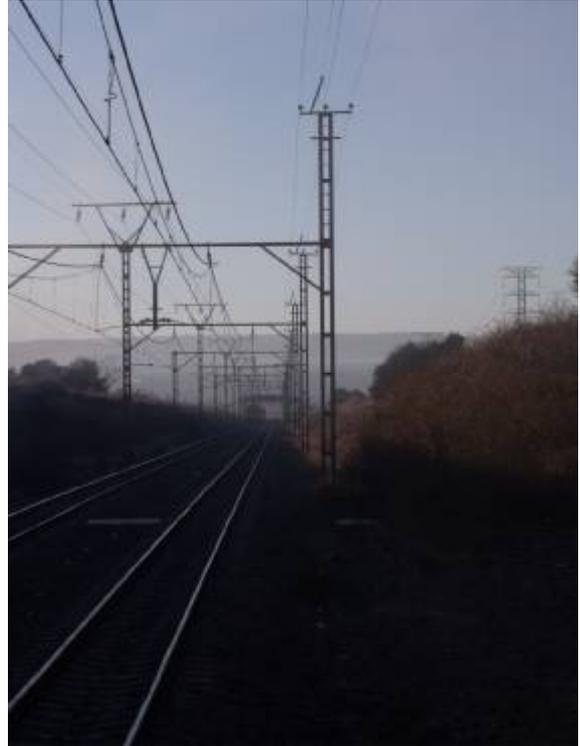


*Kusile Railway Project: Proposed construction of a railway line (and associated infrastructure) from the existing railway (parallel to the N4) to the Kusile Power Station*



**DEA REF NO: 12/12/20/1488**

**Proponent: Eskom Generation**

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## **FINAL PLAN OF STUDY FOR EIA**

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**Project: 12202**

## **1.1 Technical Process**

### **1.1.1 Prepare Specialist Investigations**

The scoping phase investigations have reviewed a range of potential environmental impacts associated with the proposed development. Such an assessment, which was informed by authorities input, interested and affected parties and various professionals, a shortlist of such potentially significant environmental impacts were identified for detailed specialist assessments during the Impact Assessment phase. The specialist investigations to be conducted during the EIA-phase of this project will consist of the following studies:

- Heritage and Archaeological Assessment;
- Soils and Land Capability Assessment (including agricultural potential);
- Groundwater Investigation;
- Wetland Delineation;
- Traffic Impact Assessment;
- Air Quality Assessment;
- Noise Impact Assessment;
- Geotechnical Investigations;
- Social Impact Assessment;
- Risk Assessment;
- Ecology (Fauna and Flora – terrestrial and aquatic)
- Avi-fauna Assessment; and
- Visual Assessment.

The findings of these studies will be reflected in the EIA Report. The proposed Terms of Reference (ToR) for each of these specialist investigations is indicated in Section 7.1.2 below.

## **1.2 Specialist Studies: Terms of Reference (ToR)**

### ToR: Heritage and Archaeological

A Heritage Impact Assessment will be conducted to comply with Section 38 of the National heritage Resources Act (No 25 of 1999). Specific objectives of this study will be:

- Desktop study (consulting heritage data banks and appropriate literature);
- Site visit of the project area;

- Determine whether any of the types and ranges of heritage resources as outlined in Section 3 of the Act (No 25 of 1999) do occur in the project area;
- Determine what the nature, the extent and the significance of these remains are;
- Determine whether any heritage resources (including graves) will be affected by the development project; and
- If any heritage resources are to be affected by the development project mitigation measures (Phase II studies) has to be undertaken and management proposals have to be set for heritage resources which may continue to exist unaffected in or near the project area.

