consult with land owner before the removal or cutting of trees on their property.
- ❖ Clean up and remove all debris and vegetation waste generated from the bush clearance.
- ❖ Separate the first 10cm of soil, as fertile topsoil, from the subsoil layers
- ❖ Do not establish soil stockpiles inside wetland areas.
- ❖ Secure the stockpiles with materials for it not to erode into surrounding areas
- ❖ Remove excessive soil from the site and rip the soil for revegetation to take place. Continue to rewet the area after ripping and monitor vegetation growth.
- ❖ Vegetation management should be done in accordance with the **CONTRACT SPECIFICATION FOR VEGETATION MANAGEMENT SERVICES ON ESKOM NETWORKS (DST-240-52456757)**.



Figure 5: Nama-Karoo biome vegetation



Figure 6: Hill covered with sweet thorn canopy trees



Figure 7: African potato

Reference:

Mucina, L. and Rutherford, M.C., 2006. *The vegetation of South Africa, Lesotho and Swaziland*. South African National Biodiversity Institute.

POOLEY, E.S. (1998). *A Field Guide to Wildflowers Kwazulu-Natal and the eastern region*. Natal Flora Publishers Trust: Durban, South Africa.

Raimondo, D., von Staden, L., Foden., W., Victor, JE., Helme, NA., Turner, RC., Kamundi, DA., Manyama, PA. (eds) (2009). *Red List of South African Plants Strelitzia 25*. South African National Biodiversity Institute, Pretoria.

5.2 Fauna:

mammals

birds

OTHER

.....

Brief description and conservation status:

The study area is located in a biome where the grassland and nama-karoo vegetation growth overlaps. The study area falls within a **Critical Biodiversity Area of which the theme is terrestrial biodiversity**. The primary grassland, sandstone, ridges, surrounding streams, wetlands and the Riet River create a large variety of important habitat for small mammals like bats, rats, moles etc. The red data list bird species recorded in this area is the **BLUE CRANE, and CAPE VULTURE AND SECRETARY BIRDS** (See figure 10). There are also **CATTLE AND SHEEP** grazing in the area and in the low wet area. The area is also identified to be possible fish eagle area since it falls within 500m from a large river. **HADEDA BIRDS** and **GREY HEADED HERONS** which are prone to collision could also be found in the area. There is a game reserve on farm Doornhoek 139 that has wild animals.

The **blue cranes** have an altitudinal migration pattern from elevated grasslands to lower lands where water bodies and grass occurs. This species is vulnerable on the Red data list. Breeding season is between October and March and they nest in the grass (See figure 11).

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

- ❖ There is a possible disturbance of natural habitat for birds and small mammals.
- ❖ Poaching might take place.
- ❖ The birds which perch and stream on the electrical structures might cause pollution that can lead to faults on the system.
- ❖ Bigger water birds in the area might collide with the proposed power line as they fly east to west and visa verse to watercourses and roosting area.
- ❖ There is also a risk of electrocution as big birds like eagles and vultures perch on the power line.
- ❖ The loss of livestock due to vehicle accidents involving wild animals might occur.
- ❖ Farm gates being left open might result in the loss of livestock.
- ❖ Bird nests might be damaged which leads to destruction of habitat.

Comments/mitigating measures:

- ❖ Minimal vegetation clearance in this area should take place.
- ❖ No poaching of birds and wild animals should take place.
- ❖ The **bird friendly structures** (inverted T-structures) must be used on this project.
- ❖ The land owner must be informed of when construction is going to commence in order for him 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.
- ❖ Do not disturb the bird nests found in the sweet thorn trees and where they occur on the proposed site.
- ❖ 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.
- ❖ Employees who are going to work on site during construction and maintenance of the line should **always consult with the land owner before doing so**.
- ❖ Construction must take place during normal working hours.
- ❖ **If practicably possible, install bird flight diverters on the line over farm Doornhoek 139.**



Figure 8: Cape vulture (Picture is not from site)



Figure 9: Blue crane bird (Picture is not from site)

5. Social environments

6.1 Restricted areas:	nature/game reserves	hiking trails	tourism routes	parks	recreational areas
residential-areas	green belts	sacred/holy grounds	OTHER ...		

Brief description

The proposed site is located next to a gravel road within the Doornhoek nature game reserve (See figure 10). There are farming communities in the surrounding areas of the proposed site. Farmhouses and farm worker houses are present on the farms. The nature reserve is declared as a protected area (See figure 11). There are no wetlands or waterbodies near the proposed power line.

