

ESKOM TRANSNET FREIGHT RAIL PROJECT
Final Basic Assessment Report
Limpopo Province

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Applicant

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INTRODUCTION

Transnet Freight Rail is planning the expansion of the existing rail network and development of a new heavy haul rail line in order to unlock the Waterberg and Botswana Coal Fields. A major component of this project is to electrify the current diesel railway section between Lephalale and Thabazimbi and Eskom is to provide electricity to this railway line.

Eskom Holding Limited SOC has appointed Landscape Dynamics Environmental Consultants to apply for Environmental Authorisation for this **Eskom Transnet Freight Rail Project** with the Department of Environmental Affairs (DEA), which is the Competent Authority for this project.

LOCALITY

The project runs south and west of Medupi Power Station near Lephalale to just north of Thabazimbi in the Limpopo Province. The route and traction stations fall within both the Lephalale and Thabazimbi Local Municipalities within the boundaries of the Waterberg District Municipality.

PROJECT COMPONENTS

The project entails the construction of

- 4 x 132kV Traction Stations (Lephalale, Diepspruit, Matlabas and Marekele)
- 4x communication towers (1x tower at each traction station)
- ±6km 132kV line from Medupi to proposed Lephalale Traction Station
- ±23km 132kV line from Lephalale Traction Station to existing Theunispan Substation
- ±23km 132kV line from Theunispan Substation to Theunispan T-off
- 3 x 132kV line bays at Theunispan Substation
- Loop in-out the 132kV traction stations as follows:
 - Lephalale Traction – 2 x 40 m 132kV lines from the new Medupi Theunispan line
 - Diepspruit Traction – 2 x 1 km 132kV lines from the existing Medupi Thabazimbi line
 - Matlabas Traction – 2 x 1 km 132kV lines from the existing Medupi Thabazimbi line
 - Marekele Traction – 2 x 2.5 km 132kV Lines from the existing Medupi Thabazimbi line

MAIN LEGAL REQUIREMENT

- ***National Environmental Management Act (Act 107 of 1998)***

This application is done in terms of the National Environmental Management Act, 1998 (Act No 107 of 1998) (NEMA) and the Environmental Impact Assessment Regulations of December 2014, as amended in April 2017 (Government Notice Nr 326). Environmental Authorisation is requested for the following listed activities:

- Government Notice 327: Listing Notice 1: Numbers 11 and 27
- Government Notice 324: Listing Notice 3: Numbers 3 and 12
- ***The National Water Act (Act No 36 of 1998)***
There are no water sources (rivers, streams, wetlands) that will be impacted on by this project and it is therefore not required to apply for a Water Use License.
- ***The National Heritage Resources Act (Act 25 of 1999)***
The proposed project falls within the scope of Section 38 of the National Heritage Resources Act (NHRA) and the applicable activities are:
 - the construction of a road, wall, power line, pipeline, canal or similar form of linear development or barrier exceeding 300m in length;

The authorisation process in terms of the NHRA forms part of the EIA process and both the South Africa Heritage Resource Agency (SAHRA) and the Limpopo Provincial Heritage Resources Authority (LIHRA) was approached for comment.

STRATEGIC INFRASTRUCTURE PROJECTS (SIP)

This Eskom Transnet Freight Rail Project is a SIP 1 *and* SIP 10 project.

SIP 1: Unlocking the northern mineral belt with Waterberg as the catalyst

- Unlock mineral resources.
- Rail, water pipelines, energy generation and transmission infrastructure.
- Thousands of direct jobs across the areas unlocked.
- Urban development in Waterberg - first major post-apartheid new urban centre will be a “green” development project.
- Rail capacity to Mpumalanga and Richards Bay.
- Shift from road to rail in Mpumalanga.
- Logistics corridor to connect Mpumalanga and Gauteng.

SIP 10: Electricity transmission and distribution for all

- Expand the transmission and distribution network to address historical imbalances, provide access to electricity for all and support economic development.
- Align the 10-year transmission plan, the services backlog, the national broadband roll-out and the freight rail line development to leverage off regulatory approvals, supply chain and project development capacity.

ALTERNATIVES

Alternative route alignments and traction station sites were investigated. The *1st Draft Power Line Route and Traction Station Sites* were based on the positions and alternatives as initially preferred by Eskom. This *1st Draft* was presented during the first round of public participation. The specialist investigated these routes and sites together with the proposed 1km corridor.

Route and site changes were made as a result of public participation and specialist studies and the 2nd Draft Power Line Route and Traction Station Sites were compiled and included in the Draft BAR. The Draft BAR was distributed for public comment and further objections were received.

A new section of the route between the Theunispan T-off and Theunispan Substation was determined at approximately 5km to the north of the originally proposed route:

- A site visit was undertaken and further specialist studies were conducted. The specialists (ecologist-, aquatic-, bird- and heritage specialists) concluded that no obvious signs of any sensitive components were identified that could affect the viability of this proposed route.
- This new section of the route runs in its entirety adjacent to a soon to be constructed railway line. Only one property owner is involved, namely Resgen South Africa (Pty) Ltd. They are a new-generation, emerging coal producer and agreed in-principle that the powerline route may run across their properties.

The alternative selection process can be summarised as follows:

POWER LINE ROUTE

The power line route was rerouted

- to accommodate the landowner of the farm Taaiboschpan;
- to accommodate the landowner of the farm Zandnek 358.
- to facilitate significant cost savings by using an existing servitude on a part of the route;

TRACTION STATION SITES

The site positions were amended as follows:

Lephalale

- The site was moved away from a drainage pathway.

Diepspruit

- The site was moved to accommodate the landowner of the farm Zandfontein.
- This new site position on the eastern side of the railway line also accommodates the future DWS pipeline route.

Matlabas

- The site was moved away from a drainage pathway
- The site was moved to the east of the railway line to accommodate the future DWS pipeline route.

Marakele

- No issues were identified with the original proposal and the original preferred site is the final site position.

CONCLUSION OF ALTERNATIVE SELECTION PROCESS

The *Final Power Line Route and Traction Station Sites* maps as presented in the Final BAR (this document) were selected after a thorough public participation process and in-depth specialist studies as well as liaison with Eskom and Transnet.

The EAPs are confident that the route and sites as presented in the maps above are the most acceptable and viable alternatives for this project. This is based on the following:

- *Technical considerations*
Eskom and Transnet are satisfied that the final proposed route meets their requirement in terms of the need of the project.
- *Community Consultation (Social Impact)*
All the directly affected landowners on the final proposed route indicated their support for the project. All objections/comments/concerns received from Interested & Affected Parties were satisfactorily addressed.
- *Environmental Considerations*
All the specialists (vegetation; aquatic; bird and heritage specialists) for the project confirmed their support for the final route and traction station sites.
- *Mitigation*
The EAPs are confident that all potentially negative impact associated with the project can be mitigated to acceptable levels.

ENVIRONMENTAL IMPACT ASSESSMENT

The main potential negative impacts associated with the project are the following:

Expected Negative Impacts

Planning and Design Phase

- Impact 1: Route & Traction Station Site Selection: Impact on landowners
- Impact 2: Route & Traction Station Site Selection: Impacts on Fauna, Flora, Avifauna and Heritage

Construction Phase

- Impact 1: Impact on natural habitat
- Impact 2: Impact on birds
- Impact 3: Impact on aquatic features
- Impact 4: Impact on cultural heritage resources
- Impact 5: Risk of groundwater pollution
- Impact 6: Risk of erosion

- Impact 7: Community Impact
- Impact 8: Noise and Dust (air quality)

Post- Construction Phase

- Impact 1: Impacts of improper site clearance after construction
- Impact 2: Impacts associated with lack of rehabilitation

Expected Positive Impacts

- This project forms part a major component of Transnet’s plans to develop a new heavy haul railway line in order to unlock the Waterberg and Botswana Coal Fields. The line will also allow the coal mined in the Lephalale area to be transported using rail to the rest of South Africa. This will have a huge positive impact in terms of economic growth and job creation within especially the Limpopo Province.
- The rail expansion will not only expand the market for coal but it will also allow the various coal mines to utilise rail instead of road with the associated positive impacts of less heavy load trucks on the roads with less damage to the roads caused by such heavy vehicles, safer transport of goods, more reliable transport, less accident risks, and substantial less fleet maintenance cost.
- The proposed project is being planned in a legal, pro-active and structured manner taking all development components, potential and restrictions into account.

Impact Assessment

All impacts were assessed before and after mitigation have been applied. The significance of the impacts *after* mitigation has been rated as Low / Very Low / Negligible.

ENVIRONMENTAL IMPACT STATEMENT

Specialist studies, landowner negotiations and public participation were undertaken for this project and the following is applicable:

Specialist studies

- *Ecological Assessment of the Flora and Watercourses*

The total study area can be broadly classified as a *Combretum apiculatum* woodland with smaller sections dominated by *Senegalia/Vachellia* and *Terminalia* species. The proposed power line routes and substations are located within natural areas however, most of the areas of the proposed power line and the proposed Diepspruit, Matlabas and Marakele substations are regarded as being moderately degraded to natural.

The sections of the power line located within CBA or ESA areas do have natural species, but the ecosystem has been negatively affected due to anthropogenic influences (current and past). The vegetation of these areas has been affected resulting in a degraded herbaceous layer and resultant densification of woody species. The vegetation of some of the areas is

mostly natural, though some sections are degraded. All of the vegetation units, although natural and part of the natural ecosystem form part of a larger and in some places more pristine ecosystem. The landscape is mostly low flat to undulating areas with sandy plains.

Fragmentation of the habitat is not expected to be of any significance with normal connectivity between ecosystems still intact due to the relatively small footprint of the pylons.

Three water pathways and various seasonally wet depressions were identified along the proposed powerline and the one along the Matlabas Traction substation loop route. The drainage pathways have a low Ecological Importance and Sensitivity while the depressions have a medium-high conservation value. The alternatives provided where these substation locations did occur within the pathways are all outside the pathways and will therefore have no impact on these systems. Except for one seasonally wet depression, none of the substations or proposed powerline route traverses any depression. The area where one depression is traversed can be easily mitigated and should have a minimal if any effect on the ecosystem.

Two protected tree species namely *Sclerocarya birrea* and *Boscia albitrunca* were identified in different vegetation units. The placement of the pylons should be done in such a way as to avoid damaging these species as far as possible. If single individuals of these species have to be removed, a permit from the Department of Agriculture, Fisheries and Forestry (Forestry Branch) and Nature Conservation will have to be obtained for this purpose.

It is recommended that once the final powerline route and pylon positions have been decided on and pegged that a walk down by a qualified plant ecologist is done to determine if any of these protected species must be removed.

Four medicinal plant species were recorded but none are threatened species and are common throughout the area.

It is concluded that all impacts could be mitigated to LOW or NEGLIGIBLE levels.

- *Bird Impact Assessment*

The impact that electrocutions, collisions and habitat transformation could have on the birds of the area is judged to be LOW and can be further reduced to VERY LOW with the application of mitigation measures.

- *Heritage Impact Assessment*

No heritage resources were found, but a walk-down is nevertheless recommended to ensure that no sensitive features that could have been missed during the site investigation will be impacted on. Impact on the heritage resources of the area will be NEGLIGIBLE.

Landowners

- The power line route was changed to accommodate some landowners
- The position of the Matlabas Traction Station was moved to the eastern side of the railway line to accommodate a planned DWS pipeline route.
- The position of the Diepspruit Traction Station was changed to accommodate a landowner and the new position on the eastern side of the railway line also accommodates the planned DWS pipeline route

Public Participation

- Even though the project was widely advertised and as per the NEMA Regulations very little comment from the general public was received. All objections / queries were satisfactorily addressed.

CONCLUSION AND RECOMMENDATION

The proposed Eskom Transnet Freight Rail Project is planned in a legal, pro-active and structured manner taking all development components, environmental features, site potential and restrictions into account.

The Environmental Assessment Practitioners recommend this Basic Assessment Report for approval and Environmental Authorisation by the Department of Environmental Affairs.

CHAPTER 1: INTRODUCTION

1.1 Background

Transnet Freight Rail is planning the expansion of the existing rail network and development of a new heavy haul rail line in order to unlock the Waterberg and Botswana Coal Fields. A major component of this project is to electrify the current diesel railway section between Lephalale and Thabazimbi and Eskom is to provide electricity to this railway line.

Eskom Holding Limited SOC has appointed Landscape Dynamics Environmental Consultants to apply for Environmental Authorisation for this **Eskom Transnet Freight Rail Project** with the Department of Environmental Affairs (DEA), which is the Competent Authority for this project.

1.2 The Basic Assessment Report

1.2.1 Objectives of the Basic Assessment Report

According to the NEMA Regulations' Appendix 1, the objective of the environmental impact assessment process is to, through a consultative process

- a) determine the policy and legislative context within which the proposed activity is located and how the activity complies with and responds to the policy and legislative context;
- b) identify the alternatives considered, including the activity, location, and technology alternatives;
- c) describe the need and desirability of the proposed alternatives;
- d) through the undertaking of an impact and risk assessment process, inclusive of cumulative impacts which focused on determining the geographical, physical, biological, social, economic, heritage, and cultural sensitivity of the sites and locations within sites and the risk of impact of the proposed activity and technology alternatives on these aspects to determine–
 - (i) the nature, significance, consequence, extent, duration, and probability of the impacts occurring to; and
 - (ii) the degree to which these impacts–
 - (aa) can be reversed;
 - (bb) may cause irreplaceable loss of resources; and
 - (cc) can be avoided, managed or mitigated; and
- e) through a ranking of the site sensitivities and possible impacts the activity and technology alternatives will impose on the sites and location identified through the life of the activity to–
 - (i) identify and motivate a preferred site, activity and technology alternative;
 - (ii) identify suitable measures to avoid, manage or mitigate identified impacts; and
 - (iii) identify residual risks that need to be managed and monitored.

1.2.2 Content of the Basic Assessment Report

According to the NEMA 2014 Regulations (as amended in April 2017), Appendix 1, Section 3, the Basic Assessment Report must contain the information that is necessary for the competent authority to consider and come to a decision on the application. The items are listed below with appropriate reference to the relevant Chapters in the BAR where the item is addressed.

Regulation Requirement	Section in BAR where addressed
(a) details of <ul style="list-style-type: none"> (i) the EAP who prepared the report; and (ii) the expertise of the EAP, including a curriculum vitae; 	Chapter 1, Paragraph 1.4 Appendix F
(b) the location of the activity, including: <ul style="list-style-type: none"> (i) the 21 digit Surveyor General code of each cadastral land parcel; (ii) where available, the physical address and farm name; (iii) where the required information in items (i) and (ii) is not available, the coordinates of the boundary of the property or properties; 	Chapter 2, Paragraph 2.6
(c) a plan which locates the proposed activity or activities applied for as well as associated structures and infrastructure at an appropriate scale; or, if it is <ul style="list-style-type: none"> (i) a linear activity, a description and coordinates of the corridor in which the proposed activity or activities is to be undertaken; or (ii) on land where the property has not been defined, the coordinates within which the activity is to be undertaken; 	Chapter 2, Paragraph 2.7 Chapter 4, Paragraph 4.1 Appendix A
(d) a description of the scope of the proposed activity, including— <ul style="list-style-type: none"> (i) all listed and specified activities triggered and being applied for; and (ii) a description of the activities to be undertaken including associated structures and infrastructure; 	Chapter 1, Paragraph
(e) a description of the policy and legislative context within which the development is proposed including— <ul style="list-style-type: none"> (i) an identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks, and instruments that are applicable to this activity and have been considered in the preparation of the report; and (ii) how the proposed activity complies with and responds to the legislation (iii) and policy context, plans, guidelines, tools frameworks, and instruments; 	Chapter 1, Paragraph 1.3 Chapter 2, Paragraph 2.3

<p>(f) a motivation for the need and desirability for the proposed development including the need and desirability of the activity in the context of the preferred location;</p>	<p>Chapter 2, Paragraph 2.1</p>
<p>(g) a motivation for the preferred site, activity and technology alternative;</p>	<p>Chapter 3</p>
<p>(h) a full description of the process followed to reach the proposed preferred alternative within the site, including</p> <ul style="list-style-type: none"> (i) details of all the alternatives considered; (ii) details of the public participation process undertaken in terms of regulation 41 of the Regulations, including copies of the supporting documents and inputs; (iii) a summary of the issues raised by interested and affected parties, and an indication of the manner in which the issues were incorporated, or the reasons for not including them; (iv) the environmental attributes associated with the alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects; (v) the impacts and risks identified for each alternative, including the nature, significance, consequence, extent, duration and probability of the impacts, including the degree to which these impacts— <ul style="list-style-type: none"> (aa) can be reversed; (bb) may cause irreplaceable loss of resources; and (cc) can be avoided, managed or mitigated; (vi) the methodology used in determining and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks associated with the alternatives; (vii) positive and negative impacts that the proposed activity and alternatives will have on the environment and on the community that may be affected focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects; (viii) the possible mitigation measures that could be applied and level of residual risk; (ix) the outcome of the site selection matrix; (x) if no alternatives, including alternative locations for the activity were investigated, the motivation for not considering such; and (xi) a concluding statement indicating the preferred alternatives, including preferred location of the activity; 	<p>Chapter 3</p> <p>Chapter 3</p> <p>Chapter 5, Paragraph 5.2</p> <p>Chapter 5, Paragraph 5.3</p> <p>Chapter 3</p> <p>Chapter 6</p> <p>Chapter 6, Paragraph 6.1</p> <p>Chapter 6, Paragraph 6.2</p> <p>Chapter 6, Paragraph 6.4</p> <p>Chapter 6, Paragraph 6.4</p> <p>Chapter 3</p>
<p>(i) a full description of the process undertaken to identify, assess and rank the impacts the activity will impose on the preferred location through the life of the activity, including—</p>	<p>Chapter 6, Paragraph 6.1</p>

<ul style="list-style-type: none"> (i) a description of all environmental issues and risks that were identified during the environmental impact assessment process; and (ii) an assessment of the significance of each issue and risk and an indication of the extent to which the issue and risk could be avoided or addressed by the adoption of mitigation measures; 	<p>Chapter 6, Paragraph 6.4 Chapter 6, Paragraph 6.4</p>
<ul style="list-style-type: none"> (j) an assessment of each identified potentially significant impact and risk, including— <ul style="list-style-type: none"> (i) cumulative impacts; (ii) the nature, significance and consequences of the impact and risk; (iii) the extent and duration of the impact and risk; (iv) the probability of the impact and risk occurring; (v) the degree to which the impact and risk can be reversed; (vi) the degree to which the impact and risk may cause irreplaceable loss of resources; and (vii) the degree to which the impact and risk can be avoided, managed or mitigated; 	<p>Chapter 6, Paragraph 6.4</p>
<ul style="list-style-type: none"> (k) where applicable, a summary of the findings and impact management measures identified in any specialist report complying with Appendix 6 to these Regulations and an indication as to how these findings and recommendations have been included in the final report; 	<p>Chapter 3 Chapter 4, Paragraphs 4.2 & 4.3 Appendix C</p>
<ul style="list-style-type: none"> (l) an environmental impact statement which contains— <ul style="list-style-type: none"> (i) a summary of the key findings of the environmental impact assessment; (ii) a map at an appropriate scale which superimposes the proposed activity and its associated structures and infrastructure on the environmental sensitivities of the preferred site indicating any areas that should be avoided, including buffers; and (iii) a summary of the positive and negative impacts and risks of the proposed activity and identified alternatives; 	<p>Chapter 7, Paragraph 7.2</p>
<ul style="list-style-type: none"> (m) based on the assessment, and where applicable, impact management measures from specialist reports, the recording of the proposed impact management outcomes for the development for inclusion in the EMPr; 	<p>Chapter 6</p>
<ul style="list-style-type: none"> (n) any aspects which were conditional to the findings of the assessment either by the EAP or specialist which are to be included as conditions of authorisation; 	<p>Chapter 7, Paragraph 7.5</p>

(o) a description of any assumptions, uncertainties, and gaps in knowledge which relate to the assessment and mitigation measures proposed;	Chapter 7.1 and included in specialist reports in Appendix C
(p) a reasoned opinion as to whether the proposed activity should or should not be authorised, and if the opinion is that it should be authorised, any conditions that should be made in respect of that authorisation;	Chapter 7, Paragraph 7.3
(q) where the proposed activity does not include operational aspects, the period for which the environmental authorisation is required, the date on which the activity will be concluded, and the post construction monitoring requirements finalised;	Chapter 7, Paragraph 7.4
(r) an undertaking under oath or affirmation by the EAP in relation to <ul style="list-style-type: none"> (i) the correctness of the information provided in the reports; (ii) the inclusion of comments and inputs from stakeholders and I&APs; (iii) the inclusion of inputs and recommendations from the specialist reports where relevant; and (iv) any information provided by the EAP to interested and affected parties and any responses by the EAP to comments or inputs made by interested and affected parties; and 	Chapter 7, Paragraph 7.5
(s) where applicable, details of any financial provision for the rehabilitation, closure, and ongoing post decommissioning management of negative environmental impacts;	Not applicable
(t) any specific information that may be required by the competent authority; and	Not applicable
(u) any other matters required in terms of section 24(4)(a) and (b) of the Act.	Not applicable

1.3 Legal Requirement

1.3.1 National Environmental Management Act (Act 107 of 1998)

This application is done in terms of the National Environmental Management Act, 1998 (Act No 107 of 1998) (NEMA) and the Environmental Impact Assessment Regulations of December 2014, as amended in April 2017 (Government Notice Nr 326). Environmental Authorisation is requested for the following listed activities:

Listing Notice 1 (GN R327)		
Nr 11	The development of facilities or infrastructure for the transmission and distribution of electricity (i) Outside urban areas of industrial complexes with a capacity of more than 33kV but less than 275 kilovolts	The proposed development site is situated on agricultural land west of the town of Lephalale towards farm land north of Thabazimbi. 132kV structures are applicable to this project.
Nr 27	The clearance of an area of 1 hectares or more, but less than 20 hectares of indigenous vegetation except where such clearance of indigenous vegetation is required for (i) the undertaking of a linear activity ; or (ii) maintenance purposes undertaken in accordance with a maintenance management plan.	The total affected area of the four traction station sites will each be 150m x 200m (3 hectares) which would be cleared.