- Compile a report which would

Clearly identify possible archaeological, cultural and historical sites within the study area;

Identify the potential impacts of construction and operation of the proposed development on such resources, with and without mitigation;

Offer an opinion on a preferred route in terms of this specialist field;

Provide mitigation measures to ameliorate any negative impacts on areas of heritage significance;

Include a map illustrating the salient aspects of the report

#### ToR: Soils and Land Capability (including agricultural potential)

A soil and land capability investigation will be conducted for the Kusile railway project. The objectives of this study will be:

- Review existing information available;
- An aerial photographic study to assess the accessibility, vegetation cover, drainage lines, slope aspects and percentage outcrop of each of the three routes;
- A field visit to verify the aerial photographic study observations. Additionally, during the visit, the depth and properties of regolith will be judged from natural exposure (dongas) and hand augering where applicable;
- A map will be compiled of each of the alternative routes, indicating the features observed; and
- Assess the potential impacts and their significance on the agricultural potential of each alternative;
  - Propose mitigation measures to reduce or mitigate potential impacts;
- A short report will be compiled, in which the alternatives will be prioritized based on the results of the study.

### ToR: Groundwater Investigation

A groundwater investigation will be conducted for the Kusile railway project. The objectives of this study will be:

- Detailed description the topography, geological and hydrogeological setting of the proposed routes;
- Characterization of the groundwater regime in a regional geological and geohydrological context with a general geological and geohydrological description, indicating the overall characteristics of the geological settings and aquifer parameters, and identification of immediate groundwater users;
- Detailed description of the aquifer parameters, such as the lateral extent of aquifers, hydraulic parameters, recharge, groundwater elevations, groundwater yields and groundwater qualities;
- Determination of pre-project groundwater quality;
- Description of the effect of project on the groundwater regime i.e. aquifers, streams, high recharge areas and surrounding groundwater users and water quality for the construction operation and post closure phases;
- Description of groundwater management measures related to project phases;
- Groundwater monitoring protocols and a report containing groundwater monitoring data and analysis;
- A groundwater model illustrating the above mentioned analysis will be required;
- Provide a groundwater level contour map of the area; and
- A report with the findings and recommendations in which the alternatives will be prioritized based on the results of the study.

### ToR: Wetland Delineation

A wetland delineation investigation will be conducted for the Kusile railway project. The objectives of this study will be:

- Review existing information available;
- An aerial photographic study to assess the accessibility, vegetation cover, drainage lines, slope aspects and percentage outcrop of each of the three routes;
- A field visit to delineate the wetlands according to the Department of Water Affairs (DWA) methodology;
- The wetlands should be clearly demarcated with provision of co-ordinates or demarcation of polygons;
- Identify impacts associated with the proposed development on the wetlands and provide mitigation measures for the identified impacts;

- A map will be compiled of each of the alternative routes, indicating the features observed; and
- A report will be compiled, in which the alternatives will be prioritized based on the results of the study.

#### ToR: Traffic Impact Assessment

A traffic impact assessment will be conducted for the Kusile railway project. The objectives of this study will be:

- Undertake a site visit, taking cognisance of the three identified alternatives in the study area;
- Undertake a review of existing information and conceptual plans of the study area;
- Determine the existing and predicted traffic impact during and after construction of the railway and assess the general impact of the project on traffic.
- Provide mitigation measures to prevent and/or mitigate any environmental impacts that may occur due to the proposed project;
- Provide a traffic impact report in which the alternatives will be prioritized based on the results of the study.

#### ToR: Air Quality Assessment

An air quality impact assessment will be conducted for the Kusile railway project. The objectives of this study will be:

- To assess impacts on the air quality during the construction and operational phases of the project;
- Quantify emissions from the construction operations and operational phase using US-EPA emission factors based on the process description and information available. The dispersion model (i.e. AERMOD) will be applied;
- Simulate ambient air pollutant concentrations for short-term impacts (i.e. highest hourly average), with extrapolations to long-term exposures (i.e. annual averages);
- Comparison emissions with ambient air quality guidelines/standards/goals and dose-response thresholds;
- Provide mitigation measures to prevent and/or mitigate any environmental impacts that may occur due to the proposed project;
- Compile an air impact assessment report in which alternatives are prioritised based on the findings of the study.