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 in the residential area and to occupants on municipal land.
- ❖ A safety risk, in terms of vehicle accidents, is posed to household members, especially children walking to and from the farm.

Comments/ Mitigating measures:

- ❖ The construction site must be clearly barricaded to avoid injury to farm occupants.
- ❖ Vehicles must drive at a moderate speed.
- ❖ Construction must take place during the day to avoid disturbance of residents at night.
- ❖ The occupants of the farm should not be engaged by contractor workers, unnecessarily.
- ❖ Keep the correct safety clearances from buildings.



Figure 10: Doornhoek nature game reserve

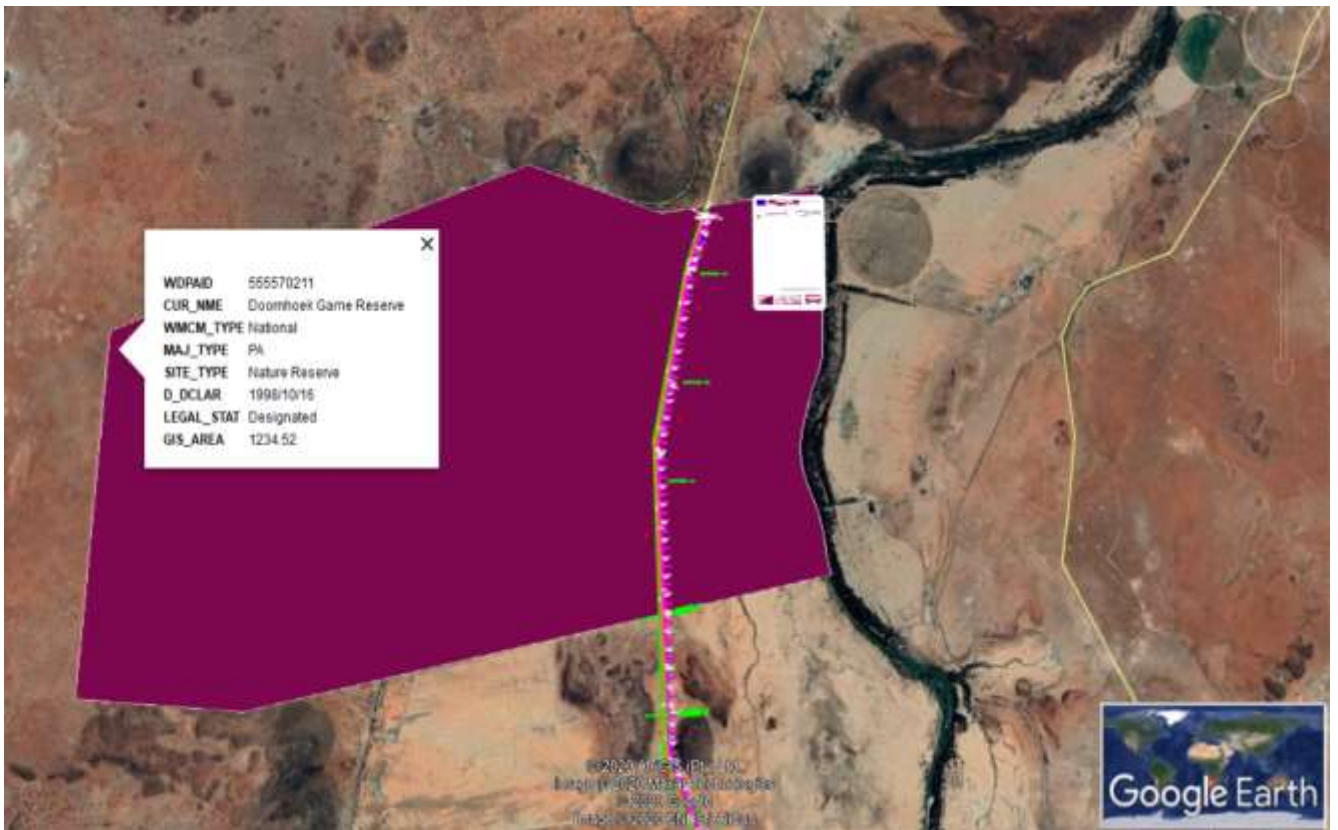


Figure 11: Doornhoek game reserve as national protected area

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6.2 Visual aesthetics: easily seen hidden **Partially**.....
 ..

Brief description:

The proposed power line will be seen from the main gravel road. The power line will also be seen from farmhouses and from the game reserve.