Listing Notice 3 (GN R324)		
Nr 3	The development of masts or towers of any material or type used for telecommunication broadcasting or radio transmission purposes where the masts or tower (b) will exceed 15 metres in height in (e) (i) outside urban areas in (e) Limpopo (i) Outside urban areas in (ee) Critical Biodiversity Areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans; and (gg) Areas within 10 kilometres from national parks.	According to the South African National Biodiversity Institute (SANBI) database the following project sites where a telecommunication mast of approximately 30m in height is required fall within areas described as Critical Biodiversity Areas (CBA) 1 and/or 2 : <ul style="list-style-type: none"> • Lephalale Traction Station • Diepspruit Traction Station • Marakele Traction Station • Matalabas Traction Station <p>The proposed Marakele Traction Station which requires a telecommunication mast of 30m in height is situated approximately 3km west of the Marakale National Park.</p>
Nr 12	The clearance of an area of 300 square metres or more of indigenous vegetation except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan in (e) Limpopo (ii) within Critical Biodiversity Areas identified in bioregional plans.	The total affected area of the four traction station sites will each be 150m x 200m (3 hectares) which would be cleared. <p>Furthermore, selective clearing for construction and maintenance purposes would also be required within the servitude areas of the proposed powerline routes.</p>

NEMA can be regarded as the most important piece of general environmental legislation. It provides a framework for environmental law reform and covers three areas, namely:

- Land, planning and development;
- Natural and cultural resources, use and conservation; and
- Pollution control and waste management.

The law is based on the concept of sustainable development. The objective of the NEMA is to provide for co-operative environmental governance through a series of principles relating to:

- The procedures for state decision-making on the environment; and
- The institutions of state which make those decisions.

NEMA principles serve as:

- A general framework for environmental planning;
- Guidelines according to which the state must exercise its environmental functions; and
- A guide to the interpretation of NEMA itself and of any other law relating to the environment.

NEMA principles are the following:

- Environmental management must put people and their needs first;
- Development must be socially, environmentally and economically sustainable;
- There should be equal access to environmental resources, benefits and services to meet basic human needs;
- Government should promote public participation when making decisions about the environment;
- Communities must be given environmental education;
- Workers have the right to refuse to do work that is harmful to their health or to the environment;
- Decisions must be taken in an open and transparent manner and there must be access to information;
- The role of youth and women in environmental management must be recognised;
- The person or company who pollutes the environment must pay to clean it up;
- The environment is held in trust by the state for the benefit of all South Africans; and
- The utmost caution should be used when permission for new developments is granted.

Chapter 2 of NEMA

Chapter 2 of NEMA provides a number of principles that decision-makers have to consider when making decisions that may affect the environment, therefore, when a Competent Authority considers granting or refusing environmental authorisation based on an Environmental Impact Assessment, these principles must be taken into account.

The NEMA principles with which this application conforms are described as follows —

1. Environmental management must place people and their needs at the forefront of its concern, and serve their physical, psychological, developmental, cultural and social interests equitably.
2. Development must be socially, environmentally and economically sustainable.
3. Sustainable development requires the consideration of all relevant factors.

The social, economic and environmental impacts of activities, including disadvantages and benefits, were considered, assessed and evaluated, and informed decision-making by the authority is hereby made possible.

Section 23 of NEMA

The stated objectives of Section 23 are to ensure integrated decision-making and co-operative governance so that NEMA's principles and the general objectives for integrated environmental management of activities can be achieved. The goals are to

- a) promote the integration of the principles of environmental management set out in section 2 into the making of all decisions which may have a significant effect on the environment;
- b) identify, predict and evaluate the actual and potential impact on the environment, socio-economic conditions and cultural heritage, the risks and consequences and alternatives and options for mitigation of activities, with a view to minimising negative impacts, maximising benefits, and promoting compliance with the principles of environmental management set out in section 2;
- c) ensure that the effects of activities on the environment receive adequate consideration before actions are taken in connection with them;
- d) ensure adequate and appropriate opportunity for public participation in decisions that may affect the environment;
- e) ensure the consideration of environmental attributes in management and decision-making which may have a significant effect on the environment; and
- f) identify and employ the modes of environmental management best suited to ensuring that a particular activity is pursued in accordance with the principles of environmental management set out in section 2.

For this project the following actions were taken to reach the general objectives of Integrated Environmental Management as set out in Section 23 of NEMA:

- a) Applicable environmental, economic and social aspects have been assessed, thereby ensuring an integrated approach in order to balance the needs of all whom would be affected by this development.
- b) Impacts have been described, assessed and mitigation measures have been supplied in order to ensure that all identified impacts are mitigated to acceptable levels. Alternatives have been thoroughly assessed and the best possible solution represents this development proposal.
- c) The development proposal has to be evaluated and approved by DEA and no construction may commence prior to the issuing of the Environmental Authorisation.
- d) The procedures which were followed during the public participation programme were based on the NEMA EIA Regulations which came into effect on December 2014, as amended in April 2017.
- e) DEA will take all information as represented in this report into consideration and may request further information should they feel that further studies/information is required before an informed decision can be made.
- f) The mitigation measures as supplied in this report together with the measures as per the Environmental Management Programme are deemed to be the best way to manage anticipated impacts.

By providing electricity whilst not impacting negatively on the environment, the Eskom Transnet Freight Rail project would contribute to a sustainable environment.

1.3.2 The National Water Act (Act No 36 of 1998)

The National Water Act (NWA) guides the management of water in South Africa as a common resource. The Act aims to regulate the use of water and activities which may impact on water resources through the categorisation of 'listed water uses' encompassing water extraction, flow attenuation within catchments as well as the potential contamination of water resources. The Department of Water & Sanitation (DWS) is the administering body in this regard.

There are no water sources (rivers, streams, wetlands) that will be impacted on by this project and it is therefore not required to apply for a Water Use License.

1.3.3 The National Heritage Resources Act (Act 25 of 1999)

The proposed project falls within the scope of Section 38 of the National Heritage Resources Act (NHRA) and the applicable activities are:

- the construction of a road, wall, power line, pipeline, canal or similar form of linear development or barrier exceeding 300m in length;

The authorisation process in terms of the NHRA forms part of the EIA process. A Heritage Impact Assessment was electronically submitted to the South Africa Heritage Resource Agency (SAHRA) via SAHRIS as well as to the Limpopo Provincial Heritage Resources Authority (LIHRA) for their comment.

1.3.4 Additional Acts, Frameworks and Guidelines

STRATEGIC INFRASTRUCTURE PROJECT (SIP)

The Presidential Infrastructure Co-ordination Commission (PICC) was inaugurated in September 2001, bringing in key Ministers, Premiers and Mayors for the first time into a joint forum to promote infrastructure co-ordination and decision making. Resulting from the PICC work plans for future projects and infrastructure initiatives from state owned enterprise, national, provincial and local departments have been clustered, sequenced and prioritised into 18 strategic integrated projects (SIPs). Together these SIPs unlock the economic development and maximise the returns on investment in the form of increased jobs, growth and economic potential. This will be a continuous process creating a pipeline of projects into the future that gives substance to the long term NDP, and certainty to South Africa's Development.

This Eskom Transnet Freight Rail Project is a SIP 10 *and* SIP 1 project.

SIP 10: Electricity transmission and distribution for all

- Expand the transmission and distribution network to address historical imbalances, provide access to electricity for all and support economic development.
- Align the 10-year transmission plan, the services backlog, the national broadband roll-out and the freight rail line development to leverage off regulatory approvals, supply chain and project development capacity.

Waterberg District Municipality Integrated Development Plan (2017/2018)

The Waterberg District Municipality's Local Economic Development (LED) strategy will be realigning its plans with SIP 1, as indicated below.

SIP 1: Unlocking the northern mineral belt with Waterberg as the catalyst

- Unlock mineral resources.
- Rail, water pipelines, energy generation and transmission infrastructure.
- Thousands of direct jobs across the areas unlocked.
- Urban development in Waterberg - first major post-apartheid new urban centre will be a "green" development project.
- Rail capacity to Mpumalanga and Richards Bay.
- Shift from road to rail in Mpumalanga.
- Logistics corridor to connect Mpumalanga and Gauteng.

Primary Mineral Reserves

- Coal 18 bn tons
- Chromite 5,5 tons
- Platinum 6 323 tons
- Palladium 3 611 tons

There is a functioning Business Development Forum which provides a good platform for the district municipality, local municipalities, sector departments and the private sector to interact and align economic development programmes to ensure synergy and have a greater impact. Some local municipalities have functioning LED and tourism clusters, namely Mogalakwena, Thabazimbi and Lephalale Municipalities.

THIS ESKOM TRANSNET FREIGHT RAIL PROJECT IS A SIP 1 and SIP 10 PROJECT

Limpopo Province Spatial Development Plan (2015)

The identified key sectors in the Province (Agriculture, Mining, Tourism and Manufacturing) combined with opportunities identified by the municipalities which could assist to stimulate economic growth, poverty reduction and overall economic impact should be supported wherever possible.

Economic development opportunities are the key determinant in the settlement patterns. Economic development, in turn, typically responds to the availability of Environmental Capital (e.g. water, suitable agricultural soil, mining resources, etc.) and Infrastructural Capital (e.g. roads, electricity, railway lines, bulk engineering services, etc.).

Transnet Freight Rail is planning the expansion of the existing rail network and development of a new heavy haul rail line in order to unlock the Waterberg and Botswana Coal Fields. A major component of this project is to electrify the current diesel railway section between Lephalale and Thabazimbi (this project).

It is clear that this Eskom Transnet Freight Rail project will unlock economic opportunities within the Limpopo Province and are in line with the principles of the PSDF.

Waterberg District Environmental Management Framework Report

Specialist studies conducted for this project, namely ecology-, bird- heritage- and paleontological impact assessments all concluded that, with the proposed mitigation measures in place, the Preferred Route and Traction Station sites for this development will not jeopardize the integrity of the environment.

These findings were taken into account when the Preferred Alternative, as proposed for Environmental Authorisation, was selected.

The integrity of existing environmental management priorities will not be compromised by the development as proposed.

Title of legislation, policy or guideline	Applicability to Project	Regulating authority
National Environmental Management Act, 1998 (Act No 107 of 1998) (NEMA) and the Environmental Impact Assessment Regulations published in Government Notice No. R.982, December 2014, as amended in April 2017	Authorisation is required – refer to Paragraph 1.3.1 above	National Department of Environmental Affairs
The National Water Act, 1998 (Act No 36 of 1998)	Water use authorisation is not required– refer to Paragraph 1.3.2 above	The Department of Water and Sanitation
National Heritage Resources Act, (NHRA), (Act 25 of 1999)	Comment must be obtained – refer to paragraph 1.3.4 above	South African Heritage Agency (SAHRA) and Limpopo HRA
National Environmental Management: Biodiversity Act (Act no 10 of 2004) NEMBA	Parts of the project falls within a CBA - Authorisation will be granted by DEA via the EA.	National Department of Environmental Affairs
National Environmental Management: Waste Act (Act No. 59 of 2008) 2008	Authorisation is not required	Department of Environmental Affairs
Mineral and Petroleum Resources Development Act (No 28 of 2002)	Authorisation is not required	Department of Mineral Resources
Conservation of Agricultural Resources Act (43 of 1983)	Authorisation is not required	Department of Agriculture
National Forests Act (No 84 of 1998) and Government Notice 1339 of 6 August 1976 (promulgated under the Forest Act (No 122 of 1984) for protected tree species), the removal, relocation or pruning of any protected plants	Permits could be required to remove and/or replant protected tree species. Permit requirements will be identified during the walk-down phase of this project.	Department of Agriculture, Forestry and Fisheries
Fencing Act (No 31 of 1963): Amended by the Agricultural Laws Rationalisation Act, Act No 72 of 1998	Authorisation is not required	South African Government

South African National Standard Civil Engineering Standards and Publications	To be implemented in the design, construction and operational phases of the project.	South African Bureau of Standards
National Development Plan (NDP) (2030)	To be considered	SA National Government

1.4 Details and Expertise of the Environmental Assessment Practitioner

Landscape Dynamics CC is the Environmental Consultants appointed for this project. Landscape Dynamics is an environmental consultancy firm established in May 1997. The main line of business since that time up to present is the compilation of environmental impact assessments. Landscape Dynamics has a broad client base from both the private and government sectors which has developed over the past 22 years of professional services supplied. The operating base for Landscape Dynamics is the entire South Africa; with local representation in Gauteng, the North West Province, Mpumalanga, the Western Cape, the Northern Cape and Limpopo. The Environmental Assessment Practitioners (EAPs) for this project are Ms Annelize Grobler and Ms Susanna Nel. The Landscape Dynamics Company Profile with the relevant condensed Curriculum Vitae is attached in Appendix F.

1.5 Project Team

The impact that this project might have on the environment can only effectively be assessed if all the environmental project components had been satisfactorily identified and considered. A multi-disciplinary approach is therefore required for this basic Environmental Impact Assessment.

The EIA Project Team members are the following (Company Profiles, CV's and Declaration of Interest of the specialists are attached in Appendix F):

Company Name	Contact Person(s)	Responsibility and/or Project Component
Landscape Dynamics	Ms Annelize Grobler Ms Susanna Nel	EIA Project Management Environmental Assessment Practitioners Public Participation Programme
Enviroguard Ecological Services	Prof Leslie Brown	Vegetation Ecological Assessment Aquatic Statement
Archaetnos Cultural & Heritage Resource Consultants	Prof Anton van Vollenhoven	Heritage Impact Assessment
Afrimage Photography	Mr Albert Froneman	Mapping and GIS support

The EIA Project Team is supported by the following team members from within Eskom:

Division within Eskom Group Capital Division	Contact Person(s)	Responsibility and/or Project Component
Environment	Ms Tshifhiwa Matamela	Manager: Land Use Development
Environment	Mr Khathutshelo Nesindande	Applicant Representative & Environmental Manager
Land & Rights	Mr Xander Neethling	Compensation and Servitude Acquisition

1.6 Working Programme

It was necessary to seek an alternative route due to landowner objections and it was required to apply for a 50-day extension as per the NEMA Regulations. The working programme below reflects this extension period.

Activity	Planned (2019)
Kick-off meeting with Eskom	3 April
Date of Site Visit with Professional Team	15 April
<i>Commencement of Public Participation & advertising</i>	19 April
• BID sent to IAPs (30 day commenting period plus holidays)	
• First contact with landowners & adjacent landowners	19 April
• Placement of newspaper ads	19 April
• Placement of onsite ads	15 April
Date specialist studies completed	5 May
Draft BAR & Application Form to Eskom	16 May
Draft BAR & Application Form received back from Eskom	22 May
Submission of Draft BAR to IAPs and landowners (30-day commenting period plus holidays)	22 May
Submission of Draft BAR and Application Form to DEA	31 May
Communication and correspondence with IAPs plus amendment to Draft BAR	30 Sept
Distribution of Final BAR to IAPs for their record keeping	10 October
Submission of Final BAR to DEA (31 May + 90 days + 50 day extension, excluding public holidays)	21 October
Date EA received (107 days after submission of Final BAR)	28 Feb 2020
Notification to all I&AP's of EA and right to appeal	1 March 2020
20 days appeal period ended	21 March 2020

CHAPTER 2: PROJECT INFORMATION

2.1 Need and Desirability

Transnet Freight Rail (TRF) is planning the expansion of the existing rail network and development of a new heavy haul rail line in order to unlock the Waterberg and Botswana Coal Fields. A major component of this project is to electrify the current diesel railway section between Lephalale and Thabazimbi. TRF has requested Eskom provide a CEL for 4x33MVA NMD Traction Stations along the Thabazimbi – Lephalale railway route / corridor. This supply will be utilised as part of the road-rail project which will allow the coal mined in the Lephalale area to be transported using rail to the rest of South Africa.

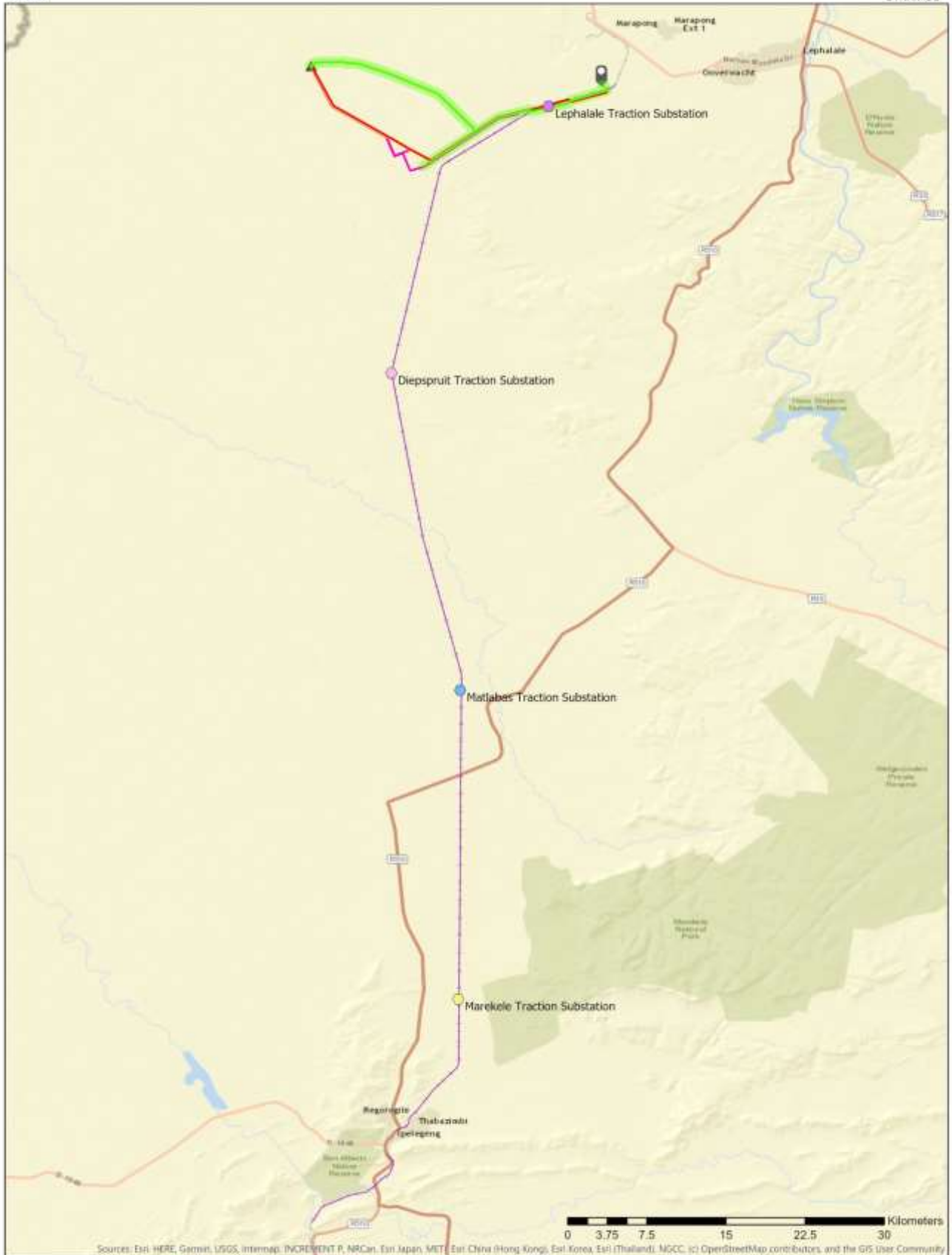
The rail expansion will not only expand the market for coal but it will also allow the various coal mines to utilise the railway instead of road with the associated positive impacts of less heavy load trucks on the roads with less damage to the roads caused by such heavy vehicles, safer transport of goods, more reliable transport, less accident risks, and substantial less fleet maintenance cost.

