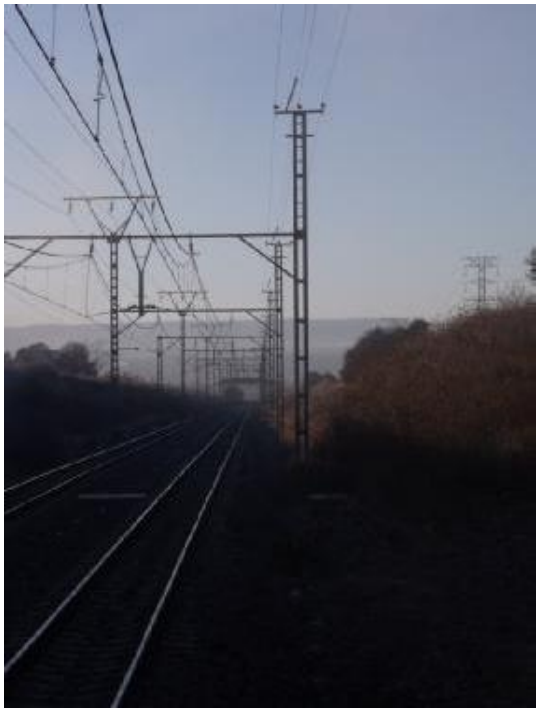
January 2010
Authorisation Phase

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

FINAL ENVIRONMENTAL IMPACT REPORT

Project: 12202

EXECUTIVE SUMMARY

Overview of the Proposed Project

The Kusile Power Station, and its infrastructure, including rail and road transportation, received Environmental Authorisation (EA) in March 2008. According to the original planning, sorbent would only be transported by rail to the power station while the roads network would be used for other transportation. However, during the detailed design of the infrastructure, the authorised rail route was deemed not feasible due to some technical challenges. The planning process also showed that the rail construction and operation would not be ready when the first generation unit comes into operation thus necessitating an alternative sorbent transportation mechanism. Road transportation was deemed an appropriate ***temporary*** alternative until the railway is operational.

One of the conditions of the EA (March 2008) for the construction of Kusile Power Station was that it must be fitted with the most advanced air pollution reducing equipment ever installed at a power station in South Africa (Flue Gas Desulphurisation [FGD]). This technology would result in a minimum of 90% of the sulphur dioxide (SO_2) being removed from the power station emissions, bringing it in line with international emission standards.

Alkaline sorbents (materials used to adsorb either liquids or gases) are used for scrubbing flue gases to remove the SO_2. Lime is used on large coal or oil fired boilers as found in power plants, as it is less expensive than sodium hydroxide. Therefore, a sorbent is required to reduce the amount of SO_2 that is emitted. The SO_2 reacts with the calcium in the limestone to form calcium sulphate ($CaSO_4$) or calcium sulphite ($CaSO_3$) and CO_2. The source of sorbent would be determined through a commercial process.

Eskom Generation appointed Zitholele Consulting (Pty) Ltd, an independent company, to conduct an Environmental Impact Assessment (EIA) to evaluate the potential environmental and social impacts of the proposed construction of a railway from the existing Pretoria – Witbank railway to the Kusile Power Station. Three alternative corridors (500 m wide) were identified and are being assessed in this EIA.

Purpose of this Report

This report is the Final Environmental Impact Report (FEIR), a key component of the environmental authorisation process for the proposed construction of a railway line from the existing Pretoria-Witbank railway line, north of the N4 highway, to the Kusile Power Station for the transportation of sorbent.

This report addresses the requirements for the Impact Assessment Phase for the EIA as outlined in the NEMA regulations. The aim of this Final EIR is to:

- Provide information to the authorities as well as interested and affected parties on the proposed project;

- Provide information regarding alternatives that are being considered;
- Indicate how interested and affected parties have been and are still being afforded the opportunity to contribute to the project, verify that the issues they raised to date have been considered, and comment on the findings of the impact assessments;
- Describe the baseline receiving environment;
- Provide information on the assessing and ranking of the alternatives;
- Provide proposed mitigation measures in order to minimise negative impacts and enhance positive impacts; and
- Present the findings of the Impact Assessment Phase in a manner that facilitates decision-making by the relevant authorities.

Environmental Impact Assessment Process

An EIA for the proposed railway is been undertaken in accordance with the EIA Regulations promulgated in terms of Section 24 (5) of the NEMA. This EIA was undertaken in order to identify environmental issues associated with the proposed project, and determine which issues require further investigation.

To ensure effective public participation in the EIA phase, the Public Participation Process (PPP) was implemented in stages. This process included the identification of, and consultation with all relevant stakeholders, as well as ongoing communication and networking with I&APs throughout the duration of the project. Issues and concerns raised during this process were compiled in an Issues and Response Report (IRR), and included within the Scoping Report, and this Final EIR.

The Draft EIR was available for public review. During the review period, public feedback meetings were held to discuss the draft report. Comments received from the public have been considered in this Final EIR, which is being presented to the DEA for comment, consideration and authorisation.