### ToR: Noise Impact Assessment

A noise impact assessment will be conducted for the Kusile railway project. The objectives of this study will be:

- To assess the impact of the construction and operation of a railway on the existing ambient noise climate of the area;
- Take noise measurements on site to confirm the baseline noise levels in the area and compare typical noise levels for this type of construction and operation;
- Determine the expected response from the community and all other receptors (e.g. livestock) to the noise impact, i.e. the change in ambient noise of the area taking into account sociological factors as well as the noise climate based on the relevant SANS document.
- Reflect on input from traffic impact during construction and operation of the development;
- Provide mitigation measures to prevent and/or mitigate any environmental impacts that may occur due to the proposed project;
- Determine details of planned operations (when train will run etc.);
- A noise impact assessment report in which alternatives are prioritised based on the findings of the study.

### ToR: Geotechnical Investigations

A Geotechnical Investigation is required to be conducted in the area and for the three alternative routes. The following is required:

- Review of existing and available geological and geotechnical information;
- A site visit to verify all aerial photographs and to investigate the depth and properties of regolith which will be judged by assessing natural exposure (dongas) and with the aid of hand augering where applicable;
- A map will be compiled of each alternative route, indicating features observed;
- Identify and assess significance of potential geotechnical constraints to the proposed development on all alternatives;
- Propose mitigation measures that could reduce or eliminate the identified constraints; and
- A short report will be compiled, in which alternatives are prioritised based on the findings of the study.

### ToR: Social Impact Assessment

A Social Impact Assessment (SIA) is required to be conducted in the area and for the three alternative routes. The following is required:

- Undertaking of a social analysis including a social baseline study describing the socio – economic characteristics of the area;
- Identify relevant social aspects and predict the anticipated social as well as socio-economic changes and impacts associated with the proposed project;
- Assess positive and negative social impacts including identification of viable mitigation measures and project related benefits; and
- Compile a Social Impact Assessment Report indicating findings, recommendations and maps indicating sensitive and/or no-go areas as well as the preferred alternative.

#### ToR: Terrestrial Ecology and Avi-fauna

A terrestrial ecological and avifauna investigation will be conducted on the Kusile railway project. The objectives of this study will be:

- Review existing ecological information available;
- Conduct a site visit to determine the general ecological state of the proposed site, determine the occurrence of any red data and vulnerable species;
- Provide mitigation measures to prevent and/or mitigate any environmental impacts that may occur due to the proposed project;
- Provide a ranking assessment of the suitability of the three proposed alternative routes;
- Compile a terrestrial ecological and avi-fauna report, indicating findings, recommendations and maps indicating sensitive and/or no-go areas.

#### ToR: Aquatic Ecology

An aquatic ecological investigation will be conducted on the Kusile railway project. The objectives of this study will be to:

- Characterize the biotic integrity of aquatic ecosystems associated with the three proposed rail alternatives;
- Evaluate of the extent of site-related effects in terms of selected ecological indicators;
- Identify potential problems and recommend suitable mitigation measures;
- Identify listed aquatic biota based on the latest IUCN rankings, or other pertinent conservation ranking bodies;
- Identify sensitive or unique aquatic habitats which could suffer irreplaceable loss; and
- Compile an aquatic ecological report, indicating findings, recommendations and maps indicating sensitive and/or no-go areas.

### ToR: Visual Assessment

A Visual Assessment will be conducted on the Kusile railway project. Specific objectives of this study will be:

- Desktop study (consulting existing and appropriate literature);
- Site visit of the project area if required;
- Assess the visual impact of the proposed development on each of the three alternative routes;
- Suggest any recommendation / mitigation measures that can be done to decrease the impacts of the proposed development;
- Provide a ranking assessment of the suitability of the three proposed alternative routes; and
- Compile a visual assessment report, indicating findings, fatal flaws, recommendations and maps indicating sensitive and/or no-go areas.

### ToR: Risk assessment

A Risk Assessment will be conducted on the Kusile railway project. Specific objectives of this study will be to:

- Describe possible major incidents associated with this development, if any;
- Provide an estimate of the probability of such major incidents;
- Describe the potential effects of such a major incident on the public and residential areas;
- Compile an assessment of the risks associated with the proposed development;
- Describe mitigation measures that could reduce or eliminate the risks;
- Provide a ranking assessment of the suitability of the three proposed alternative routes; and
- Compile a Risk Assessment Report, indicating findings and recommendations.