This project forms part of the Presidential projects currently taking place in the Lephalale area and are both SIP 1 and SIP 10.

During this EIA process the impacts that the project may have on the environment are being assessed and mitigated to acceptable levels. The biophysical environment as well as the impact on the directly affected landowners are taken into account and minimised. This development can therefore be seen as sustainable and desirable.

2.2 Locality and Regional Context

The project runs south and west of Medupi Power Station near Lephalale to just north of Thabazimbi in the Limpopo Province. The route and traction stations fall within both the Lephalale and Thabazimbi Local Municipalities within the boundaries of the Waterberg District Municipality.



- ▲ Theunispans Substation
- Medupi Power Station
- Railway line
- Final route
- Alternative route
- 1st darft route
- 2nd darft route
- 1km final route corridor

0 3.75 7.5 15 22.5 30 Kilometers

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2.3 Project Components / Project Description

The project entails the construction of

- 4 x 132kV Traction Stations (Lephalale, Diepspruit, Matlabas and Marekele)
- 4x communication towers (1x tower at each traction station)
- ±6km 132kV line from Medupi to proposed Lephalale Traction Station
- ±23km 132kV line from Lephalale Traction Station to existing Theunispan Substation
- ±23km 132kV line from Theunispan Substation to Theunispan T-off
- 3 x 132kV line bays at Theunispan Substation
- Loop in-out the 132kV traction stations as follows:
 - Lephalale Traction – 2 x 40 m 132kV lines from the new Medupi Theunispan line
 - Diepspruit Traction – 2 x 1 km 132kV lines from the existing Medupi Thabazimbi line
 - Matlabas Traction – 2 x 1 km 132kV lines from the existing Medupi Thabazimbi line
 - Marekele Traction – 2 x 2.5 km 132kV Lines from the existing Medupi Thabazimbi line

Access roads

Access roads are available to most of the route and to all traction station sites. The existing Transnet servitude road will be utilised. Where new access roads will be made, guidelines as per the EMPr will be strictly adhered to.

2.4 Technical Information

Refer to Appendix B for detailed engineering drawings of the monopole structures that will be used for the proposed power line as well as drawings of a typical traction station.

2.5 Servitude size and Route corridors

Power line

The power line servitude will be 15m for the centre line and 18m on both sides of the line: 18 + 15 + 18 equals a total servitude width of **51m**.

Traction Stations

The servitude for the traction stations will be 150m x 200m (3 hectares), but the actual footprint of the traction station will be approximately 100m x 100m (1 hectare). This will allow for laydown areas during the construction period and expansion should it be required in the future.

Corridors

A 1km corridor (500m on both side of the line as well as around the tractions stations) were investigated and **it is requested that a corridor width of 1km be authorised**. This will enable reasonable adjustments within the corridor during the walk-down and servitude negotiations with the relevant landowner without having to enter into an additional environmental authorisation process. Note that Eskom will however only register the required servitude within the route corridor and *not* the entire corridor.

2.6 Farm and portion numbers & Surveyor General 21 Digit Codes

Key to the SG 21 Digit Codes

Major region				Minor region				Farm / Erf number								Portion number				
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	21	21

FINAL ROUTE AND TRACTION STATION SITES

Farm name and Portion number	SG21 Digit Code
Medupi – Theunispan Power Line Route	
○ Portion 1 of Naauw Ontkomen 509-LQ	TOLQ 0001 00000509 00001
○ Portion 0 of the farm Kuipersbult 511-LQ	TOLQ 0001 00000511 00000
○ Portion 1 of the farm Kuipersbult 511-LQ	TOLQ 0001 00000511 00001
○ Kromdraai 690-LQ	TOLQ 0001 00000690 00000
○ Eenzaamheid 687-LQ	TOLQ 0000 00000687 00000
○ Vergulde Helm 321-LQ,	TOLQ 0001 00000321 00000
○ Buffelsjagt 317-LQ,	TOLQ 0001 00000317 00000
○ Pontes Estates 712-LQ	TOLQ 0001 00000712 00000
○ Enkeldraai 314-LQ	TOLQ 0001 00000314 00000
○ Portion 1 of Geelhoutskloof 717-LQ,	TOLQ 0001 00000717 00001
○ The Remaining Extent Geelhoutskloof 717-LQ	TOLQ 0001 00000717 00000
○ Portion 1 of the farm Zandnek 358-LQ	TOLQ 0001 00000358 00001
○ Portion 2 of the farm Loopleegte 302	TOLQ 0000 00000302 00002
○ Zandbult 300-LQ	TOLQ 0001 00000300 00000
○ Portion 2 of the farm Vangpan 294-LQ	TOLQ 0001 00000294 00002
○ Remainder of the farm Vangpan 294-LQ	TOLQ 0001 00000294 00000
Lephalale Traction Station	
○ Kromdraai 690-LQ	TOLQ 0001 00000690 00000
Diepspruit Traction Station	
○ Diepspruit 386-LQ, Owner	TOLQ 0001 00000386 00000
Matlabas Traction Station	
○ Portion 1 of Matsulan 98-KQ	TOKQ 0003 00000098 00001
Marikele Traction Station	
○ Portion 1 of Kua Metswiri 597-KQ	TOKQ 0003 00000597 00000

The following properties fall within the 1km corridor of the route section between the Theunispans T-off and Theunispans Substation. These properties are situated directly north of the soon to be constructed railway line which will run on properties belonging to Resgen South Africa (Pty) Ltd. The chances of the route running directly across these properties are however very slim.

Portion 3 of the Farm Loopegte 302-LQ	TOLQ 0000 00000302 00003
Vetleegte 304-LQ	TOLQ 0000 00000304 00000
Hooikraal 315	TOLQ 0000 00000315 00000

2.7 Coordinates of Final Route and Traction Station Sites

The coordinates of the final route have been determined and is attached under Appendix A.

The centre point coordinates of the final traction station sites are as follows:

- Lephallale Traction Station
 - 23°43'25.82"S
 - 27°31'14.56"E

- Diepspruit Traction Station
 - 23°57'22.21"S
 - 27°23'34.80"E

- Matlabas Traction Station
 - 24°13'17.97"S
 - 27°27'2.96"E

- Marakele Traction Station
 - 24°28'58.15"S
 - 27°26'51.37"E

CHAPTER 3: ALTERNATIVES

3.1 1st Draft Power Line Route and Traction Station Sites (distributed during first round of public participation)

The 1st Draft Power Line Route and Traction Station Sites were based on the position and alternatives as initially preferred by Eskom. This route was initially preferred by Eskom due to the following:

- It follows existing Eskom power lines with associated advantages that existing access roads could be used for construction and maintenance purposes.
- Maintenance of the new lines could take place at the same time that maintenance on the old lines is being conducted.
- Access to the lines is already arranged with the landowners.

This 1st Draft was presented during the first round of public participation and the specialist investigated these routes and sites.

3.1.1 Maps of 1st Draft

In the maps below, the green line indicates the route and sites preferred by Eskom and the red line indicates alternatives. The black line is the existing diesel railway line that needs to be electrified.

Also refer to Appendix A for A3 and A4 sizes of these maps.

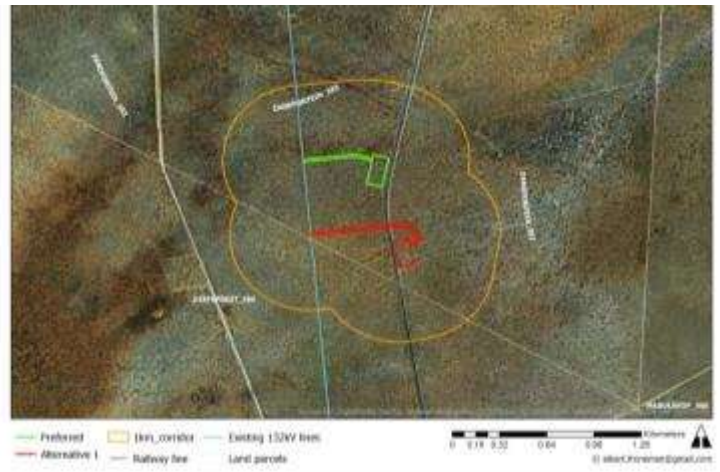
1st Draft: Power line route from the Medupi Power Station to the existing Theunispan Substation



1st Draft: Lephalale Traction Station



1st Draft: Diepspruit Traction Station



1st Draft: Matlabas Traction Station



1st Draft: Marakele Traction Station



3.2 Amendments to 1st Draft

3.2.1 Amendments to 1st Draft due to public input

The maps as shown above were presented during the first round of public participation. All landowners (or their representatives) were telephonically contacted and emails, with these maps attached thereto, were also sent.

Two landowners objected and refused any Eskom infrastructure on their properties. It was required for the power line route to be amended and a new site for the Diepspruit Traction Station had to be found:

POWER LINE ROUTE

- The route was amended to avoid the farm Taaiboschpan 320-LQ

TRACTION STATION SITES

- The Diepspruit Traction Station site was moved to the adjacent property, namely Diepspruit 386-LQ (previously on the farm Portion 2 of Zandfontein).

3.2.2 Amendments to 1st Draft due to specialist studies

Specialist studies were conducted and the following applies:

An Ecological Assessment of the Flora and Watercourses

Flora

The alternative options are located within the same vegetation unit/s and from a plant and faunal ecological point of view has the same conservation value and ecosystem functioning. Except for the protected tree *Sclerocarya birrea* (marula) none of the woody species recorded within the proposed route or traction stations site are protected or threatened species. No red data species were found within the area. From the sensitivity analysis none of the vegetation units had a high sensitivity with vegetation units 1 and 2 having a medium sensitivity while units 3-7 all have a low-medium sensitivity.

Watercourses

A drainage pathway was identified within the Lephalale Traction Station site and another pathway in close proximity to the Matlabas Traction Station site. It was recommended that the traction station site be moved to be outside the water pathway. If it is not possible, it is not thought that it would adversely affect any surface water flow since most of the water cannot continue further south due to the tar road.

The sites were however moved to be well outside of the drainage area. The watercourse will not be impacted on and a Water Use License would not be required.

Conclusion

Based on this study it is concluded that any of the two alternative routes could be considered for the construction of the proposed powerlines and traction stations with no long or medium-term negative ecological effects envisaged.

Bird Impact Assessment

The various alternatives are all located close together and in similar habitat and no specific preferences have emerged from a bird impact assessment perspective. The one exception to this is the core study area for the Lephalale Traction Station. The currently preferred location contains more large trees than the alternative location, making it slightly less preferred from an avifaunal perspective than the alternative location, as it will entail the removal of more large trees, which has a greater potential impact on avifauna.

Heritage Impact Assessment

There is no preference for any alternative from a heritage point of view.

POWER LINE ROUTE

- Amendments to the route due to specialist studies were not required.

TRACTION STATION SITES

- The Lephallale Traction Station site was moved to avoid the drainage pathway
- The Matlabas Traction Station site was moved to avoid the drainage pathway

3.2.3 Conclusion of 1st Draft Alternative Assessment

- A section of the 1st Draft Power Line Route was not reasonable or feasible due to landowner objections of the farm Taaiboschpan 320-LQ (the landowner refused any Eskom infrastructure on the property).
- The 1st Draft Site Position for the Diepspruit Traction Station site was not reasonable or feasible due to landowner objections of Portion 2 of the farm Zandfontein (the landowner refused any Eskom infrastructure on the property).
- The 1st Draft Site Position for the Lephallale Traction Station site was not reasonable or feasible because it was situated within a drainage pathway.
- The 1st Draft Site Position for the Matlabas Traction Station site was not reasonable or feasible because it was situated within a drainage pathway.

3.3 2nd Draft Power Line Route and Traction Station Sites (distributed during the distribution of the Draft BAR)

As described above, the following amendments were made to the 1st Draft due to input from the public and conclusions from specialist studies:

POWER LINE ROUTE

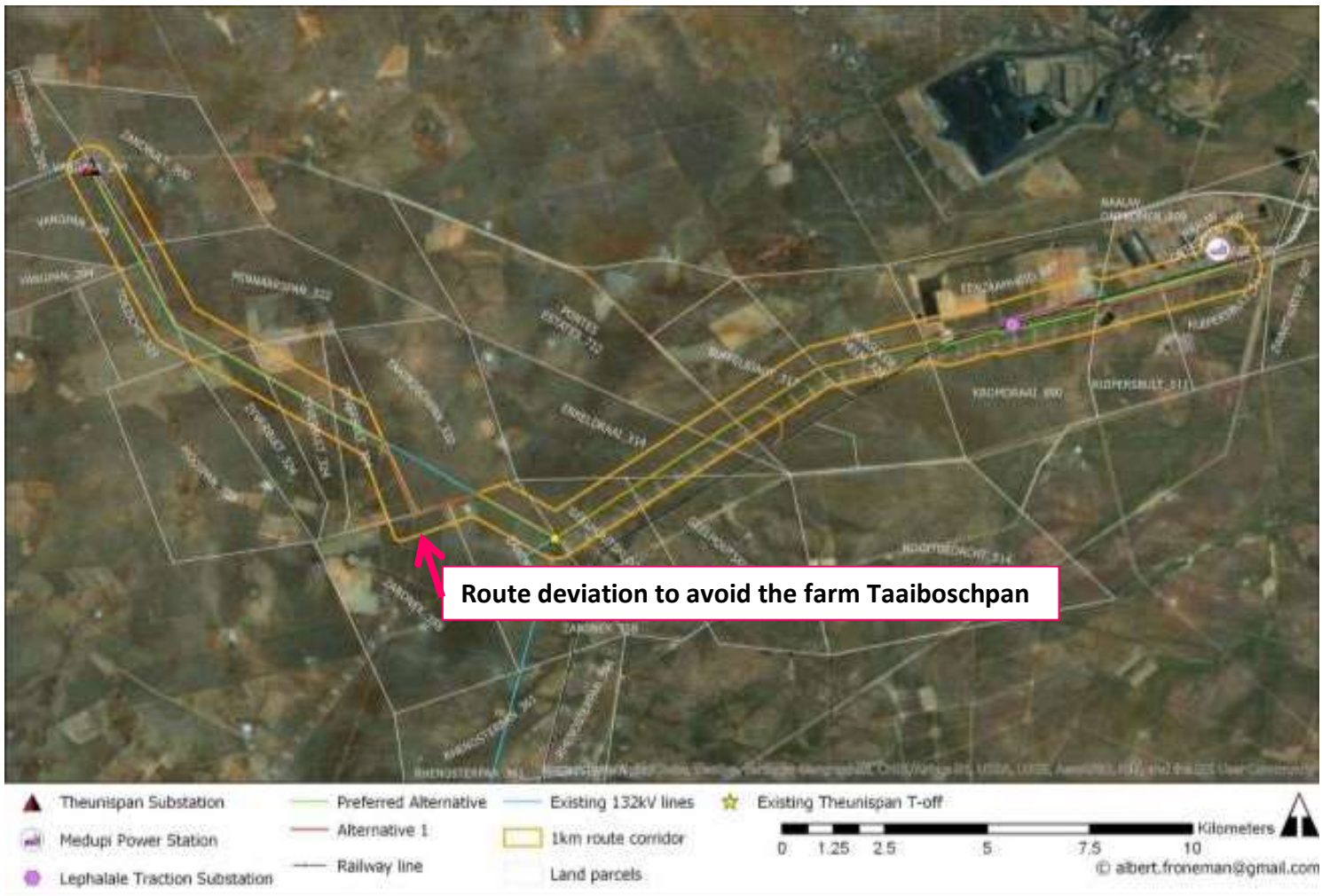
- The route was amended to avoid the farm Taaiboschpan 320-LQ

TRACTION STATION SITES

- The Lephallale Traction Station site was moved to avoid the drainage pathway
- The Matlabas Traction Station site was moved to avoid the drainage pathway
- The Diepspruit Traction Station site was moved to the adjacent property, namely Diepspruit 386-LQ (previously on the farm Portion 2 of Zandfontein) due to landowner objections.

3.3.1 Maps of 2nd Draft

The maps below shows the 2nd Draft route alternative and traction station sites which were distributed for comment during the distribution of the Draft BAR (also refer to Appendix A for A3 and A4 sizes of these maps).



2nd Draft Lephalele Traction Station site
 (amended to avoid drainage pathway)



2nd Draft Diepspruit Traction Station site
 (amended to avoid the farm Zandfontein)



**2nd Draft Matlabas Traction Station site
(amended to avoid drainage pathway)**



**2nd Draft Marakele Station Site
(same as 1st Draft)**



3.4 Amendments to 2nd Draft

3.4.1 Amendments to 2nd Draft due to Eskom requirement

POWER LINE ROUTE

Use of existing servitude for a part of the new proposed line

It came to Eskom’s attention that an existing servitude can be used for a part of the new proposed route. This would result in a saving of servitude costs for about 14km of line and 6 fewer properties to negotiate servitude for with associated millions in cost saving.

The map below shows the new power line route (green line) which is approximately 21m southeast of the previous preferred route. It commences on the farm Vergulde Helm 321 and ends on the farm Zandnek 358, which belongs to Eskom. The route runs along the border of this property to accommodate future Eskom developments.



3.4.2 Amendments to 2nd Draft due to public input

The route as shown above however created problems with the owner of the farm Zyferbult 324 (the farm furthest to the left on the above map) due to the fact that it will have an unacceptable visual impact because the route will run in very close proximity to the farm homestead. This new route would also result in additional line length of ±2km with associated costs of ±R3 million.

In order to mitigate this problem, an entire new route was found approximately 5km to the north of the route that impacts on the Zyferbult farm.

New route 5km north of a section of the originally proposed route

A new section of the route between the Theunispan T-off and the Theunispan Substation (refer to the Final Route Map as shown below) was determined at approximately 5km to the north of the originally proposed route:

- This new section of the route runs in its entirety adjacent to a soon to be constructed railway line - site clearance for the new railway line is underway and construction of some bridges has commenced.
- Only one property owner is involved, namely Resgen South Africa (Pty) Ltd. They are a new-generation, emerging coal producer and agreed in-principle that the powerline route may run across their properties.
- This route avoids any impact whatsoever on the farm Taaiboschpan as well as the farm Zyferbult.

This new route (map in paragraph 3.3 below) is the only acceptable and viable route alternative.

TRACTION STATION SITES

- The Matlabas Traction Station site was moved to the eastern side of the railway line to accommodate a planned water pipeline from the Department of Water & Sanitation.

3.4.3 Amendments to 2nd Draft due to specialist studies

The specialists (ecologist-, aquatic-, bird- and heritage specialists) investigated the new route and all concluded that no obvious signs of any sensitive components were identified that could affect the viability of this proposed route.

3.4.4 Conclusion 2nd Draft Alternative Assessment

The route deviation which was made to avoid the farm Taaibosch was unacceptable to the landowner of Portions 1 and 2 of the farm Zyferbult 324-LQ because the line will run in very close proximity to the homestead. It will also result in additional costs to Eskom of ±R3 million. The section of the 2nd Draft Power Line Route between the Theunispan T-off and Theunispan Substation was therefore not reasonable or feasible.

The final route as proposed below is the only reasonable and feasible route alternative due to the following advantages:

- This new section of the route runs in its entirety adjacent to a soon to be constructed railway line - site clearance for the new railway line is underway and construction of some bridges has commenced.
- Only one property owner is involved, namely Resgen South Africa (Pty) Ltd. They are a new-generation, emerging coal producer and agreed in-principle that the powerline route may run across their properties.
- This route avoids any impact whatsoever on the farm Taaiboschpan as well as the farm Zyferbult.

3.5 Final route and Traction Station Sites Maps

Also refer to Appendix A for A3 and A4 sizes of these maps.