Conclusion

This section provides a short sensitivity matrix, which compares the three different alternatives corridors and their associated environmental sensitivities. Where an impact is rated between two thresholds, that is, low-moderate; moderate-high or high-very high the rating assigned to the description will lean towards the value assigned to that impact. (i.e. if ranked as 2.9 it wall fall within the upper threshold that is the high category as indicated in the matrix below).

TABLE 1-1: ALTERNATIVE SENSITIVITY MATRIX

	Sensitivity	RAILWAY CORRIDOR			POWER LINE A		POWER LINE B	
		Alternative 1	Alternative 2	Alternative 3	Alternative A-(a)	Alternative A-(b)	Alternative B-(a)	Alternative B-(b)
BIO-PHYSICAL	Air	Low	Low	Low	Low	Low	Low	Low
	Geology	Moderate	Moderate - High	Low - Moderate	Moderate	Moderate	Low - Moderate	Low - Moderate
	Topography	Low - Moderate	Moderate	Low-Moderate	Moderate	Moderate	Low	Low
	Soils and Agricultural Potential	Moderate – High	High	Moderate - High	Low	Low	Low	Low
	Surface Water and Wetlands	High	High (most stream crossings)	High	High	Moderate - High	Low - Moderate	Low - Moderate
	Groundwater	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate
	Terrestrial Ecology	Moderate	Moderate - High	Moderate	Moderate	Low - Moderate	Low - Moderate	Low - Moderate
	Avi-fauna	Moderate - High	High	Moderate - High	High	High	High	High

	Sensitivity	RAILWAY CORRIDOR			POWER LINE A		POWER LINE B	
		Alternative 1	Alternative 2	Alternative 3	Alternative A-(a)	Alternative A-(b)	Alternative B-(a)	Alternative B-(b)
	Aquatic Ecology	Moderate	High	Moderate	Moderate	Moderate - Low	Low	Low
SOCIO-ECONOMIC	Social	Moderate	Moderate - High	Moderate	Moderate	Moderate	Moderate	Moderate
SOCIO-ECONOMIC	Visual	Moderate	Moderate – High	Moderate	Moderate	Moderate	Moderate	Moderate
SOCIO-ECONOMIC	Risk	Low	Low	Low	N/A	N/A	N/A	N/A
SOCIO-ECONOMIC	Noise	Low	Moderate - High	Low	Low	Low	Low	Low
SOCIO-ECONOMIC	Traffic	Low	Low - Moderate	Low	Low	Low	Low	Low
CULTURAL	Heritage	Low	Low	Low (preferred)	Low	Low	Low	Low
	Total Sensitivities	**11**	**16**	**10**	**11**	**9**	**6**	**6**

Low = 0	Moderate = 1	High = 2	Very High = 3

On the basis of the matrix presented above, it is suggested that ***railway corridor alternative 3 (three)*** be utilised as the preferred alternative for the proposed railway, access roads and substations (as well as associated infrastructure) and ***power line corridor A-(b)*** be utilised as the preferred alternative for the one 88/132kV power line, as these have the least sensitive features associated with the alignments. For the second power line both alternative B-(a) and B-(b) where ranked equally and have few environmental sensitivities therefore either is preferred.

The corridors that were assessed for the railway alternatives were 500 metres in width along the length of the proposed routes. Consequently Alternative 1 and Alternative 3 corridors are immediately adjacent to each other along the property boundaries. This being said it is preferable to construct the railway line along this boundary to minimise the impact on the landowners as little to no land will be lost. Therefore the preferred alternative is alternative three.

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ABBREVIATIONS

$CaSO_3$ ..... Calcium Sulphite
$CaSO_4$ ..... Calcium Sulphate
CO_2 ..... Carbon Dioxide
DC ..... Direct Current
DEIR ..... Draft Environmental Impact Report
DME ..... Department of Minerals and Energy
DSR ..... Draft Scoping Report
DWEA ..... Department of Water and Environmental Affairs
EA ..... Environmental Authorisation
EAP ..... Environmental Assessment Practitioner
ECA ..... Environment Conservation Act
EIA ..... Environmental Impact Assessment
FEIR ..... Final Environmental Impact Report
FGD ..... Flue Gas Desulphurisation
FSR ..... Final Scoping Report
GNR ..... Government Notice Regulation
HDI ..... Historically Disadvantaged Individuals
I&APs ..... Interested and Affected Parties
IEM ..... Integrated Environmental Management
IEP ..... Integrated Energy Plan
ISEP ..... Integrated Strategic Electricity Planning
kV ..... Kilo Volts
MVA ..... Mega Volt Ampere
NEMA ..... National Environmental Management Act
NERSA ..... National Energy Regulator of South Africa
NIRP ..... National Integrated Resource Plan
OHTE ..... Overhead Traction Equipment
SIA ..... Social Impact Assessment
SO_2 ..... Sulphur Dioxide
TFR ..... Transnet Freight Rail
ToR ..... Terms of Reference