#### **1.2.1 Impact Analysis**

The significance (quantification) of potential environmental impacts identified during scoping and identified during the specialist investigations will be determined using a ranking scale, based on the following:

- Occurrence
  - Probability of occurrence (how likely is it that the impact may occur?), and
  - Duration of occurrence (how long may it last?)
- Severity

- Magnitude (severity) of impact (will the impact be of high, moderate or low severity?), and
- Scale/extent of impact (will the impact affect the national, regional or local environment, or only that of the site?)

Each of these factors has been assessed for each potential impact using the following ranking scales:

<p><b>Probability:</b></p> <p>5 – Definite/don't know            4 – Highly probable            3 – Medium probability            2 – Low probability            1 – Improbable            0 – None</p>	<p><b>Duration:</b></p> <p>5 – Permanent            4 - Long-term (ceases with the operational life)            3 - Medium-term (5-15 years)            2 - Short-term (0-5 years)            1 – Immediate</p>
<p><b>Scale:</b></p> <p>5 – International            4 – National            3 – Regional            2 – Local            1 – Site only            0 – None</p>	<p><b>Magnitude:</b></p> <p>10 - Very high/don't know            8 – High            6 – Moderate            4 – Low            2 – Minor</p>

The environmental significance of each potential impact was assessed using the following formula:

$$\text{Significance Points (SP)} = (\text{Magnitude} + \text{Duration} + \text{Scale}) \times \text{Probability}$$

The maximum value is 100 Significance Points (SP). Potential environmental impacts were rated as high, moderate or low significance on the following basis:

- More than 60 significance points indicates high environmental significance.
- Between 30 and 60 significance points indicates moderate environmental significance.
- Less than 30 significance points indicates low environmental significance.

### 1.2.2 Draft EIA Report and EMP

Findings and/or recommendations of the specialist studies will be integrated into a report that will be updated as comments are received from I&APs. The Final EIA report together with a draft construction and operation EMP will be submitted to DEA for environmental authorisation.

### 1.3 Public Participation

The public participation process for the EIA will involve the following proposed steps:

- Announcement of the availability and public review of the draft Environmental Impact Report;

- Announcement of the availability of the final Environmental Impact Report;
- Holding of public and focus group meetings; and
- Notification of the authorities' decision with regard to Environmental Authorisation.

Information about each step is provided below.

### **1.3.1 Announcing the availability of the Draft EIR and EMP**

At this point, specialist assessments would have been conducted and the Draft EIR and EMP would be ready for public review. A letter will be circulated to all registered I&APs, informing them of progress made with the study and that the Draft EIR and EMP are available for comment. The report will be distributed to public places and also presented at a stakeholder workshop / open house.

### **1.3.2 Public review of Draft EIR and EMP**

The EIA Guidelines specify that stakeholders must have the opportunity to verify that their issues have been captured and assessed before the EIA Report will be approved. The findings of the specialist assessments will be integrated into the Draft EIR. The report will be written in a way accessible to stakeholders in terms of language level and general coherence. The Draft EIR will have a comprehensive project description, motivation, and description of alternatives considered and also the findings of the assessment and recommended mitigation measures. It will further include the Issues and Responses Report, which will list every issue raised, with an indication of where the issue was dealt with in the EIR. The findings of the assessment and recommended mitigation measures will also be incorporated into the EIR.

As part of the process to review the Draft EIR and EMP, stakeholder workshops with an open house component will be arranged to afford stakeholders the opportunity to obtain first-hand information from the project team members and also to discuss their issues and concerns.

Contributions at this meeting will be considered in the Final EIR. It is proposed that the same public places be used as in the scoping phase and also that stakeholder meeting be conducted at the same venues as during scoping.

### **1.3.3 Announcing the availability of the Final EIR and EMP**

After comments from I&APs have been incorporated, all stakeholders on the database will receive a personalised letter to report on where we are in the process, to thank those who commented to date and to inform them that the Final EIR and EMP have been submitted to the lead authority for consideration.

#### **1.3.4 Announce authorities' decision on Environmental Authorisation**

Based on the contributions by the stakeholders, the decision of the authorities may be advertised through the following methods:

- Personalised letters to individuals and organisations on the mailing list;
- Advert in local or regional newspapers.