FINAL POWER LINE ROUTE

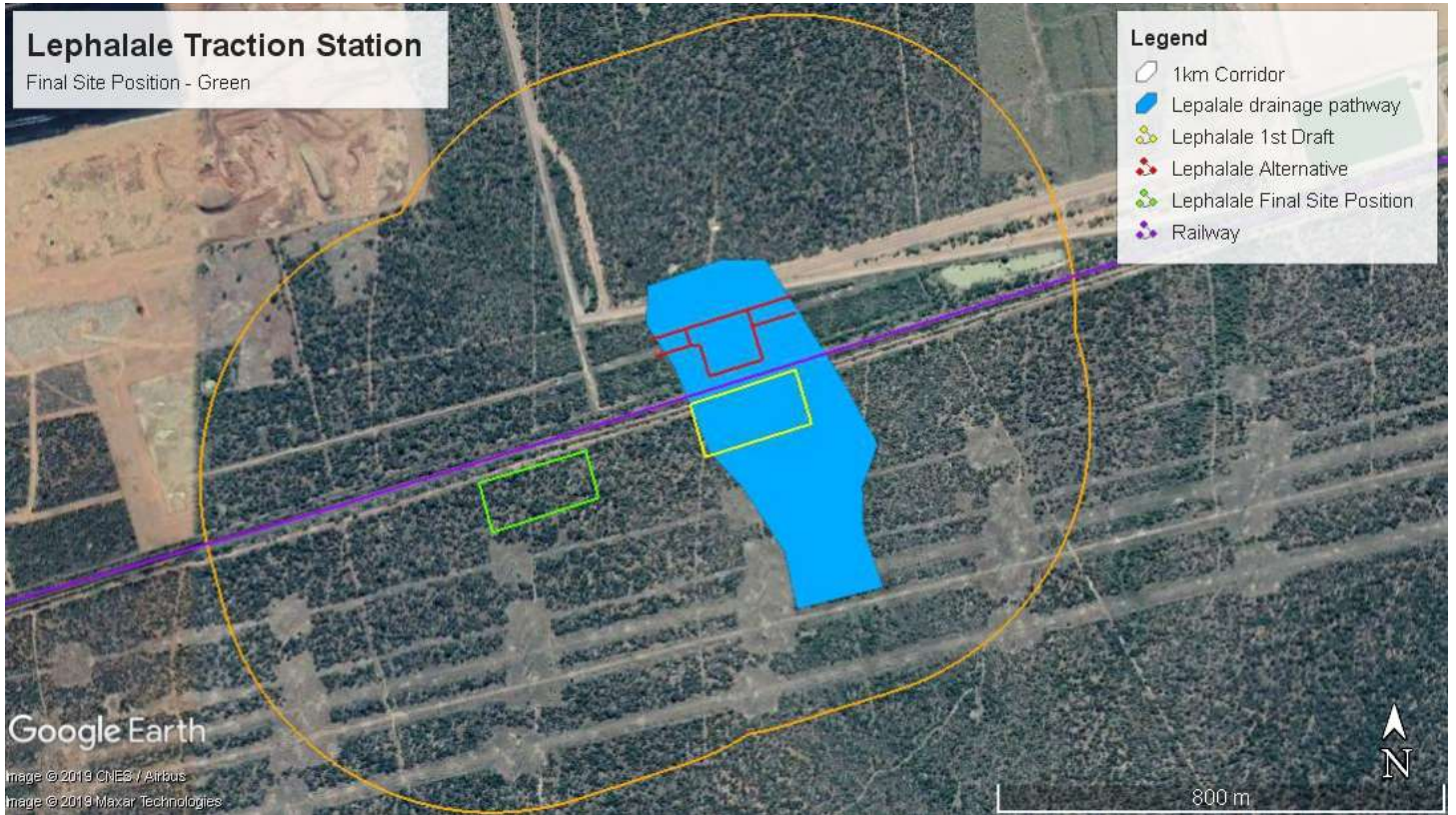
Final Medupi-Theunispans Power Line Route

Legend

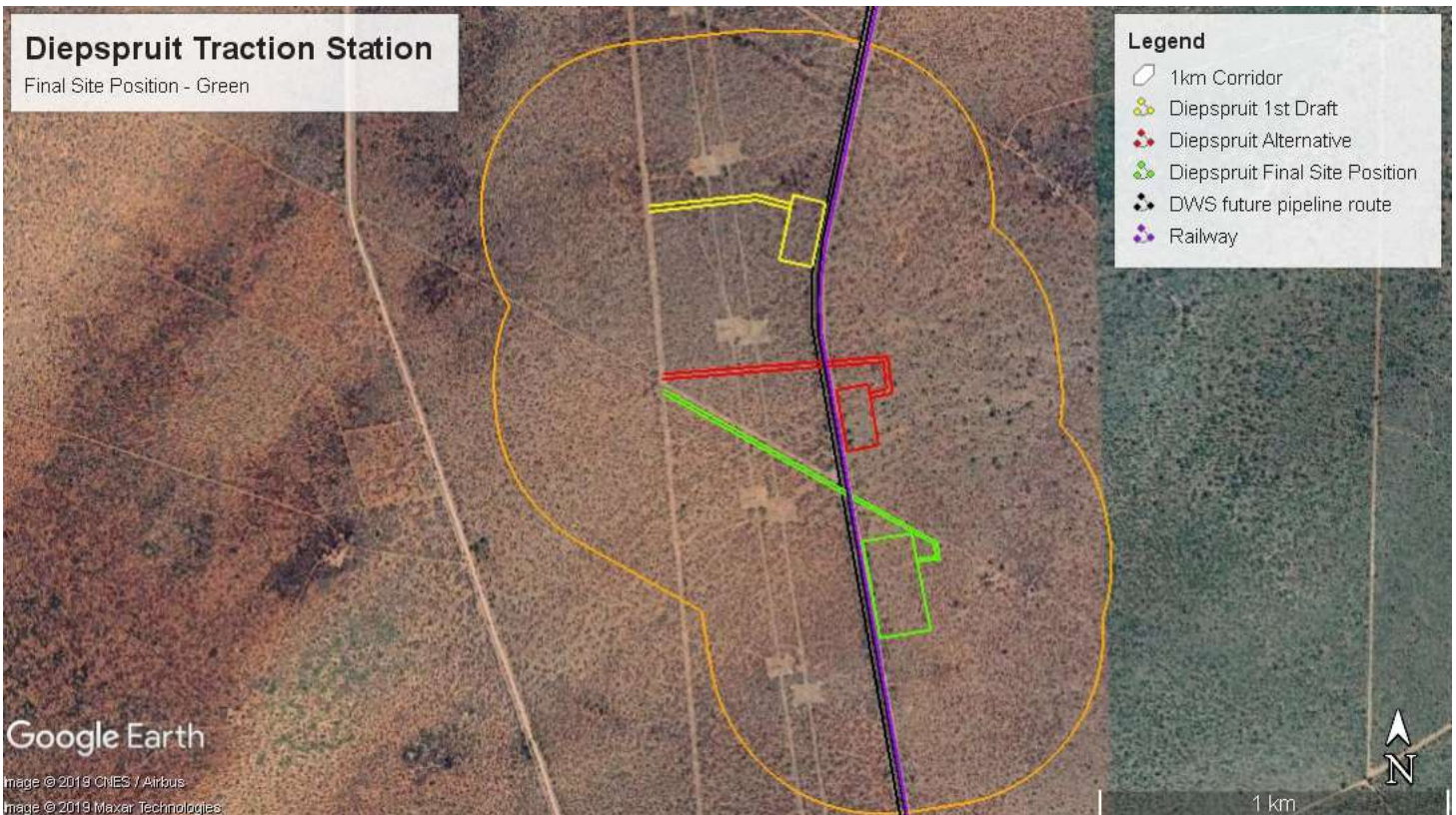
- 1 km corridor
- Final Route



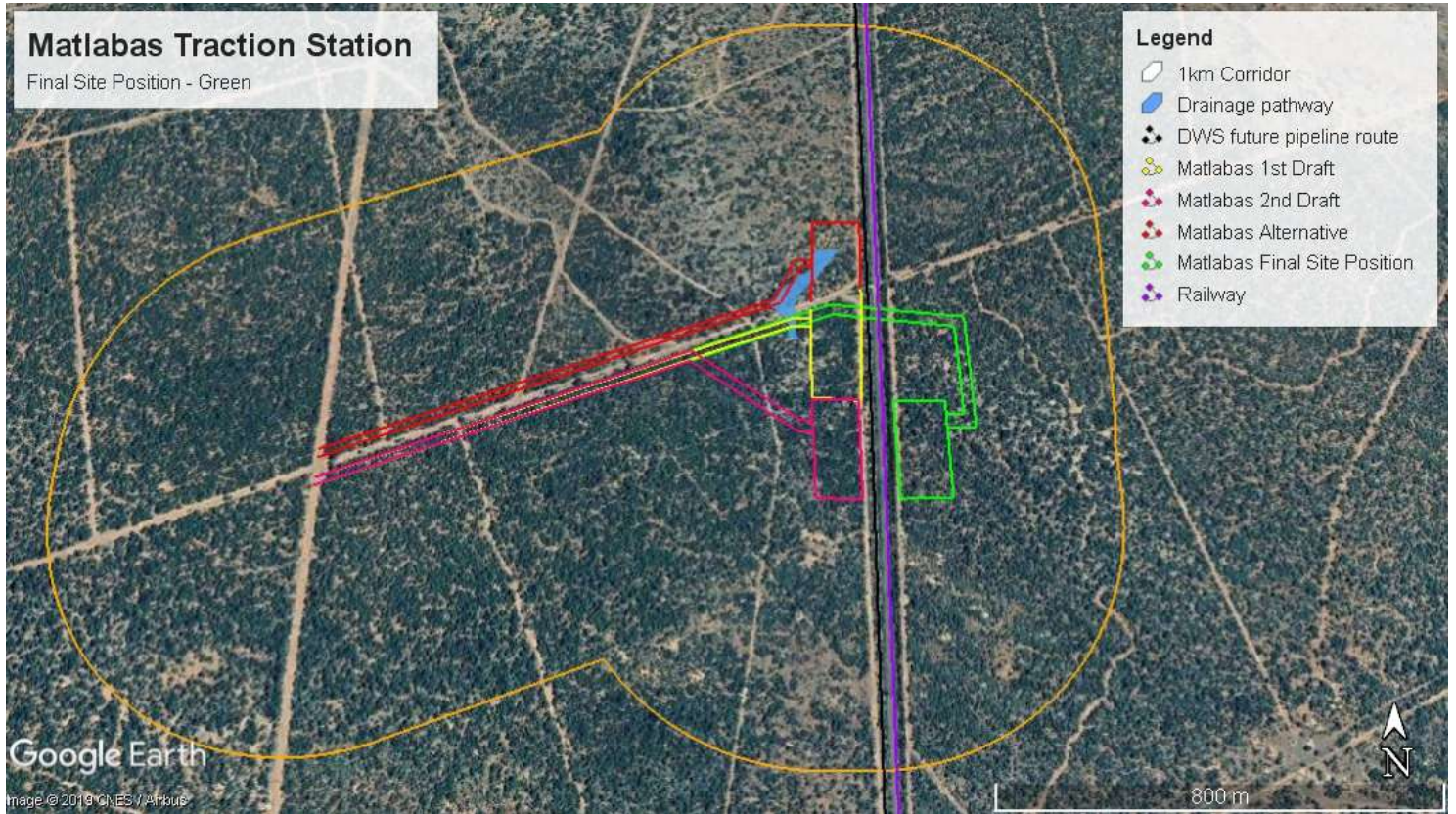
Lephalale Final Site Position (green)



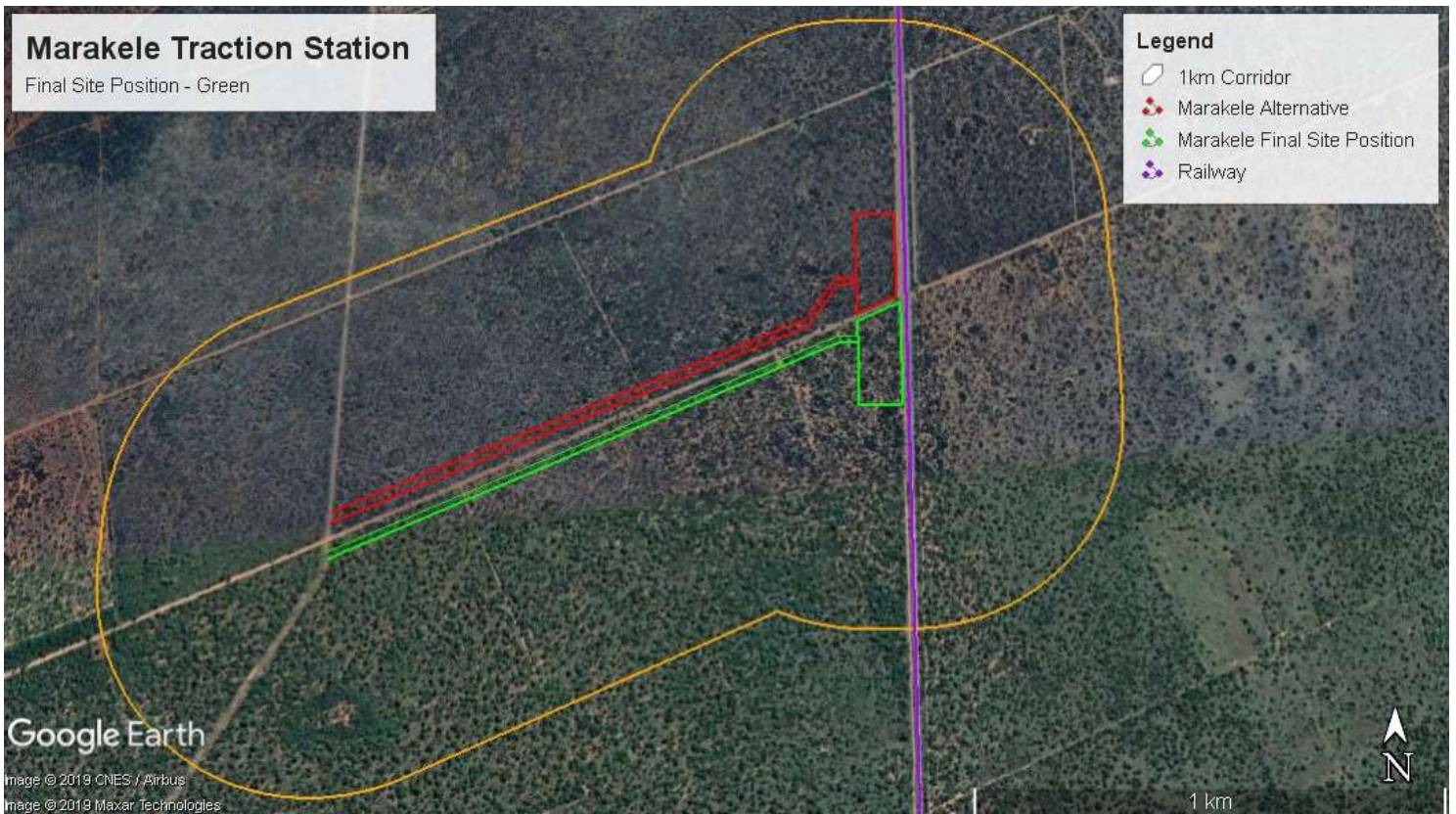
Diepspruit Final Site Position (green)



Matlabas Final Site Position (green)



Marakele Final Site Position (green)



3.6 No Go Alternative

This is the “do nothing” alternative. Under these circumstances the power line and traction stations will not be constructed, there would obviously be no changes to the environment and Transnet would not be able to electrify the current Lephalale / Thabazimbi diesel railway line.

This Eskom Transnet Freight Rail Project forms a major component of Transnet’s plans to develop a new heavy haul rail line in order to unlock the Waterberg and Botswana Coal Fields. The line will also allow the coal mined in the Lephalale area to be transported using rail to the rest of South Africa. This will have a huge positive impact in terms of economic growth and job creation within especially the Limpopo Province.

The rail expansion will not only expand the market for coal but it will also allow the various coal mines to utilise rail instead of road with the associated positive impacts of less heavy load trucks on the roads with less damage to the roads caused by such heavy vehicles, safer transport of goods, more reliable transport, less accident risks, and substantial less fleet maintenance cost.

Should the no go option be applied, none of the positive impacts of this project will be realised and the “No Go” option cannot be considered a responsible and viable alternative.

3.7 Summary

The alternative selection process can be summarised as follows:

POWER LINE ROUTE

The power line route was rerouted

- to accommodate the landowner of the farm Taaiboschpan;
- to accommodate the landowner of the farm Zandnek 358.
- to facilitate significant cost savings by using an existing servitude on a part of the route; and

Further to the above, the section of the route running from the Theunispan T-off to the Theunispan Substation runs directly adjacent to a railway line which is currently under construction. The power line can therefore be seen as an extension of an existing disturbed environment. The railway’s access roads will be utilised for the construction of the power line as well as maintenance purposes.

TRACTION STATION SITES

The site positions were amended as follows:

Lephalale

- The site was moved away from a drainage pathway.

Diepspruit

- The site was moved to accommodate the landowner of the farm Zandfontein.
- This new site position on the eastern side of the railway line also accommodates the future DWS pipeline route.

Matlabas

- The site was moved away from a drainage pathway
- The site was moved to the east of the railway line to accommodate the future DWS pipeline route.

Marakele

- No issues were identified with the original proposal and the original preferred site is the final site position.

3.8 Conclusion

The *Final Power Line Route and Traction Station Sites* maps as presented in the Final BAR (this document) were selected after a thorough public participation process and in-depth specialist studies as well as liaison with Eskom and Transnet.

The EAPs are confident that the route and sites as presented in the maps above are the most acceptable and viable alternatives for this project. This is based on the following:

- *Technical considerations*
Eskom and Transnet are satisfied that the final proposed route meets their requirement in terms of the need of the project.
- *Community Consultation (Social Impact)*
All the directly affected landowners on the final proposed route indicated their support for the project. All objections/comments/concerns received from Interested & Affected Parties were satisfactorily addressed.
- *Environmental Considerations*
All the specialists (vegetation; aquatic; bird and heritage specialists) for the project confirmed their support for the final route and traction station sites.
- *Mitigation*
The EAPs are confident that all potentially negative impact associated with the project can be mitigated to acceptable levels.

CHAPTER 4: SPECIALIST STUDIES

4.1 General / Route Description of the Study Area

General

The route commences at the Medupi Power Station and runs south-west for approximately 18km adjacent to existing power lines. At the Theunispan T-off it veers north-west for a further ±23km and ends at the Theunispan Substation. A double line will be constructed between the Theunispan T-off and the Theunispan Substation. The line runs directly adjacent to a soon to be constructed railway line in this section. It runs through game farms with the main farming activities being game and cattle farming. The four traction station sites are all situated directly adjacent the existing diesel railway line. These sites are all easily accessible via the existing Transnet access road and are also situated on bushveld farms.

Climate

The area is known for its hot summers (November-February) and mild winters (June-August). The average midday temperatures range from 22°C in the winter (June) to 32°C in the summer (January). During July the coldest temperatures are experienced when the mercury drops to 3.5°C during the night. On average the area received 400mm of rain per annum with most of the rainfall occurring during the mid-summer.

Topography

The landscape varies from flat gently undulating plains. No major rivers flow through the proposed route area.

4.2 Biophysical Environment

4.2.1 Ecological Assessment of the Flora and Watercourses

The aim of the impact assessment is to present a floristic and aquatic assessment of the habitat along the proposed power lines, loops and substations and to highlight sensitive attributes and areas within the environment that might be adversely affected by the proposed development. The impacts are to be evaluated and pertinent mitigating actions recommended.

This report provides information on:

- Main vegetation types that occur along the proposed routes
- Vegetation units present along the proposed routes

- Watercourses present along the proposed routes
- Likelihood that red data plant species could occur along the different proposed routes
- Sensitive ecosystems that could be affected by the proposed routes

VEGETATION

Along the proposed power line route four distinct **Vegetation Units** were identified:

1. *Combretum apiculatum* woodland
2. *Senegalia nigrescens* woodland
3. *Senegalia erubescens* woodland
4. *Terminalia sericea* woodland
5. Drainage pathways and seasonally wet depressions
6. Old fields

Other areas identified include the developed areas. These areas consist of the Medupi Power Station as well as retention dams and areas cleared of all vegetation. No natural vegetation is present on these areas since all have been destroyed by the developments and buildings.