Potential impact:

The new line might have a minimal impact as it impacts on the aesthetic value of the natural scenery since the background of the scenery is dark and Riet river riparian trees and the hills in the background contributing largely to the line camouflage.

Comments/ Mitigating measures:

- ❖ Make use of wooden poles on the project.
- ❖ Line should be kept behind trees where it is hidden
- ❖ The power line should preferably be aligned in the valley and not on top of the hills.
- ❖ The proposed power line should as far as possible be aligned next to or close to existing infrastructure and already disturbed environments.

6.3 Sensitive areas: historical sites graves archaeological landmarks archaeological ruins monuments ruins natural heritage sites OTHER **Paleontological sites**...

Present condition:

The paleontology sensitivity map on the SAHRA GIS system indicates that the sensitivity ranges from moderate to high on the proposed site (See figure 12). The proposed site has areas which are rocky at hills and has rocky outcrops in the veldt.

Potential impact:

There might be unmarked graves along the route, which might be disturbed during construction earthworks.

Paleontological sites might be affected if bedrock is disturbed which is protected under the section 35 of the National Heritage Resources Act.

Unlawful disturbance or collection of fossils and paleontological assemblages might take place during construction.

Comments/mitigating a measure:

- ❖ Field assessment based on the findings of a desktop study for paleontological finds must be carried out prior to construction
- ❖ Should fossil remains be discovered during construction, on the exposed surface or be exposed by excavations, The Environmental Officer must be contacted immediately.
- ❖ The exposed fossil remains should be protected (in situ) while the EO alert SAHRA (South African Heritage Resources Agency).
- ❖ A Professional paleontologist should be appointed for appropriate mitigation to be followed.
- ❖ No grave should be disturbed or damaged during, because of and after construction by Eskom contractors.
- ❖ All activities must cease and the Environmental management section must be contacted at 051 404 5759/ 2287/ 2040/ 2980 once a grave or graves have been hit during construction activities.

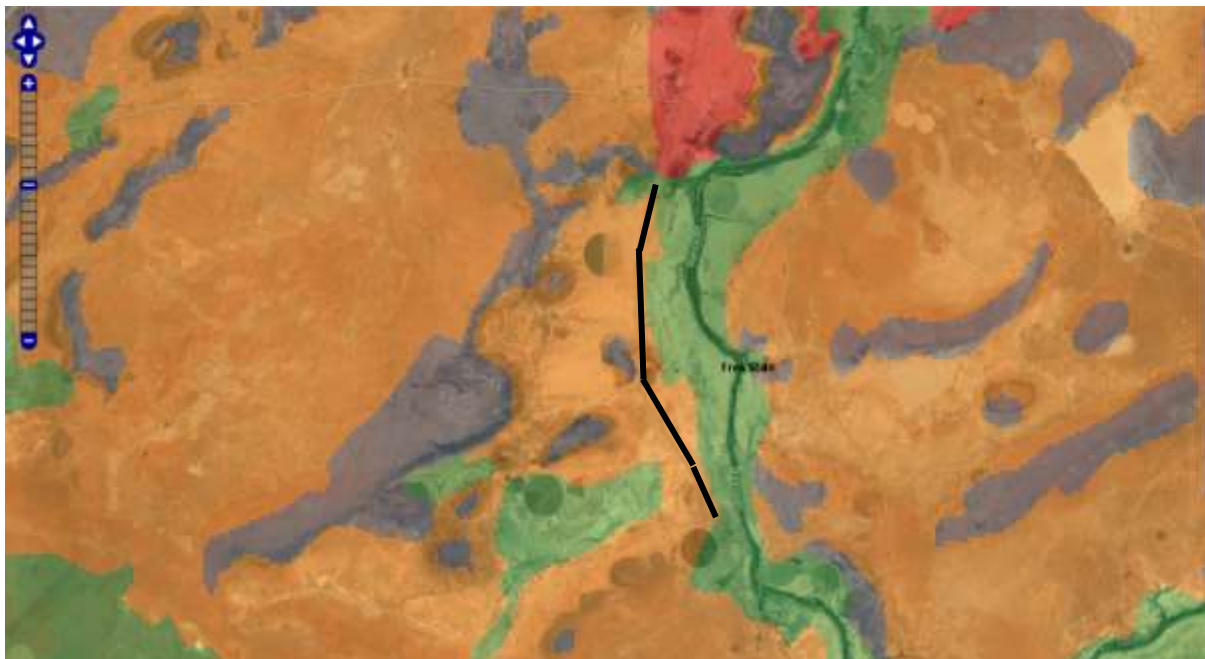


Figure 12: Paleontology sensitivity map_SAHRS (SAHRIS, 2020. Paleontology sensitivity map. Available at <https://sahris.sahra.org.za/map/palaeo> Accessed 21 April 2020)

6. Economic environments

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

Brief description:

The study area is mainly covered by Nama-Karoo vegetation types like thorn trees and shrubs. There are cattle grazing and wild animals on Doornhoek game reserve present. Pecan nut plantations were observed on farm Doornhoek 139 (See figure 13).