Vegetation Units



No colour = Unit 1; Red = Unit 2; Green = Unit 3; Purple = Unit 4; Blue = Unit 5 (Light blue = Drainage lines; Dark blue = Seasonally wet depressions); White = unit 6]

Vegetation Unit 1: *Combretum apiculatum* woodland



Soil	Red loamy sandy soil	Tree cover	30%
Topography	Level	Shrub cover	45%
Land use	Livestock and free moving game	Herb cover	8%
Unit status	Natural to degraded	Grass cover	1-25%
Faunal spp.	Birds, insects, small mammals, domestic animals	Rock cover	1-5%
Erosion	0%		
Dominant spp.	<i>Combretum apiculatum</i> ; <i>Combretum zeyheri</i> ; <i>Sclerocarya birrea</i> ; <i>Senegalia nigrescens</i> , <i>Ehretia rigida</i> .		
Alien plant species <i>Verbena bonariensis</i>		Red data species Protected tree <i>Sclerocarya birrea</i>	
Conservation value: Medium-high		Ecosystem functioning: Medium-high	

Vegetation Unit 2: *Senegalia nigrescens* woodland



Soil	Red loamy sandy soil	Tree cover	15%
Topography	Level – undulating slight southern slope (1-20)	Shrub cover	25%
Land use	Game & cattle	Herb cover	8%
Unit status	Natural to degraded	Grass cover	55-60%
Faunal spp.	Birds, insects, small mammals, domestic animals	Rock cover	1%
Erosion	5%		
Dominant spp	<i>Senegalia nigrescens</i> , <i>Senegalia erubescens</i> , <i>Combretum apiculatum</i> , <i>Eragrostis rigidior</i> , <i>Heteropogon contortus</i>		
Alien Plant Species None		Red data species None	
Conservation value: Medium- high		Ecosystem functioning: Medium-high	

Vegetation Unit 3: *Senegalia erubescens* shrubland



Soil	Red loamy sandy soil	Tree cover	5%
Topography	Level – undulating slight southern slope (20)	Shrub cover	35%
Land use	Game & cattle	Herb cover	10%
Unit status	Natural to degraded	Grass cover	30%
Faunal spp.	Birds, insects, small mammals, domestic animals	Rock cover	1%
Erosion		2%	
Dominant spp	<i>Senegalia erubescens, Eragrostis rigidior; Grewia bicolor</i>		
Alien plant species <i>Opuntia ficus-indica</i>		Red data species None	
Conservation value: Medium		Ecosystem functioning: Medium	

Vegetation Unit 4: *Terminalia sericea* woodland



Soil	Red sandy soil	Tree cover	15%
Topography	Level – undulating slight southern slope (1-20)	Shrub cover	15%
Land use	Game & cattle	Herb cover	3%
Unit status	Natural to degraded	Grass cover	65%
Faunal spp.	Birds, insects, small mammals, domestic animals	Rock cover	0%
Erosion		0%	
Dominant spp	<i>Terminalia sericea; Eragrostis pallens</i>		
Alien Plant Species None		Red Data Species Protected tree <i>Sclerocarya birrea</i>	
Conservation value: Low		Ecosystem functioning: Low-medium	

Unit 5: Drainage pathways and seasonally wet depressions



Soil	Red to grey sandy sodic soil	Tree cover	10%
Topography	Slightly to medium deep depressions	Shrub cover	15%
Land use	Game & cattle	Herb cover	3%
Unit status	Natural but degraded	Grass cover	45%
Faunal spp.	Birds, insects, small mammals, domestic animals	Rock cover	3%
Erosion		3%	
Dominant spp	<i>Vachellia tortilis</i>		
Alien Plant Species		Red Data Species	
None		One protected tree <i>Boscia albitrunca</i> was found within the depressions	
Conservation value: High		Ecosystem functioning: Medium	

Unit 6: Old fields



Soil	Red sandy loam soil	Tree cover	0-5%
Topography	Level – undulating slight southern slope	Shrub cover	0-25%
Land use	Game & cattle	Herb cover	5%
Unit status	Degraded	Grass cover	65%
Faunal spp.	Birds, insects, small mammals, domestic animals	Rock cover	0%
Erosion		5%	
Dominant spp	<i>Dichrostachys cinerea, Vachellia tortilis; Eragrostis rigidior; Cynodon dactylon</i>		
Alien Plant Species		Red Data Species	
None		None	
Conservation value: Low		Ecosystem functioning: Low	

Unit 7: Diepspruit Traction Station



Soil	Red sandy soil	Tree cover	15%
Topography	Level – undulating slight southern slope (1-20)	Shrub cover	15%
Land use	Game & cattle	Herb cover	3%
Unit status	Natural to degraded	Grass cover	65%
Faunal spp.	Birds, insects, small mammals, domestic animals	Rock cover	0%
Erosion		0%	
Dominant spp	<i>Terminalia sericea; Eragrostis pallens</i>		
Alien Plant Species		Red Data Species	
None		None	
Conservation value: Medium		Ecosystem functioning: Medium	

Unit 8: Matlabas Traction Station



Soil	Deep red sandy soil	Tree cover	15%
Topography	Level	Shrub cover	15%
Land use	Game & cattle	Herb cover	5%
Unit status	Degraded	Grass cover	5%
Faunal spp.	Birds, insects, small mammals, domestic animals	Rock cover	0%
Erosion		0%	
Dominant spp	<i>Combretum apiculatum; Dichrostachys cinerea; Grewia bicolor</i>		
Alien Plant Species		Red Data Species	
None		Protected tree <i>Sclerocarya birrea</i>	
Conservation value: Low		Ecosystem functioning: Low-medium	

Unit 9: Marakele Traction Station



Soil	Red loam soil	Tree cover	8%
Topography	Level – undulating slight southern slope (1-20)	Shrub cover	50%
Land use	Game & cattle	Herb cover	5%
Unit status	Natural to degraded	Grass cover	50%
Faunal spp.	Birds, insects, small mammals, domestic animals	Rock cover	0%
Erosion	1%		
Dominant spp	Various spp		
Alien Plant Species		Red Data Species	
None		None	
Conservation value: Low		Ecosystem functioning: Low-medium	

Vegetation Type

Threatened ecosystems & Protected areas

According to the SANBI data and locality maps no protected or threatened vegetation types are present within the proposed corridors and substations.

Vegetation types

On a small scale the proposed routes fall within the savanna biome and within a larger regional scale the proposed route and substations are located within the Central Bushveld Bioregion (Svk).

In terms of vegetation types the proposed route and substations are located within two vegetation types, namely:

- Limpopo Sweet Bushveld (SVcb 19)
This vegetation type is regarded as being least threatened. Although only 1% of the target of 19% is statutorily conserved in smaller nature reserves, the area is mostly used for game farming and cattle grazing purposes with an estimated 5% transformed by cultivation.
- Western Sandy Bushveld (SVcb 16)
This vegetation type is regarded as being least threatened. Of the target of 19% only 6% is statutorily conserved, while 4% is transformed due to agricultural activities. Large sections are used for game farming also.

Limpopo Conservation Plan: Ecosystem classification

The proposed routes as well as substations were also assessed in terms of their provincial classification according to the Limpopo Conservation Plan 2 (LCPv2):

- Vegetation units 3 and 5 and sections of vegetation unit 1: Critical Biodiversity Area (CBA) 1
- Sections of vegetation unit 1, 2 and 6 in the south and eastern parts are located within an Ecological Support Area (ESA) 1
- Diepspruit Traction substation: CBA 1
- Matlabas Traction substation: CBA 1
- Marakele Traction substation: ESA 1

The Conservation Plan and associated maps are done on a relatively coarse scale and it is important to note that it does not replace site assessments for EIA purposes and still requires specialist interpretation and assessment.

A CBA is regarded as an area that need to be maintained in as natural condition as possible to meet the region's biodiversity target. An ESA is an area that has been subjected to some degradation and although no longer intact, it is largely natural and important to support CBA's and to maintain landscape connectivity

For the proposed powerline from Medupi Power Station to the existing Theunispan substation the southern sections of the proposed power line are located within either a CBA or an ESA. The sections of vegetation unit 1, 3 and 5 (*Combretum apiculatum* woodland, *Senegalia erubescens* shrubland & Drainage pathways and seasonally wet depressions) that are located within these units are very narrow, along existing power-lines and roads, and have become degraded due to anthropogenic activities (roads, overgrazing, land clearing, edge effect of tar and gravel roads etc.). The vegetation of these areas consists of natural plant species but has become densified with degraded sections present. Thus, although these areas are located within the broad-scale CBA & ESA areas, they are not regarded as being sensitive from a plant ecological perspective along this part of the proposed route. No development is however planned within vegetation unit 5.

Vegetation units 2 & 6 (*Senegalia nigrescens* woodland & *Old fields*) and sections of vegetation unit 1 (*Combretum apiculatum* woodland) are located within ESA areas. These vegetation units are not regarded as being unique and are also somewhat degraded (especially the Old fields) resulting in these units having medium and low conservation values respectively. These sections are therefore not regarded as having an important function in terms of conservation of the vegetation ecosystem.

The proposed Diepspruit and Matlabas traction substations are located within CBA areas, while the Marakele traction substation is located within an ESA. These areas are however, regarded as being degraded with the Diepspruit area having a medium and the Matlabas and Marakele substation low conservation values.

Environmental Sensitivity

A sensitivity analysis was done for the seven vegetation units identified. This was achieved by evaluating the different vegetation units against a set of habitat criteria. The results indicate that units 1, 2 and 5 to have **medium sensitivity**, Unit 6 a **low sensitivity**, while units 3, 4, Diepspruit, Matlabas and Marakele all have **low-medium sensitivity** to disturbance.

Ecological sensitivity of the different vegetation units along the proposed corridors



Orange = Medium; Yellow Low-medium

WATERCOURSES

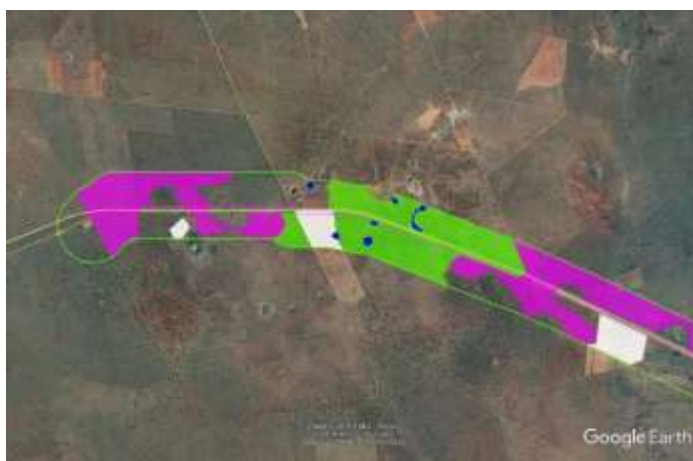
One small artificial concrete-lined dam, three broad open drainage pathways and scattered seasonally wet depressions were identified in the proposed powerline route (vegetation unit 5), while a similar open drainage pathway occurs within unit 8 (Matlabas Traction). The drainage pathways are indiscernible from the surrounding vegetation and is at most slightly more open in terms of woody species with a slightly higher number of *Vachellia/Senegalia* species, though the tree *Combretum apiculatum* is still either dominant or prominent. These areas are only visible on aerial images and the slightly different vegetation composition. Due to the presence of the drainage pathway at the Matlabas substation the Alternative and Final position are the preferred sites.

Two of the three alternatives of the Lephalale Traction station are located within the drainage pathways. The final site position (green lines) is located within vegetation unit 1 and would from a plant ecological point of view have the lowest impact on the environment.



From an ecological point of view these pathways cannot be classified as watercourses, though it does in some way channel slightly more surface water during high rainfall events than the surrounding areas. These areas were nonetheless assessed as drainage lines in terms of their Ecological Importance and Sensitivity (EIS). The results of the analysis indicate the pathways as having a low Ecological Importance and Sensitivity (EIS) score of 0.92. These areas thus at the most play a role in directing surface water from the areas and have no significant ecological value or different vegetation structure and composition from adjacent areas.

The proposed powerline route will traverse one seasonally wet depression section, but it is not expected that it would have any negative effect on the system provided that no pylons are placed within the depression. Similar depressions are traversed by existing powerlines along the route.



All the other seasonally wet depressions identified are not located within the proposed powerline route. The depressions are however important within the ecosystem and the results from the PES analysis indicate the hydrology and vegetation of these areas (PES = C) to be moderately modified, but overall these systems are natural. Geomorphologically these depressions (PES = B) are largely natural with minimal loss of ecosystem services as a result thereof.

IMPACT ASSESSMENT

Refer to Chapter 6 of this report for a detail Impact description, mitigation measures provided and impact assessment tables. In summary it states that construction of the proposed infrastructure will pose a LOW / NEGLIGIBLE impact on the environment *after* mitigation measures have been applied.

ASSESSMENT OF ALTERNATIVES

Vegetation

All options are located within the same vegetation unit/s and from a plant and faunal ecological point of view has the same conservation value and ecosystem functioning. Except for the protected trees *Sclerocarya birrea* (marula) and *Boscia albitrunca* (Shepperd's tree) none of the woody species recorded within the proposed route or substations are protected or threatened species. No red data species were found within the area. From the sensitivity analysis none of the vegetation units had a high sensitivity with vegetation units 1, 2, 3, 5 and 7 having a medium sensitivity while units 4, 6, 8 and 9 all have a low-medium sensitivity.

Watercourses

The site position of the Lephalale and Matlabas Traction Stations were moved to be well outside of the identified drainage pathways and these new site positions are therefore the preferred sites.

CONCLUSION

Any development will have a negative effect on the natural ecosystem in particular the vegetation thereof. The vegetation of the areas where the proposed pylons will be constructed will be damaged and some destroyed. The vegetation is however, not regarded as highly sensitive or threatened and most of these species will regrow without any huge negative effect on the environment.

The total study area can be broadly classified as a *Combretum apiculatum* woodland with smaller sections dominated by *Senegalia/Vachellia* and *Terminalia* species. The proposed power line

routes and substations are located within natural areas however, most of the areas of the proposed power line and the proposed Diepspruit, Matlabas and Marakele substations are regarded as being moderately degraded to natural. The sections of the power line located within CBA or ESA areas do have natural species, but the ecosystem has been negatively affected due to anthropogenic influences (current and past). The vegetation of these areas, although natural in terms of the woody component, has been affected resulting in a degraded herbaceous layer and resultant densification of woody species. The vegetation of some of the areas is mostly natural, though some sections are degraded. All of the vegetation units, although natural and part of the natural ecosystem form part of a larger and in some places more pristine ecosystem. The landscape is mostly low flat to undulating areas with sandy plains.

Fragmentation of the habitat is not expected to be of any significance with normal connectivity between ecosystems still intact due to the relatively small footprint of the pylons. Any fragmentation will also be mitigated by clearing as small an area as possible when constructing the pylons.

Three water pathways and various seasonally wet depressions (vegetation unit 5) were identified along the proposed Medupi-Theunispan powerline and the one along the Matlabas Traction substation loop route. The drainage pathways have a low Ecological Importance and Sensitivity while the depressions have a medium-high conservation value. The alternatives provided where these substation locations did occur within the pathways are all outside the pathways and will therefore have no impact on these systems. Except for one seasonally wet depression, none of the substations or proposed powerline route traverses any depression. The area where one depression is traversed can be easily mitigated and should have a minimal if any effect on the ecosystem.

Two protected tree species namely *Sclerocarya birrea* (units 1, 4 & 6) and *Boscia albitrunca* (units 1, 2 & 6) were identified in different vegetation units. These trees play an important role in the ecosystem by providing food, shelter and shade to various animal and bird species. It is therefore important that these trees are not unnecessarily removed from the ecosystem. The placement of the pylons should be done in such a way as to avoid damaging these species as far as possible. If single individuals of these species have to be removed, a permit from the Department of Agriculture, Fisheries and Forestry (Forestry Branch) and Nature Conservation will have to be obtained for this purpose. It is recommended that once the final powerline route and pylon positions have been decided on and pegged that a walk down by a qualified plant ecologist is done to determine if any of these protected species must be removed.

Four medicinal plant species were recorded but none are threatened species and are common throughout the area.

It is concluded that all impacts could be mitigated to LOW or NEGLIGIBLE levels.

4.2.2 Bird Impact Assessment

A Bird Impact Assessment was undertaken by Chris van Rooyen Consulting and is attached under Appendix C. A summary thereof follows below.

Important Bird Areas (IBA)

None of the core study areas fall within an IBA. However, the Waterberg System IBA SA007 is located directly east of the core study areas, and it is conceivable that some birds, especially Cape Vultures from the Kransberg vulture colony in the Marekele National Park, could at times wander into the core study areas, especially if there is food available in the form of carcasses. The multitude of transmission lines which converge on the Matimba and Medupi power stations also serve as occasional roosting substrate for Cape Vultures.

Coordinated Waterbird Count (CWAC) Data

There are no registered CWAC sites within close proximity of the study area therefore CWAC data was not used as a criterion to assess the sensitivity and anticipated impacts in the project area.

Avian Habitat

The following avian habitat classes were recorded within the core study areas:

- Woodland
- Waterbodies
- Cleared areas
- Industrial areas
- Transmission lines

Power line sensitive and Red Data species

The powerline sensitive and Red Data species recorded within the broader study area most relevant to this impact assessment are:

- Raptors, vultures, large terrestrial species and waterbirds that is potentially susceptible to collisions with powerlines.
- Raptors, vultures and some waterbirds that is potentially susceptible to electrocutions on powerlines.

IMPACT ASSESSMENT

Refer to Chapter 6 of this report for a detail Impact description, mitigation measures provided and impact assessment tables. In summary it states that construction of the proposed infrastructure will pose a LOW potential risk to power line sensitive and Red Data avifauna. In all instances, appropriate mitigation should reduce the LOW risk to VERY LOW.

ASSESSMENT OF ALTERNATIVES

The various alternatives for the traction substations and the proposed loop in-out are all located close together and in similar habitat. No specific preferences have emerged from a bird impact

assessment perspective as far as alternatives are concerned. The one exception to this is the core study area for the Lephalale Traction substation. The final location contains more large trees than the alternative location, making it slightly less preferred from an avifaunal perspective than the alternative location, as it will entail the removal of more large trees, which has a greater potential impact on avifauna.

The major difference between the first, second and final alternatives that have been proposed for the proposed Medupi-Lephalale-Theunispan 132kV line, is the presence of existing high voltage lines. In the case of the first and second drafts, there is an existing high voltage line which runs parallel to these proposed alignments. This is advantageous in that it increases the risk of impacts only moderately, as it effectively comes down to the extension of an existing impact, namely the existing high voltage line. It also helps to reduce the risk of collisions, in that the bundling of the lines together makes the obstacle more visible. However, given the habitat and species potentially at risk, the overall risk of collisions is still regarded to be low, irrespective of which alignment is used, and it can be mitigated to very low levels.

CONCLUSION OF BIRD IMPACT ASSESSMENT

In general, the sensitivity of the habitat is low to medium from a potential power line impact perspective. Historically, woodland (savanna) dominated the core study area and would have supported many Red Data and power line sensitive species. However, anthropogenic impacts as a result of a change in land use practices have had a negative impact on the available natural habitat in some sections of the core study area, and consequently the avifaunal diversity and abundance. However, the avifaunal habitat is generally in a good state.

The construction of the proposed infrastructure will pose a LOW potential risk to power line sensitive and Red Data avifauna. In all instances, appropriate mitigation should reduce the LOW risk to VERY LOW.

4.3 Cultural / Historical Environment

4.3.1 Heritage Impact Assessment

A Heritage Impact Assessment was undertaken by Archaetnos Consultants and is attached under Appendix C. A short summary thereof follows below.

A survey of literature as well as a field investigation was undertaken according to generally accepted HIA practices and was aimed at locating all possible objects, sites and features of cultural significance in the area of proposed development. The study concluded as follows that **no sites of cultural heritage importance were identified.**

The following is recommended:

- Since no sites were identified, the project may continue from a heritage perspective.
- A few sites, all outside of the corridors have however been noted from previous heritage reports. This development will however not impact on these sites.
- From a heritage perspective the final positions of infrastructure for the project can be accepted.
- Due to accessibility issues and the density of vegetation a walk down, after positions of pylons have been determined, would be needed to confirm that nothing of heritage value is being compromised. This will be applicable to all project components.
- It should be noted that the subterranean presence of archaeological and/or historical sites, features or artefacts is always a distinct possibility. Care should therefore be taken when development commences that if any of these are discovered, work on site immediate cease and a qualified archaeologist be called in to investigate the occurrence.

4.3.2 Paleontological Impact Assessment

A Desktop Paleontological Impact Assessment was undertaken by Prof Marion Bamford and is attached under Appendix C. The study concluded as follows:

The proposed routes and sites for the Theunispan-Lephalale-Medupi section (north section) and the Lephalale, Diepspruit, Matlabas and Marakele Traction substations lie on rocks of the Waterberg Group. More specifically, the northern section, including Diepspruit, are on sandstones of the Sandriviersberg and Mogalakwena Formations (Kransberg Subgroup), the Matlabas Traction substation is on sandstones of the Skilpadkop and Setlaole Formations (Matlabas Subgroup), and the Marakele Traction substation is on sandstones of the Alma Formation (Nylstroom Subgroup).

The formations of the Waterberg Group listed here are not fossiliferous because they are older than the evolution of body fossils and are too coarse-grained, as far as recorded to date, to preserve microbial trace fossils. Microbial trace fossils such as “biological soil crusts” have only been reported from the fine-grained sandstones of Makgabeng Formation which is about 75km east of Lephalale.

It is concluded that there is no chance of finding fossils in the medium to coarse-grained sandstones of the majority of the formations of the Waterberg Group and that, as far as the palaeontology is concerned, the excavation for foundations for the project pylons, access roads and buildings may proceed. There are no preferred routes or sites.

CHAPTER 5: PUBLIC PARTICIPATION

5.1 Objectives of the Public Participation Programme

The main aim of public participation is to ensure transparency throughout the EIA process. The objectives of public participation in this EIA are the following:

- To identify all potentially directly and indirectly affected stakeholders, government departments, municipalities and landowners;
- To communicate the proposed project in an objective manner with the aim to obtain informed input;
- To assist the Interested & Affected Parties (IAPs) with the identification of issues of concern, and providing suggestions for enhanced benefits and alternatives;
- To obtain the local knowledge and experience of IAPs;
- To ensure that all reasonable alternatives are identified for assessment.
- To communicate the proceedings and findings of the specialist studies;
- To ensure that informed comment is possible;
- To ensure that all concerns, comment and objections raised are appropriately and satisfactorily documented and addressed;

5.2 Public Participation Process Followed

Significant measures were taken to ensure that all stakeholders and IAPs were informed of the project and were allowed the initial opportunity to place their concerns and comment on record.

First Phase Notification/Advertisement of the project

- *List of Interested & Affected Parties*
All potential directly and indirectly affected landowners, stakeholders and government departments were identified. The list is included in Appendix D of this report.
- *First Phase Notification: Distribution of Background Information Document*
A Background Information Document (BID) was compiled and distributed via email on 18 – 30 April 2019. A 30-day commenting period excluding public holidays applied. This BID as well as proof of distribution is included in Appendix D.
- *Onsite notices*
Seven A2 laminated onsite notices (in English) were placed on 15 April 2019 along the proposed power line route as well as at each traction station site as follows:

- At the start of the line close to the Medupi Power Station
- At the proposed Lephallale Traction Substation
- At the approximate centre of the new route where the line veers to the north-west
- At the existing Theunispans Substation
- At the proposed Diepspruit Traction Substation
- At the proposed Matlabas Tracation Substation
- At the proposed Marekele Traction Substation

Proof of placement is included in Appendix D.

- *Newspaper advertisement*

An advertisement was placed in the Mogol Post local newspaper on 19 April 2019. Proof of placement is included in Appendix D.

Distribution of the Draft Basic Assessment Report

The Draft Basic Assessment Report (BAR) was distributed for a 30-day commenting period (May/June) as follows (proof of distribution is attached under Appendix D):

- Hard copies of the report were sent via courier to:
 - Lephallale Local Municipality
 - Thabazimbi Local Municipality
 - National Department of Environmental Affairs: Biodiversity Conservation
 - Limpopo Department of Economic Development, Environment and Tourism: EIA Office
 - The Draft BAR was linked to the SAHRIS website of the South African Heritage Resources Agency (SAHRA) for their perusal and comment.

- All registered Interested and Affected Parties, inclusive of directly affected landowners, was informed via email that the Draft BAR could be viewed on www.landcapedynamics.co.za.

Onsite notification on new section of the route (the Final Route)

3x A2 laminated onsite notices (in English) were placed on 4 October 2019 along the new power line route – the new route, which is the Final Route as presented in this report, runs approximately 5km to the north of a section of the first route alternatives (proof is attached under Appendix D):

- At the Theunispans Substation
- At the approximate centre of the route
- At the Theunispans T-off

Distribution of the Final BAR

Comment received on the Draft BAR is addressed in the Final BAR (this document) and was distributed to the public for their perusal and record keeping. Should any comment be received (which is not foreseen) it will be forwarded to DEA in due course.

The Final BAR is now submitted to DEA for their consideration for Environmental Authorisation.

5.3 Comment Received during the Initial Advertising Period

Portion 2 of Zandfontein 382 LQ: The Landowner - Zandfontein 382 LQ Boerdery (Pty) Ltd, care of Mr Gabriel Josua Du Preez

Mr du Preez stated during a telephonic conversation with Landscape Dynamics that he objects to any Eskom infrastructure on his property. He will not give Eskom permission to construct the proposed Diepspruit Traction Station on his farm Zandfontein 382, portion 2.

Response from Landscape Dynamics

- *Negotiations with Eskom resulted in a new site being selected and the traction station will not be built on Portion 2 of the farm Zandfontein 382 LQ.*

Taaiboschpan 320-LQ: The landowner - Taaiboschpan Landgoed CC, care of Prof Meiring

Prof Mering stated during a telephonic conversation with Landscape Dynamics that he objects to any Eskom infrastructure on his property. He will not give Eskom permission to construct a portion of the proposed powerline route on their farm Taaiboschpan 320.

Response from Landscape Dynamics

- *Negotiations with Eskom resulted in a new route being selected and the proposed power line will not be constructed on the farm Taaiboschpan 320.*
- *Prof Meiring confirmed that this is acceptable.*

Portions 1 and 2 Zyferbult 324-LQ, and the Remaining Extent Zyferbult 324-LQ: The landowner De Boveneinde Natuurreseervaat CC: care of Mr Chris van Niekerk

The route changes which was made to miss Taaiboschpan crosses additional portions of Mr van Niekerk's land and the new route was forwarded to Mr van Niekerk. He indicated that the proposed route alignment is direct adjacent to the main entrance route to the accommodation on his property. This will influence the value of his property as well as the income-potential (financial viability) of the property negatively. A green zone between his perimeter fence and the infrastructure will be acceptable to him.

Response from Landscape Dynamics

Negotiations between Eskom and Mr van Niekerk are still ongoing. The route as agreed upon will be included in the Final BAR.

South Africa National Roads Agency (SANRAL), Northern Region: Ms Ria Barkhuizen

A response will be provided within 30 days, in line with requirements of Section 29 of the Spatial Planning and Land Use management Act (Act No.16 of 2013) read with Section 3 of the Promotion of Administrative Justice Act (Act No.3 of 2000). Should no response be received within 30 days, follow-up should be made to Mr Jan Oliver (012) 426-6200 / 6242.

Response from Landscape Dynamics

- *No further comment was received.*

Mokolo and Crocodile River (West) Water Augmentation Project Phase 2A (MCWAP-2A), (DEA Reference: 14/12/16/3/3/2/1100) Care of Nema Consulting, Mr Donovan Henning

Mr Henning informed Landscape Dynamics that the Department of Water & Sanitation has applied for Environmental Authorisation for a new pipeline route of which the Environmental Authorisation was issued in March 2019. This route may impact on the Eskom Transnet Project.

Technical information about the pipeline was obtained and supplied to Transnet for comment that replied as follows:

It is assumed that the water pipe route was chosen because of the easy access using the Transnet service road and also because the existing rail from Thabazimbi to Lephalale is non-electrified, however having a water pipeline in close vicinity of an electrified rail is not recommended due to the following reasons:

- Earthing challenges
 - Electrical infrastructures are earthed directly to ground, and in order to prevent dissipating earth currents to the underground pipes, earthwires are usually insulated if they are close to the pipes/crossing water pipes.
 - If a powerline/rail line runs parallel to a water pipe, the earthing of masts/structures/stays would have to be insulated and earthed remotely. This scenario is not favourable as it would increase the risk of flashovers along the line, the line is approx. 120km.
 - It would also not be practical to earth the traction stations remotely were the water pipe crosses the substations.
- Corrosion
 - If earthing of the structure/earthwires and masts is not insulated, the pipe can corrode seeing that it's made of steel.
 - Other effects would need to be investigated, I am not sure if cathodic protection on the water pipe would counter against the risk which I highlighted,
 - Only an expert in that field can advise (DWS engineers can advise how they plan to protect the pipe, in their planning they must assume the rail is electrified).

Mr Henning replied to Transnet's comment as follows:

- They had a number of representatives from Transnet on their IAP database. During the course of the EIA direct contact was made with Transnet to establish their plans to increase the capacity of the existing railway line, to determine how this will potentially influence the proposed MCWAP-2A footprint.
- Unfortunately, the concerns were never communicated by Transnet during the EIA process. This will need to be taken into consideration by the design team.

The following response was received from *DWS: Mr Johann Enslin*:

Steel Pipelines must have Cathodic Protection since these pipelines intersects railway lines, run close to, or parallel to, power lines and/or are located nearby any other electrical installation/s. The purpose of the Cathodic Protection is to divert electrical currents away from the steel pipeline in order to avoid/minimise the impacts of electrical current on the pipeline, e.g. corrosion. The DWS have Specifications for the Design and Installation of Cathodic Protection for Steel Pipelines.

Mr Ofhani Mashamba from Transnet Group Capital replied to Mr Enslin's email and stated that if the protection method stated would be applied on the pipe, then problems with the pipeline route are not expected and he has no further objection.

Mr Piet du Plessis, civil engineer from Bigen Africa (engineers responsible for implementing this water pipeline project) was informed of the proximity of the pipeline to the railway line. He indicated that they will take it further with the applicable people at Transnet and Eskom.

Response form Landscape Dynamics

- *The Trans-Caledon Tunnel Authority (TCTA), an agency of the DWS in charge of financing and implementing bulk raw water infrastructure projects, were also copied on this correspondence and detailed maps were forwarded to them upon request for their perusal and action.*
- *Correspondence between Landscape Dynamics, Mr Henning and DWS was also forwarded to the Transnet engineers for their perusal and further action.*

Eskom Real Estate Department: Ms Bronwyn Stolp

Ms Stolp requested to be removed from the IAP list. Future correspondence should be forwarded to Ms Tinkie Holl.

Response from Landscape Dynamics

- *The IAP list was amended accordingly.*

Sentrum Farmers' Union: The Chairman: Mr Pieter Welgemoed

Mr Welgemoed requested the maps which were emailed in a different format. No further comment was received.

Response from Landscape Dynamics

- *Maps were emailed as requested.*

Waterberg Nature Conservancy: The secretary – Ms Sue Walker & Waterberg Biosphere Reserve Committee, The Chairperson, Mr Lesiba Masibe

Ms Walker forwarded the request for comment to Mr Masibe for his input.

Response from Landscape Dynamics

- *No further comment was received*

The landowner: Pontes Estates 712-LQ, Zandbult 300-LQ and The Remaining Portion of Vangpan 294-LQ: Environmental Manager: Boikarabelo Coal Mine: Ledjadja Coal (Pty) Limited: Ms Louise Louise Nicolai

Mr Leapeetswe Rapula Radiala Molotsane and Mr Lulalmile Lincoln Xate must be removed as the representatives for Resgen South Africa and utilise the information as per the email. A clearer image of the route plan was also requested.

Response from Landscape Dynamics

- *The IAP list was amended accordingly*
- *The requested maps were forwarded to Ms Nicolai*

The landowner: Portion 1 of Kua Metswiri 597-KQ: Allen Du Buys Trust, Ms Trysie van Staden

Ms van Staden gave her new contact details and requested that the IAP list be updated.

Response from Landscape Dynamics

- *The IAP list was amended accordingly*

Department of Water & Sanitation, Limpopo Region: Designated officer for this project in (DWS, Polokwane Office): Mr Love E. Hlekane

Mr Hlekane requested the details of the Applicant to that he can finalise his comment.

Response from Landscape Dynamics

- *No further comment was received*

5.4 Comment Received after the distribution of the Draft BAR

**The Remaining Extent Zyferbult 324-LQ, Mooipan Trust: Hein Boegman and Mr Leon Potgieter
The registered landowners, Smith Family Trust, care of Mr PR Smith: Minnaarspan 322-LQ, and
Portion 2 of Toezicht 323-LQ**

Background regarding the project was telephonically requested. The requested information was sent via email and no further comment was received.

Thabazimbi Local Municipality: The Municipal Manager: Mr TG Ramagaga

They acknowledged receipt of the Draft BAR and stated that further comment is to be received from the Limpopo Department of Economic Development, Environment and Tourism.

Response from Landscape Dynamics

- *No further comment was received.*

Transnet Freight Rail, Engineering Department, care of Mr Tumelo Nyatlo

Mr Tumelo stated that he is circulating the request for comment within Transnet. He further stated that Eskom has no objection to the proposed project.

Response from Landscape Dynamics

- *Transnet provided comment during communications with TCTA (see below)*

Taaiboschpan 320-LQ: The landowner - Taaiboschpan Landgoed CC, care of Prof Meiring

Prof Meiring telephonically expressed his gratitude that the power line was amended to not run across his property and he admitted receipt of the distribution of the Draft BAR. No further comment was received.

Trans-Caledon Tunnel Authority (TCTA): Project Manager: Mokolo Crocodile River (West) Water Augmentation Project Phase 2A (MCWAP-2A): KC Mabitsela and Ms Katherine Wiles, Senior Environmental Scientist from GIBB (Joint Venture)

- The TCTA is the implementing agent for the Department of Water & Sanitation's MCWAP-2A water scheme.
- The EA for the MCWAP-2A approved a 100m corridor for the water pipeline route which runs for the most part parallel to the Transnet Freight Rail (TFR) route.
- The EAP for Nemai Consulting consulted with Landscape Dynamics to clarify and identify potential impacts of the new power line and traction stations on the MCWAP-2A.
- The following comment from Landscape Dynamics in the Draft BAR is incorrect
"No further action from Landscape Dynamics is required and this pipeline will not impact further on the planning processes of the Eskom Transnet Freight Rail Project."
- The Diepspruit and Matlabas Traction Stations intersect the approved MCWAP-2A pipeline route and would therefore need to be relocated on the eastern boundary of the TFR route.
- TCTA and Transnet had discussion in this regard and Transnet stated that they will look into possible new layouts for these two traction stations.

Response from Landscape Dynamics

- *Meetings were held between Eskom, Transnet, DWS and MCWAP-2A. Landscape Dynamics provided maps of the new site positions as well as of power line route in relation to the DWS pipeline route.*

- *The positions of both the Diepspruit and Matlabas traction stations were moved to the east of the railway line. These maps were forwarded to Ms Wiles and no further comment was received.*

South African Heritage Resources Agency (SAHRA): Nokukhanya Khumalo

- SAHRA has reviewed the HIA and cannot accept it because it does not consider other HIA's conducted in the area. The DWS MCWAP project undertook an EIA process with a HIA included, whereby several heritage sites were identified - refer to Case 12285 on SAHRIS.
- The HIA must be amended to include a detailed literature view considering the above statement, also the HIA must clarify why certain traction substation alternatives were not assessed in the field survey as seen in the survey track log.
- The development area is located in a moderate and high palaeontological sensitive area and according to the palaeomap policy a desktop study must be undertaken.
- SAHRA will comment further once an amended HIA and a palaeontological desktop assessment are submitted to the case.
- All the appendices for the dBAR must be uploaded to the case.

Response from Landscape Dynamics

- *These studies have now been included in the amended HIA. It concluded that identified sites fall well outside of the project area for this Eskom development and these sites will not be impacted on.*
- *New logs for the traction station sites have been included in the amended HIA.*
- *A desktop PIA and the amended HIA was submitted onto SAHRIS for final comment.*
- *All appendices of the dBAR was uploaded to the case.*

Endangered Wildlife Trust, Wildlife and Transport Programme: Ms Wendy Collinson and Endangered Wildlife Trust, Wildlife and Energy Programme: Programme Manager: Mr Lourens Leeuwner

Please note: The response from Landscape Dynamics is given in blue directly below each comment.

General Comment

- EWT is establishing partnerships with relevant stakeholders to provide measures to reduce the impacts of transportation-linear infrastructure (TLI; namely, rail and road) on wildlife.
- One of the most obvious impacts of railways on wildlife is direct mortality from collisions with trains.
- In 2016, the Endangered Wildlife Trust developed *The Road Ahead: Guidelines to mitigation methods to address wildlife road conflict in South Africa* as a user-friendly guide to the practices that should be followed when designing or upgrading roads. Many of the recommended techniques in this handbook are directly transferable to railways, although some of the methods may themselves have negative consequences, which must be

carefully considered. For example, although fences may effectively prevent animals from crossing a railway line and reduce the possibility of them being killed by a train, they also restrict natural movement patterns thereby affecting ecological processes.

- There are no silver bullets for addressing the impact of rail on wildlife. Each road project needs to be assessed individually and the unique circumstances taken into account when designing a mitigation programme. For example
 - AVOID: Reduce collisions though preventing animal-access to the road or reducing collision only;
 - FACILITATE: Prevent collisions but keep animal connectivity.
- Railways can restrict the movement of animals within their home ranges with many species completely avoiding crossing railways. It has been demonstrated that a variety of species will utilise manmade crossing structures specifically designed to facilitate animal movement.
- Wildlife under- and overpasses are used extensively in Europe and America.
- The EWT's Wildlife and Energy Programme has been working in partnership with Eskom for the last 23 years, developing solutions to wildlife and energy infrastructure impacts.

Response from Landscape Dynamics

- *This project is for the construction of electrical infrastructure and not new railway lines or new roads.*

Comments on the Draft BAR

Page i. Project components: The components of the project only mention the *electricity* component. No mention appears to be given to the development or upgrade of any road network as service roads to the substations, or any type of fencing adjacent (as a mitigation measure for animal access) to the railway.

Response from Landscape Dynamics

- *No new access roads will be constructed. The access roads adjacent to the existing railway lines which are being used by Transnet for construction / maintenance purposes will be used during construction as well as maintenance of the traction stations and power line route.*
- *The Traction Stations will be fenced by Eskom.*
- *Note that mitigation of the railway line falls well outside of the scope of this study. The railway line belongs to Transnet and mitigating actions would have to be done by them. This Eskom project does not change the status quo of the railway line and mitigation measures for the railway line cannot be specified in this study.*

Page iii. Expected negative impacts: We note that the anticipated negative impacts on fauna, only specify avi-and aquatic fauna. Whilst electrical power lines have been proved to impact birds, we are concerned that other taxonomic groups (e.g. mammals, reptiles and amphibians) have not been considered in this assessment. Species from these taxonomic groups will attempt to cross the railway and ultimately be killed on the railway line. To prevent this, fences can be erected adjacent to the railway line, but this has not been addressed as a mitigation method in the assessment.

Response from Landscape Dynamics

- *As mentioned above, mitigation of the railway line falls well outside of the scope of this study. Eskom is the Applicant and the owner of the electrical infrastructure and Transnet is the owner of the railway line. This study can only focus on the mitigation of the impact of the proposed electrical infrastructure.*

Page v. Bird impact assessment. See comment above (page iii). The scope of the assessment is too narrow and does not include other taxonomic groups.

Response from Landscape Dynamics

- *See response above.*

Page 25-30. (Biophysical Environment): The faunal species listed are too generic and the impact assessment does not seem to have expanded its scope beyond avifauna (e.g. insects, small mammals, domestic animals).

Response from Landscape Dynamics

- *The most important consideration in this response is that the project refers ONLY to Eskom infrastructure with a limited footprint in terms of pylon foundations and the traction substations. It does not refer to any new railway lines where faunal impact could be significant in terms of migration routes and habitat destruction.*
- *Considering the general impact of the Eskom infrastructure on fauna species, it was not deemed necessary to undertake an in-depth fauna study. Neither the Biodiversity Section of the Department of Environmental Affairs nor the Biodiversity Monitoring Division of the Limpopo Department of Economic Development, Environment and Tourism, Waterberg District requested such studies.*
- *During Eskom projects the focus is to protect birdlife and natural habitat and that is why the bird impact specialist Mr Chris van Rooyen (previously from EWT) and the SACNASP registered ecologist Dr Leslie Brown of Enviroguard Ecological Services were appointed to do the "Bird Impact Study" and the "Ecological Study of Flora and Watercourses" respectively for the project.*
- *The impact of Eskom powerlines on faunal species (apart from avi-faunal species) occurs mainly during the construction period. Faunal species will temporarily move away from the*

site while construction activities are taking place. They will return once construction has been completed.

- In addition, the footprint of the pylon foundations as well as the tractions substations are relatively small and will not affect and/or destroy sensitive habitat (vegetation and bird habitat and bird migration routes) since the final route has been designed to accommodate any potential sensitive habitat.*
- Mitigation measures provided for in the EMPr for the protection of fauna (apart from avi-fauna) and the protection of natural habitat are mostly related to control of labourers, selective servitude clearance and the management of servitude maintenance teams.*
- Landscape Dynamics is therefore of the opinion (supported by the ecologist Dr Brown) that the fauna of the area is adequately protected if stipulations in the EMPr are implemented.*

Page 45. Expected positive impacts:

- The rail expansion will not only expand the market for coal but it will also allow the various coal mines to utilise rail instead of road with the associated positive impacts of less heavy load trucks on the roads with less damage to the roads caused by such heavy vehicles, safer transport of goods, more reliable transport, less accident risks, and substantial less fleet maintenance cost.*
- We recognise that the pressure on the road network will be reduced, but the pressure resulting from the expanded railway network is likely to increase, impacting animals attempting to cross the railway line. It is also not clear how the anticipated increase in train volumes and the impact of resulting coal dust will affect both flora and fauna.*

Response from Landscape Dynamics

- It is important to note that the existing diesel railway line between Lephalale and Thabazimbi will be electrified. The construction of new railway lines does not form part of this Basic Assessment process – which are done by Transnet in a separate applications for Environmental Authorisation.*
- The electrification of the existing railway line is only a component of the planned railway expansion. The railway expansion will fall under Transnet and separate processes will be conducted to obtain approval for those new lines.*
- Transnet informed that coal dust is recognised as a health and safety issue and strict rules and regulations are in place that need to be followed at all times. These include mitigation measures such as*
 - Watering of coal must take place before any loading can commence.*
 - Train wagons must be covered with tarpaulin at all times.*
- It is also important to note that the switch from diesel trains to electrified trains will automatically result in less air pollution.*

Page 48-52. Impacts. No mitigation is mentioned regarding the impact of coal dust on flora and fauna and how this will be mitigated.