Potential impact:

- ❖ Grazing cattle and other animals in the area might be disturbed and/ or pounced on during construction.
- ❖ Potential land pollution might have a negative impact on productivity in terms of grazing land and crops.
- ❖ Potential of water pollution might affect crop produce negatively due to the contamination of underground/ seepage flow of water.
- ❖ Attacks from wild animals on the game farm.
- ❖ Loss of game can occur as secondary impact of pollution on site.
- ❖ Potential harvesting of pecan nut.

Comments/ Mitigating measures:

- ❖ Minimal removal of vegetation should take place.
- ❖ Littering and land pollution must be prevented at all times.
- ❖ Livestock should not be disturbed and vehicles must drive at a moderate speed which is max 60km/h on gravel roads according to Eskom rules.
- ❖ Inform the community of when construction is going to commence.
- ❖ Keep waste disposal bins on site at all times.
- ❖ No vehicle must be serviced on site.



Figure 13: Pecan nuts plantation

7.1.1 Commercial: factories shops OTHER
.....

Brief description:

No commercial activities observed on site

Potential impact: No impact.

Comments/ Mitigating measures: No mitigation measures needed for this section

7.1.2 Infrastructure: roads railways communications power lines air fields
pipelines sewage OTHER Game farm fencing, Kraal

Brief description:

The proposed power line take off from an existing power line next to a gravel road (See figure 14). The line terminates again at an existing power line down the road. There is a cattle kraal along the route of the power line net to the gravel road (See figure 15).

Potential impact:

- ❖ Gravel roads might deteriorate due to erosion caused by the traffic increase on it.
- ❖ The gravel road serves as an easy access medium to the proposed line.
- ❖ The existing power lines might be damaged due to construction activities.
- ❖ The game farm fence might be damaged during construction

Comments/mitigating measures:

- ❖ Comply with way leave conditions and landowners requests to promote healthy relationships with customers and stakeholders.
- ❖ Use existing access roads to access the site.
- ❖ Do not drive more than 60km/h on gravel roads.
- ❖ Do not remove vegetation next to the gravel road.
- ❖ Maintain the gravel road during construction if severe erosion takes place.
- ❖ Rehabilitate the gravel road close to its original state before leaving the construction site.
- ❖ Do not litter and/ or pollute on site.



Figure 14: Existing 22kV power line at line termination



Figure 15: Cattle kraal next to the road

8.1 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

High (3):

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.

Medium (2):

Periodically occurs once or twice a year. Impacts that are likely to occur within one year.

Low (1):

Very infrequent, every several years. Impacts associated with the aspects are several years away

MAGNITUDE

High (3):

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.

Medium (2):

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.

Low (1):

Little or no ecological effect and no measurable impact on human health.

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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>

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.

8.2 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

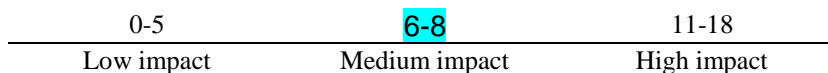
Low impact (0-5) Medium impact (6-8) High impact (11-18)

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 is applied. The impacts as assessed in the above three spheres (physical, natural and social) need to be considered to determine the overall impact



If the overall impact is between 11 and 18, contact the Environmental Practitioner or specialist.

8.3 Impacts 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

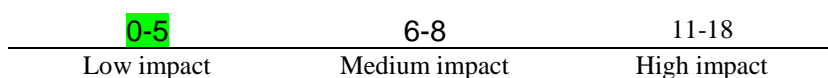
Low impact (0-5) Medium impact (6-8) High impact (11-18)

8. Economic

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

Overall impact after mitigation:

If the overall impact is between 11 and 18, contact the Environmental Practitioner or specialist



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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 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 **CONTRACT SPECIFICATION FOR VEGETATION MANAGEMENT SERVICES ON ESKOM NETWORKS (DST-240-524567571)**.

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 RECOMMENDATIONS

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

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.

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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 or 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	<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.

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	<ul style="list-style-type: none"> - 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. - 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.