Response from Landscape Dynamics

- *Refer to the response above*

Page 60. Specialist Studies. Gaps in knowledge.

- *Extensive specialist and engineering studies were undertaken for this project and it is highly unlikely that any missing information could influence the outcome of this project.*
- *We disagree with the above statement that a full scope of specialist studies is undertaken; not all taxonomic groups have been addresses as outlined in the reasons above (page v.).*

Response from Landscape Dynamics

- *Refer to the response above (page 25-30, Biophysical Environment). In order to prevent unnecessary expenditure of state funds, only studies directly relevant to Eskom projects of this nature had been identified. The statement should rather read "A full scope of relevant specialist studies were undertaken." – the statement was accordingly amended.*

Page 62. 7.5 Recommendation by the Environmental Assessment Practitioner

- *A route walk-down by the Bird Specialist, the Ecologist and the Archaeologist must be undertaken once the draft positions of the pylons have been identified.*
- *The above statement needs to include other specialists to accommodate fauna that may attempt to cross the railway line.*
- *In general, we would like to see broader surveys undertaken that reflect an assessment of all taxonomic groups likely to be impacted by the Eskom Transnet Freight Rail Project, in light of the comments above. The assessment, as it stands, is too narrow, and does not consider the wider impacts.*

Response from Landscape Dynamics

- *As explained above, the most important consideration is that the project refers ONLY to Eskom infrastructure with a limited footprint in terms of pylon foundations and the traction substations. It does not refer to any new railway lines where faunal impact can be significant in terms of migration routes and habitat destruction.*
- *Refer to the response above (page 25-30, Biophysical Environment). It has been motivated that a detailed fauna study is not deemed necessary to determine the impact of the proposed new electrical infrastructure.*
- *It is therefore the opinion of the EAPs supported by the ecologist and the bird impact specialist that all relevant studies had been undertaken to accommodate the potential impact of Eskom infrastructure on birdlife; as well as natural habitat focusing on vegetation and watercourses.*

Comment on Appendix C2 Avifauna Impact Assessment

- *The structure proposed for the project is a 132kV steel monopole type structure, with*

horizontal post insulators. Although the specialist recommends an additional perch guard on top of each pole and reiterates that clearances must exceed 1.8m between live phases as well as live and earthed components, this structure is not suitable for use in areas where vultures occur.

- The proposed project will be situated in a region with high vulture activity and it is strongly recommended that the structure type be reconsidered for this project. The EWT has on a record a number of incidents involving vultures on DT-7611 structures.
- The EWT is satisfied with the avifaunal specialists' assessment in terms of methodology, the walk through and risk mitigation. The only concern is the proposed structure design.

Response from Landscape Dynamics

- *The Avifauna Impact Assessment was amended to include the structures as proposed.*

**Department of Environmental Affairs: Chief Director: Integrated Environmental Authorisations:
Enquiries: Ms Zesipho Makhosayafana**

Please note: The response from Landscape Dynamics is given in blue directly below each comment.

- (a) The information on alternatives in the Draft BAR is insufficient and background and rationale must be provided as to how the 1st Draft Power Line Route was chosen as the initial preferred route. On page 21 a specialist refer to 'two corridors' but the entire BAR speaks of one corridor.

Response from Landscape Dynamics

- *This is described under Chapter 3, Paragraph 3.1*
- *The "two corridors" was corrected to read "two alternatives".*

Clarity is sought regarding the following:

- The alternatives that were assessed, the extent of such assessments and whether such alternatives are feasible or reasonable;
- The impact the assessed alternatives will have on the receiving environment and affected communities;
- Summary of impacts for all routes (1st and 2nd Drafts) and advantages and disadvantages thereof. Summary must be per individual power line route.
- The Final BAR must be clear why the preferred route is preferred; and
- Start, middle and end coordinates for all proposed routes and centre coordinates for the substations must be provided.

Response from Landscape Dynamics

- *The alternative assessments, advantages and disadvantages as well as why the final route is preferred are described under Chapter 3.*
- *A comprehensive Impact Assessment is provided under Chapter 6.*
- *The coordinates are provided under Chapter 2, Paragraph 2.7 and Appendix A.*

(b) Determine all policies and legislations, e.g. NEMBA is applicable.

Response from Landscape Dynamics

- *All policies and legislation applicable to this project is discussed under Chapter 1, Paragraph 1.3.*

(c) Cumulative impacts must be assessed.

Response from Landscape Dynamics

- *Cumulative impacts are assessed under Chapter 6, Paragraph 6.2.3.*

(d) Provide a motivation why a socio-economic impact study has not been considered.

Response from Landscape Dynamics

- *Socio-economic studies were not deemed necessary because*
 - *There are no townships within close proximity to the proposed routes and traction station sites.*
 - *The proposed route and traction stations will all be constructed adjacent to existing electrical and/or railway infrastructure.*
 - *Current farming practices can continue after the new infrastructure has been constructed.*
 - *The route and traction stations will not impact negatively on current tourism industries.*
 - *The directly affected landowners were all part of the public participation processes and no socio-economic studies were requested.*

(e) Details of specialists and their CVs must be provided.

Response from Landscape Dynamics

- *The specialists' CVs are provided under Appendix F*

(f) All maps must be in A3 with a clear legend.

Response from Landscape Dynamics

- *These are provided under Appendix A*

(g) Sensitivity maps with clear legend must be provided.

Response from Landscape Dynamics

- *These are provided under Appendix A*

(h) An A3 locality map must be provided

Response from Landscape Dynamics

- *These are provided under Appendix A*

(i) Detailed site or route plans must be provided.

Response from Landscape Dynamics

- *These are provided under Appendix A*

(j) A list of IAPs must be provided

Response from Landscape Dynamics

- *These are provided under Appendix D*

(k) All concerns raised on the Draft BAR must be adequately addressed in the Final BAR.

Response from Landscape Dynamics

- *These are provided in Chapter 5*

(l) Proof of correspondence to IAPs must be provided in the Final BAR.

Response from Landscape Dynamics

- *These are provided under Appendix D*

(m) A Comments & Responses Report must be provided.

Response from Landscape Dynamics

- *These are provided in Chapter 5 and Appendix D*

(n) The project location on Part B, Section 2 of the EMPr must include the coordinates of the substation sites.

Response from Landscape Dynamics

- *The EMPr has been amended accordingly*

(o) A signed declaration for the EMPr must be attached with the Final BAR.

Response from Landscape Dynamics

- *The signed declaration is included in the EMPr*

(p) The EMPr must address all impact management issues raised by IAPs and must meet the requirements of the EIA Regulations.

Response from Landscape Dynamics

- *The EMPr addresses all impact management issues and meet all requirements of the EIA Regulations.*

General

The Final BAR must include the period for which the EA is required.

Response from Landscape Dynamics

- *This is addressed under Chapter 7, Paragraph 7.4*

Regulation 19(1)(a) / 19(1)(b) must be adhered to

Response from Landscape Dynamics

- *The regulations have been adhered to*

5.5 50-day Extension

Eskom negotiated a new viable alternative between the Theunispan T-off and the Theunispan Substation in order to address concerns raised during the Public Participation Process. This route is approximately 5km north of the original proposed route and it was needed to conduct specialist studies and to advertise on site.

A 50-day extension was requested and granted by DEA on 7 August 2019 (please refer to Appendix D for proof thereof). The last day for submission of the Final BAR is 21 October 2019.

5.6 Focus Group Meetings / Public Meetings / Open Days

Very little comment was received during the entire public participation process and the need for public / focus group meetings were not deemed necessary.

5.7 Conclusion of the Public Participation Programme

The main objective of the Public Participation Programme undertaken for this project was to identify a viable route corridor and site positions for the traction stations that are not only acceptable from an ecological point of view, but also from a landowner perspective.

Even though the project was advertised widely as described above, relative few comments had been received during the public participation process.

Comments received were all satisfactorily addressed and the EAPs are confident that reasonable consensus was reached regarding the preferred route corridor and traction station site positions presented in this document.

CHAPTER 6: IMPACTS, IMPACT ASSESSMENT AND MITIGATION

6.1 Methods Used to Identify Impacts

Environmental issues and impacts have been identified through the following means:

- Correspondence with Interested and Affected Parties, including directly affected landowners, general stakeholders and relevant authorities;
- Consultation with the EIA Project Team, supported by the Eskom Project Team;
- Evaluation and consideration of relevant existing environmental data and information;
- The general knowledge and extensive experience of the Environmental Consultants in the field of Environmental Impact Assessments for linear development planning.

6.2 List of Impacts Associated with the Development

6.2.1 *Expected Negative Impacts*

Planning and Design Phase

- Impact 1: Route & Traction Station Site Selection: Impact on landowners
- Impact 2: Route & Traction Station Site Selection: Impacts on Fauna, Flora, Avifauna and Heritage

Construction Phase

- Impact 1: Impact on natural habitat
- Impact 2: Impact on birds
- Impact 3: Impact on aquatic features
- Impact 4: Impact on cultural heritage resources
- Impact 5: Risk of groundwater pollution
- Impact 6: Risk of erosion
- Impact 7: Community Impact
- Impact 8: Noise and Dust (air quality)

Post- Construction Phase

- Impact 1: Impacts of improper site clearance after construction
- Impact 2: Impacts associated with lack of rehabilitation

Operational Phase

- Impact 1: Impact associated with insensitive bush clearing for maintenance purposes

6.2.2 *Expected Positive Impacts*

- This project forms part a major component of Transnet’s plans to develop a new heavy haul railway line in order to unlock the Waterberg and Botswana Coal Fields. The line will also allow the coal mined in the Lephalale area to be transported using rail to the rest of South Africa. This will have a huge positive impact in terms of economic growth and job creation within especially the Limpopo Province.
- The rail expansion will not only expand the market for coal but it will also allow the various coal mines to utilise rail instead of road with the associated positive impacts of less heavy load trucks on the roads with less damage to the roads caused by such heavy vehicles, safer transport of goods, more reliable transport, less accident risks, and substantial less fleet maintenance cost.
- The proposed Eskom Transnet Freight Rail Project is being planned in a legal, pro-active and structured manner taking all development components, potential and restrictions into account.

6.2.3 *Cumulative impact*

The cumulative impact of additional electrical structures is considered negligible because of the of significant existing Eskom infrastructure in the macro area. These existing structures include the Medupi and Matimba Power Stations which are significant in scale and which dominates the landscape outside Lephalale. The proposed new Eskom Transnet Freight Railway 132kV distribution powerlines will be constructed with monopole pylons will are insignificant compared to the much more intrusive structures of the Eskom 400kV and 800 kV transmission powerlines that have been constructed in the macro area. There are approximately 13 existing powerlines that traverse the macro area. If it needs to be quantified, Eskom calculates the cumulative impact as 3%, which is very low. The traction stations will be constructed directly adjacent to the existing railway line; and the power lines will run adjacent and parallel to the existing railway line, existing power lines and a soon to be constructed railway line. It is therefore concluded that the addition of the electrical infrastructure as proposed will have a minimal cumulative impact within the area.

6.3 Generic Eskom Environmental Management Programme (EMPr)

On 22 March 2019 a *Generic Environmental Management Programme* was promulgated in terms of Section 24 of NEMA and gazetted as Government Notice No 435. This EMPr is applicable where application is made for Environmental Authorisation for substations and overhead electricity transmission and distribution infrastructure as identified in terms of

- activity 11 or 47 of EIA Regulations Listing Notice 1 of 2014, as amended, or for
- activity 9 of EIA Regulations Listing Notice 2 of 2014, as amended,
- and any other listed and specified activities necessary for the realisation of such infrastructure.

The EMPr which forms part of the Basic Assessment Report is a legally binding document and contains general as well as site specific mitigation measures / management actions to lessen the impact that this development may have on the environment.

In order to prevent duplication between the Impact Assessment Tables as given below and the mitigation measures / management actions as provided in the EMPr (it is a 131 page document), reference will be made to the generic EMPr where the mentioned impacts are being addressed.

Site specific mitigation measures mentioned below also forms part of Appendix A: Part C as well as Appendix B: Part C of the EMPr.

6.4 Environmental Impact Assessment

The Environmental Impact Assessment Tables includes a description of expected impact on the different environmental components as well as proposed mitigation measures / management actions to minimise those impacts to acceptable levels. These mitigation measures are also included in the Environmental Management Plan (EMPr).

6.4.1 Methodology Used in Ranking of Impacts

Impacts are evaluated and assessed in terms of the following criteria:

Extent of impact	Explanation of extent
<i>Site</i>	<i>Impacts limited to construction site and direct surrounding area</i>
<i>Local</i>	<i>Impacts affecting environmental elements within the local area / district</i>
<i>Regional</i>	<i>Impacts affecting environmental elements within the province</i>
<i>National</i>	<i>Impacts affecting environmental elements on a national level</i>
<i>Global</i>	<i>Impacts affecting environmental elements on a global level</i>

Duration of impact	Explanation of duration
Short term	0 - 5 years. The impact is reversible in less than 5 years.
Medium term	5 - 15 years. The impact is reversible in less than 15 years.
Long term	>15 years, but where the impacts will cease if the project is decommissioned
Permanent	The impact will continue indefinitely and is irreversible.

Probability of impact	Explanation of Probability
Unlikely	The chance of the impact occurring is extremely low
Possible	The impact may occur
Probable	The impact will very likely occur
Definite	Impact will certainly occur

Magnitude/Intensity of impact	Explanation of Magnitude/Intensity
Low	Where the impact affects the environment in such a way that natural, social and cultural functions and processes are not affected
Moderate	Where the affected environment is altered, but natural, social and cultural functions and processes continue albeit in a modified way
Severe	Where natural, social and cultural functions or processes are altered to the extent that it will temporarily or permanently cease

Significance of impact	Explanation of Significance
None	There is no impact at all
Low	Impact is negligible or is of a low order and is likely to have little real effect
Moderate	Impact is real but not substantial
High	Impact is substantial
Very high	Impact is very high and can therefore influence the viability of the project

6.4.2 Impact Assessment Tables

DESIGN AND PRE-CONSTRUCTION PHASE Critical issues to be addressed during the design and planning phases

Route & Traction Station Site Selection: Impact on landowners

Impact

Omitting to communicate with possible directly affected landowners may halt the construction process if landowners refuse servitude rights over their land after the Environmental Authorisation has been issued.

Mitigation

- All possible directly affected landowners were informed of the proposed route and traction station sites and an opportunity to object to the development proposal was provided. Objections were addressed to the satisfaction of all involved.

Impact Description	Extent	Duration	Probability	Magnitude / Intensity	Significance without mitigation	Significance after mitigation
Site selection: Impact on landowners	Regional	Permanent	Definite	Severe	High	Low

Route & Traction Station Site Selection: Impacts on Fauna, Flora, Avifauna & Heritage

Impact

Environmentally insensitive route & site selection as well as insensitive tower and infrastructure placement may have a severe negative impact on the natural environment.

Mitigation

- Vegetation-, Avifauna- and Heritage Impact Assessments were undertaken to determine any no-go areas and if route deviations are required. Mitigation measures were supplied to minimise impact to acceptable levels.
- A 1km wide corridor was investigated by the specialist team. Walk-downs by the ecologist, heritage- and avifauna specialist will be conducted after the Environmental Authorisation has been issued. This would ensure sensitive tower and infrastructure placement within the corridor. The purpose is to avoid as far as possible sensitive plant communities, large / protected trees, heritage sites and bird nesting areas.
- Protected tree *Sclerocarya birrea* (marula) and *Boscia albitrunca* (Shepperd's tree)
 - These trees are present in certain places within the investigated areas. It plays an important role in the ecosystem by providing food, shelter and shade to various animal and bird species. It is therefore important that these trees are not unnecessarily removed from the ecosystem.

- The specialist must identify these trees as far as possible during the walk-down and ensure its protection where possible.
- The contractor must have the necessary knowledge to be able to identify the mentioned protected trees interfering with the operation of the line due to their height and growth rate.
- In terms of Section 15(1) of the National Forests Act, 1998, no person may cut, disturb, damage or destroy any protected tree or possess, collect, remove, transport, export, purchase, sell, donate or in any other manner acquire or dispose of any protected tree or any forest product derived from a protected tree, except under a license or exemption granted by the Minister to an applicant and subject to such period and conditions as may be stipulated. Trees are protected for a variety of reasons, and some species require strict protection while others require control over harvesting and utilization. The Department of Agriculture, Forestry and Fisheries (DAFF) will have to be approached to obtain the required permits for the removal of any protected tree species.

Impact Description	Extent	Duration	Probability	Magnitude / Intensity	Significance without mitigation	Significance after mitigation
Site selection: Impacts on Fauna, Flora, Avifauna & Heritage	Local	Medium term	Definite	Severe	High	Low

CONSTRUCTION PHASE

Impact on natural habitat

Impact

Vegetation

Habitat destruction and disturbance

During the construction phase and maintenance of powerlines, some habitat destruction and alteration inevitably takes place. This happens with the construction of access roads, and the clearing of servitudes. These activities have an impact on flora and fauna (the latter breeding, foraging and roosting in or in close proximity of the servitude), both through modification of habitat and disturbance caused by human activities.

Surrounding Farming Activities

Construction activities must be planned carefully so as not to interfere with the farming activities (game farming), for example disturbing of animals which may lead to fatalities.

Fauna

- Impact on fauna is mainly associated with placement of snares by labourers and loss of habitat

Mitigation

- Refer to the *Generic EMPr*

Impact Description	Extent	Duration	Probability	Magnitude / Intensity	Significance without mitigation	Significance after mitigation
Impact on fauna	Site	Medium	Definite	Low	Low	Low
Impact on flora	Local	Medium	Definite	Moderate	Moderate	Low

Impact on birds

Impact

- *Electrocutions*

Electrocution refers to the scenario where a bird is perched or attempts to perch on the electrical structure and causes an electrical short circuit by physically bridging the air gap between live components and/or live and earthed components. The electrocution risk is largely determined by the pole/tower design. The tower design that that will most likely be used for this project is the steel monopole.

Clearance between phases on the same side of the 132kV pole structure is approximately 2.2m for this type of design, and the clearance on strain structures is 1.8m. This clearance should be sufficient to reduce the risk of phase – phase electrocutions of most birds on the towers to negligible. The length of the stand-off insulators is approximately 1.6m. If a very large species attempts to perch on the stand-off insulators, they are potentially able to touch both the conductor and the earthed pole simultaneously potentially resulting in a phase – earth electrocution. This is particularly likely when more than one bird attempts to sit on the same pole, which is an unlikely occurrence, except occasionally with vultures. Vultures are likely to regularly occur within the study core areas, but due to the presence of many other perch-friendly transmission lines in all the core study areas, the chances of the birds perching on the steel monopoles of the new line are relatively low. The risk is therefore rated to be **LOW** and can be further reduced to **VERY LOW** through the application of mitigation measures.

Electrocutions within the proposed substation yards are possible, but should not affect the majority of the more sensitive Red Data and powerline sensitive bird species as these species are unlikely to use the infrastructure within the substation yards for perching or roosting, except possibly Spotted Eagle-Owl. The risk of electrocution within the substation yard is therefore evaluated to be **LOW** and can be further reduced to **VERY LOW** through the application of mitigation measures.

- *Collisions*

Collisions are probably the biggest single threat posed by power lines to birds in southern Africa.

Most heavily impacted upon are bustards, storks, cranes and various species of waterbirds. These species are mostly heavy-bodied birds with limited manoeuvrability, which makes it difficult for them to take the necessary evasive action to avoid colliding with power lines.

For this project potential candidates for collision mortality are mostly large raptors, vultures, korhaans, bustards and Secretarybirds. In summary, the risk of collision posed to avifauna by proposed power lines are likely to be of LOW, but it can be reduced to VERY LOW through the application of mitigation measures.

- *Displacement due to habitat destruction and disturbance*

During the construction phase and maintenance of power lines and substations, some habitat destruction and transformation inevitably takes place. This happens with the construction of access roads, the clearing of servitudes and the levelling of substation yards. Servitudes have to be cleared of excess vegetation at regular intervals in order to allow access to the line for maintenance, to prevent vegetation from intruding into the legally prescribed clearance gap between the ground and the conductors and to minimize the risk of fire under the line, which can result in electrical flashovers. These activities have an impact on birds breeding, foraging and roosting in or in close proximity of the servitude through transformation of habitat, which could result in temporary or permanent displacement.

For this project the risk of displacement of Red Data species due to habitat transformation in the footprint of the proposed traction substations and powerline servitudes is likely to be very limited given the small size of the footprint. However, the removal of large trees could potentially impact on breeding raptors. The impact of displacement due to habitat transformation risk is judged to be LOW and can be further reduced to VERY LOW with the application of mitigation measures.

Apart from direct habitat destruction, the above-mentioned construction and maintenance activities also impact on birds through disturbance; this could lead to breeding failure if the disturbance happens during a critical part of the breeding cycle. Construction activities in close proximity could be a source of disturbance and could lead to temporary breeding failure or even permanent abandonment of nests. The reporting rates for Red Data species in the broader study area are generally low, which is an indication that they are not regularly utilising the area for breeding. However, there are relatively high reporting rates for several non-Red Data resident large raptors and also for White-backed Vultures. The possibility of disturbance of breeding pairs of large raptors during the construction of the powerlines cannot be entirely excluded, and requires further investigation during the walk-through phase. The impact of displacement due to disturbance is therefore likely to be LOW as far as Red Data species and large raptors are concerned, but can be reduced to VERY LOW with the application of mitigation measures.

Mitigation

- *Electrocution of avifauna on the 132kV steel monopole structure, and in the substations*
 - The steel monopole must be fitted with a bird perch to provide a safe perching area on top of the pole for large raptors and vultures (see Appendix 2 in the Bird Impact Assessment Report).
 - With regards to the infrastructure within the substation yard, the hardware is too complex to warrant any mitigation for electrocution at this stage. It is rather recommended that if any impacts are recorded once operational, site specific mitigation be applied reactively.

- *Avifaunal mortality due to collisions with the earthwire of the proposed power lines*
 - High risk sections of power line must be identified by a qualified avifaunal specialist during the walk through phase of the project, once the alignment has been finalized. If power line marking is required (i.e. in agricultural clearings and close to waterbodies) bird flight flappers must be installed on the full span length on each of the conductors (according to Eskom guidelines - five metres apart). Light and dark colour devices must be alternated so as to provide contrast against both dark and light backgrounds respectively. These devices must be installed as soon as the conductors are strung.

- *Displacement of Red Data species and large raptors due to habitat destruction and disturbance associated with the construction of the powerlines and substations*
 - Refer to the *Generic EMPr*
 - A walk-through must be conducted by the avifaunal specialist when the final pole positions have been determined, to assess whether there are any Red Data species, and/or large raptors breeding in the vicinity of the final alignment, which could be displaced by the construction activities. Should this be the case, appropriate measures must be put in place to prevent the displacement of the breeding birds, through the timing of construction activities.

Impact Description	Extent	Duration	Probability	Magnitude / Intensity	Significance without mitigation	Significance after mitigation
Electrocution	Local	Short	Possible	Moderate	Low	Very Low
Collision	Local	Short	Possible	Moderate	Low	Very Low
Habitat disturbance	Site	Short	Possible	Moderate	Low	Very Low

Impact on aquatic features

Impact

Loss of natural vegetation adjacent to and within freshwater features could have a direct impact on freshwater systems. Flow & water quality modification as a result of increased erosion and invasive plant growth within disturbed areas could also impact on the effective functioning of the freshwater aquatic systems.

Mitigation

- Refer to the *Generic EMPr*
- Eskom infrastructure will be constructed well outside of the demarcated identified drainage pathways within the study area.

Impact Description	Extent	Duration	Probability	Magnitude / Intensity	Significance without mitigation	Significance after mitigation
Impact on aquatic features	Local	Short	Unlikely	Low	Low	Very Low

Impact cultural heritage resources

Impact

No sites of heritage significance have been identified within the study area.

Mitigation

- Refer to the *Generic EMPr*
- Due to accessibility issues and the density of vegetation a walk down, after positions of pylons have been determined, is therefore recommended. This will be applicable to all project components.

Impact Description	Extent	Duration	Probability	Magnitude / Intensity	Significance without mitigation	Significance after mitigation
Impact on cultural heritage	Site	Short	Possible	Low	Low	Very Low

Increased risk for groundwater pollution

Impact

- The risk for groundwater pollution during the construction period is generally associated with oil spills resulting from construction vehicles and placement of engineering structure.
- Poor waste management could also result in unnecessary impact on the groundwater and natural habitat.

- Should ineffective construction techniques and methods be used, it could lead the structural failure with associated risk to the environment.

Mitigation

- Refer to the *Generic EMPr*

Impact Description	Extent	Duration	Probability	Magnitude / Intensity	Significance without mitigation	Significance after mitigation
Risk for groundwater pollution	Local	Medium	Possible	Moderate	Moderate	Low

Increased risk for erosion resulting from construction activities

Impact

- To cause the loss of soil by erosion is an offence under the Soil Conservation Act, Act No 76 of 1969.)
- The impact will occur where large areas of land are exposed and where stormwater is allowed to cascade freely across the site.
- Construction vehicles and insufficient construction roads could also result in erosion.

Mitigation

- Refer to the *Generic EMPr*

Impact Description	Extent	Duration	Probability	Magnitude / Intensity	Significance without mitigation	Significance after mitigation
Risk for erosion resulting from construction activities	Local	Long term	Probable	Moderate	Moderate	Low

Community

Impact

- An influx of workers could result in an increased risk for crime and safety to the adjacent landowners.
- Uncontrolled labourers would cause disturbance to and destruction of natural habitat i.e. through placement of snares, cutting trees of firewood, etc.
- Damage to the farmers’ property can have a severe economic as well as environmental impact.

Mitigation

- Refer to the *Generic EMPr*

Impact Description	Extent	Duration	Probability	Magnitude / Intensity	Significance without mitigation	Significance after mitigation
Impact on the community	Local	Short	Probable	Moderate	Moderate	Low

Impacts associated with construction activities such as noise and dust (air quality)

Impact

Construction activities are generally associated with noise and dust. This impact should however be considered in context with the rural nature of the surrounding areas.

Mitigation

- Refer to the *Generic EMP*

Impact Description	Extent	Duration	Probability	Magnitude / Intensity	Significance without mitigation	Significance after mitigation
Noise	Local	Short	Probable	Low	Low	Low
Dust	Local	Short	Probable	Moderate	Moderate	Low

POST-CONSTRUCTION PHASE

Impacts of improper site clearance after construction

Impact

- Improper clean-up of temporary site camps and construction areas after construction activities have been completed may result in wind-blown litter through a wide area, contamination of water sources from especially old oil drip trays and toilets, pieces of steel and wire may hurt animals, etc.

Mitigation

- Refer to the *Generic EMP*

Impact Description	Extent	Duration	Probability	Magnitude / Intensity	Significance without mitigation	Significance after mitigation
Improper site clearance after construction	Local	Short term	Probable	Moderate	Moderate	Low

Impacts associated with lack of rehabilitation

Impact

- Areas disturbed during construction such as temporary access roads, construction site camps, areas surrounding the tower positions, temporary laydown areas, etc. which have not been rehabilitated could lead to further environmental damage, especially erosion.
- Areas that have not been rehabilitated to the satisfaction of the landowners may result in Claims for Damages and the resultant negative economic impact.

Mitigation

- Refer to the *Generic EMPr*

Impact Description	Extent	Duration	Probability	Magnitude / Intensity	Significance without mitigation	Significance after mitigation
Lack of rehabilitation: Environmental damage & erosion	Local	Short term	Probable	Moderate	Moderate	Low

Impact associated with insensitive bush clearing for maintenance purposes

Impact

- Insensitive bush clearing underneath the power line for maintenance purposes can cause severe damage to the natural habitat and can impact on the economic viability of some of the game farms in the area.

Mitigation

- Refer to the *Generic EMPr*
- All permit and landowner conditions shall be adhered to.
- Bush clearing must be undertaken with the knowledge of the landowner.
- Under no circumstances shall natural vegetation (veld), forests or protected vegetation be removed, harvested, mowed, brush-cut or altered in any way without a permit (where applicable).
- Only selective bush clearing is allowed: only vegetation which interferes with the safe operation of the power line or where the height exceeds the requirements as set by the Electrical Machinery Regulations and the Occupational Health and Safety (OHS) Act may be trimmed / removed in agreement with the landowner.
- No damage or destruction of vegetation shall be permitted outside the footprint of the line servitude.
- No plant material may be removed if not part of identified vegetation clearance.
- No scalping shall be allowed on any part of the servitude unless absolutely necessary. Smaller vegetation can be flattened with a machine, but the blade should be kept above ground level to prevent scalping.

- Bush clearing must be done in accordance with the Vegetation Clearance and Maintenance within Overhead Power line Servitudes and on Eskom Owned Land procedure (EPC 32-247).
- Bush clearing is not allowed on river- and stream banks (riparian vegetation).
- Bush cuttings shall not be burned. Unwanted cuttings shall be removed and disposed of at a registered waste site and such records kept on file.
- The maintenance contractor must have the necessary knowledge to be able to identify protected species in the area as well indigenous species not interfering with the operation of the line due to their height and growth rate.

Impact Description	Extent	Duration	Probability	Magnitude / Intensity	Significance without mitigation	Significance after mitigation
Insensitive servitude clearing for maintenance purposes	Local	Medium term	Probable	Moderate	High	Low

6.4.2 Environmental Management Programme (EMPr)

The main objectives of the EMPr are to identify actions and mitigation measures to minimise expected negative impact and enhance positive impact during all development phases (design/pre-construction, construction, and post-construction/operation) in terms of community issues, construction site preparation, construction workers, habitat protection, security, etc. Communication channels and contact details must also be provided.

According to the NEMA 2014 Regulations, as amended Appendix 4, an EMPr must comply with section 24N of the Act and includes:

- details of (i) the EAP who prepared the EMPr; and (ii) the expertise of that EAP to prepare an EMPr, including a curriculum vitae;
- a detailed description of the aspects of the activity that are covered by the EMPr as identified by the project description;
- a map at an appropriate scale which superimposes the proposed activity, its associated structures, and infrastructure on the environmental sensitivities of the preferred site, indicating any areas that should be avoided, including buffers;
- a description of the impact management objectives, including management statements, identifying the impacts and risks that need to be avoided, managed and mitigated as identified through the environmental impact assessment process for all phases of the development including-
 - planning and design;
 - pre-construction activities;
 - construction activities;
 - rehabilitation of the environment after construction and where applicable post closure; and (v) where relevant, operation activities;

- (e) a description and identification of impact management outcomes required for the aspects contemplated in paragraph (d);
- (f) a description of proposed impact management actions, identifying the manner in which the impact management objectives and outcomes contemplated in paragraphs (d) and (e) will be achieved, and must, where applicable, include actions to
 - (i) avoid, modify, remedy, control or stop any action, activity or process which causes pollution or environmental degradation;
 - (ii) comply with any prescribed environmental management standards or practices;
 - (iii) comply with any applicable provisions of the Act regarding closure, where applicable; and
 - (iv) comply with any provisions of the Act regarding financial provisions for rehabilitation, where applicable;
- (g) the method of monitoring the implementation of the impact management actions contemplated in paragraph (f);
- (h) the frequency of monitoring the implementation of the impact management actions contemplated in paragraph (f);
- (i) an indication of the persons who will be responsible for the implementation of the impact management actions;
- (j) the time periods within which the impact management actions contemplated in paragraph (f) must be implemented;
- (k) the mechanism for monitoring compliance with the impact management actions contemplated in paragraph (f);
- (l) a program for reporting on compliance, taking into account the requirements as prescribed by the regulations;
- (m) an environmental awareness plan describing the manner in which-
 - (i) the applicant intends to inform his or her employees of any environmental risk which may result from their work; and
 - (ii) risks must be dealt with in order to avoid pollution or the degradation of the environment; and
- (n) any specific information that may be required by the competent authority.

The Generic EMPr which forms part of this BAR has been compiled strictly according to above-mentioned principles.

Identified impacts and mitigation / management outcomes will be monitored through the application of the Environmental Management Programme (EMPr) that is included as Appendix E of this Basic Assessment Report.

6.5 Conclusion of Impact Assessment

6.5.1 Summary of Impact Assessment Tables

Design and Pre-construction Phase

Impact Description	Extent	Duration	Probability	Magnitude / Intensity	Significance without mitigation	Significance after mitigation
Route & Traction Station Site Selection: Impact on landowners	Regional	Permanent	Definite	Severe	High	Low
Route & Traction Station Site Selection: Impact on environmental sites / features	Local	Medium term	Definite	Severe	High	Low

Construction Phase

Impact Description	Extent	Duration	Probability	Magnitude / Intensity	Significance without mitigation	Significance after mitigation
Impact on fauna	Site	Medium	Definite	Low	Low	Low
Impact on flora	Local	Medium	Definite	Moderate	Moderate	Low
Birds: Electrocution	Local	Short	Possible	Moderate	Low	Very Low
Birds: Collision	Local	Short	Possible	Moderate	Low	Very Low
Birds: Habitat disturbance	Site	Short	Possible	Moderate	Low	Very Low
Impact on aquatic features	Local	Short	Unlikely	Low	Low	Very Low
Impact on heritage resources	Site	Short	Possible	Low	Low	Very Low
Increased risk for groundwater pollution	Local	Medium	Possible	Moderate	Moderate	Low
Increased risk for erosion	Local	Long	Probable	Moderate	Moderate	Low
Impact on the community	Local	Short	Probable	Moderate	Moderate	Low
Noise	Local	Short	Probable	Low	Low	Low
Dust	Local	Short	Probable	Moderate	Moderate	Low

Post-Construction and Operational Phase

Impact Description	Extent	Duration	Probability	Magnitude / Intensity	Significance without mitigation	Significance after mitigation
Improper site clearance after construction	Local	Short term	Probable	Moderate	Moderate	Low
Lack of rehabilitation: Environmental damage and erosion	Local	Short term	Probable	Moderate	Moderate	Low
Insensitive servitude clearing for maintenance purposes	Local	Medium term	Probable	Moderate	High	Low

6.5.2 Conclusion

- As can be seen from the summary tables above, all identified impacts can be mitigated to acceptable levels.
- The impacts assessed include issues raised by the different specialists as well as other impacts as identified by the EAP.
- All natural, social and cultural functions and processes will be able to continue *after* mitigation measures have been applied.
- No substantial impact *after* mitigation has been applied is expected to occur.
- The impact of this project can, in general, be seen as minimal.
- All the mitigation measures are included in the Environmental Management Programme, which means that the Applicant is legally bound to follow the recommendations.

CHAPTER 7: CONCLUSION

7.1 Assumptions, Uncertainties, and Gaps in Knowledge

Assumptions

It is assumed that all documentation and information obtained from the different stakeholders, professional team members and specialists are accurate, unbiased and valid.

Uncertainties

The development proposal in relation to its environment was thoroughly investigated by various specialists and professionals and there are therefore no uncertainties with regards to the development as proposed.

Gaps in knowledge

Extensive relevant specialist and engineering studies were undertaken for this project and it is highly unlikely that any missing information could influence the outcome of this project.

7.2 Environmental Impact Statement

Specialist studies, landowner negotiations and public participation were undertaken for this project and the following is applicable:

Specialist studies

- *Ecological Assessment of the Flora and Watercourses*

The total study area can be broadly classified as a *Combretum apiculatum* woodland with smaller sections dominated by *Senegalia/Vachellia* and *Terminalia* species. Most of the areas of the proposed power line and the proposed Diepspruit, Matlabas and Marakele substations are regarded as being moderately degraded to natural.

The sections of the power line located within CBA or ESA areas do have natural species, but the ecosystem has been negatively affected due to anthropogenic influences (current and past). The vegetation of these areas has been affected resulting in a degraded herbaceous layer and resultant densification of woody species. The vegetation of some of the areas is mostly natural, though some sections are degraded. All of the vegetation units, although natural and part of the natural ecosystem form part of a larger and in some places more pristine ecosystem. The landscape is mostly low flat to undulating areas with sandy plains.

Fragmentation of the habitat is not expected to be of any significance with normal connectivity between ecosystems still intact due to the relatively small footprint of the pylons.

Three water pathways and various seasonally wet depressions were identified along the proposed powerline and the one along the Matlabas Traction substation loop route. The drainage pathways have a low Ecological Importance and Sensitivity while the depressions have a medium-high conservation value. The alternatives provided where these substation locations did occur within the pathways are all outside the pathways and will therefore have no impact on these systems. Except for one seasonally wet depression, none of the substations or proposed powerline route traverses any depression. The area where one depression is traversed can be easily mitigated and should have a minimal if any effect on the ecosystem.

Two protected tree species namely *Sclerocarya birrea* and *Boscia albitrunca* were identified in different vegetation units. The placement of the pylons should be done in such a way as to avoid damaging these species as far as possible. If single individuals of these species have to be removed, a permit from the Department of Agriculture, Fisheries and Forestry (Forestry Branch) and Nature Conservation will have to be obtained for this purpose.

It is recommended that once the final powerline route and pylon positions have been decided on and pegged that a walk down by a qualified plant ecologist is done to determine if any of these protected species must be removed.

Four medicinal plant species were recorded but none are threatened species and are common throughout the area.

It is concluded that all impacts could be mitigated to LOW or NEGLIGIBLE levels.

- *Bird Impact Assessment*

The impact that electrocutions, collisions and habitat transformation could have on the birds of the area is judged to be LOW and can be further reduced to VERY LOW with the application of mitigation measures.

- *Heritage Impact Assessment*

No heritage resources were found, but a walk-down is nevertheless recommended to ensure that no sensitive features that could have been missed during the site investigation will be impacted on. Impact on the heritage resources of the area will be NEGLIGIBLE.

Landowners

- The power line route was changed to accommodate some landowners
- The position of the Matlabas Traction Station was moved to the eastern side of the railway line to accommodate a planned DWS pipeline route.
- The position of the Diepspruit Traction Station was changed to accommodate a landowner and the new position on the eastern side of the railway line also accommodates the planned DWS pipeline route

Public Participation

- Even though the project was widely advertised and as per the NEMA Regulations very little comment from the general public was received. All objections / queries were satisfactorily addressed.

All impacts were assessed before and after mitigation have been applied. The significance of the impacts *after* mitigation has been rated as Low / Very Low / Negligible.

7.3 Why the Activity Should, or Should Not be Authorised

It is the professional and objective opinion of the independent EAP that the following is relevant:

- All reasonable actions were taken to identify relevant environmental components in the study area.
- The specialist input obtained is comprehensive and effective in providing an assessment of the status quo of the study area, identifying potentially sensitive areas and issues of concern as well as identifying impact that require re-consideration of route alternatives.
- Significant and reasonable actions were taken to identify and notify all Interested & Affected Parties that include government departments, relevant authorities, general stakeholders and potentially affected landowners of the project. Extensive and continuous communication with the IAPs took place.
- The BAR includes all proceedings, findings and recommendations which result from this study.
- All relevant legal requirement in terms of the Environmental Impact Assessment Regulations published in 2014, as amended were complied with.

The EAP can without reservation recommend this Environmental Impact Report for Environmental Authorisation by the Department of Environmental Affairs (DEA).

7.4 Environmental Authorisation

7.4.1 Period for which the EA is required

This period is from the date of which the EA has been issued until the end of all construction activities. A period of 8 years is required – this will allow for any unforeseen circumstances.

7.4.2 Date on which the activity will be concluded

The planned end of construction is March 2022.

7.4.3 Date on which the post-construction monitoring requirements will be finalised

The planned end of the post-construction monitoring requirements is August 2022.

7.5 Recommendation by the Environmental Assessment Practitioner

It is recommended that the following are included in the Environmental Authorisation:

- The implementation of the Environmental Management Programme is a condition of authorisation.
- A route corridor width of 1km is approved for the Final Route Alignment.
- The exact servitude and tower positions required by Eskom should be determined in cooperation with the directly affected landowners to accommodate site-specific requirement.
- A route walk-down by the Bird Specialist, the Ecologist and the Archaeologist must be undertaken once the draft positions of the pylons have been identified.

7.6 Affirmation by the Environmental Assessment Practitioner

We, Annelize Grobler & Susanna Nel, herewith affirm the following:

- The information contained in this report is to the best of our knowledge and experience correct.
- All relevant comment and input provided by the stakeholders and IAPs are included and addressed in this BAR.
- Input and recommendations from the specialist reports are provided in and integrated with the BAR.
- All information made available by the EAP to IAPs and any responses thereto as well as comment and input from IAPs are provided in the BAR.



Annelize Grobler
DATE: 10 October 2019



Susanna Nel
DATE: 10 October 2019
