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# Kriel Colliery Beneficiation Plant Environmental Management Programme: Draft Scoping Report

Report Prepared for

**Anglo American Inyosi Coal (Pty) Ltd**

Report Number 436368/DSR



Report Prepared by

 **srk** consulting

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# **Kriel Colliery Beneficiation Plant Environmental Management Programme: Draft Scoping Report**

## **Anglo American Inyosi Coal**

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# Executive Summary

## Introduction

Anglo American Inyosi Coal: Kriel Colliery (Kriel) supplies coal to Eskom's Kriel Power Station. Kriel Colliery intends to extend their mining operations in order to meet the Power Station's coal requirements. This includes the construction of a Beneficiation Plant in order to supply coal at the correct quality.

SRK Consulting (Pty) Ltd (SRK) has been appointed as independent Environmental Assessment Practitioners (EAP) to carry out the specialist work needed for the Environmental Impact Assessment (EIA) and Environmental Management Plan (EMP) and to conduct the public participation process required for the Beneficiation Plant in accordance with the Mineral and Petroleum Resources Development Act (MPRDA; Act No. 28 of 2002) and the National Environmental Management Act (NEMA; Act No. 107 of 1998). An application has been submitted to the competent authority, the Mpumalanga Department of Economic Development, Environment and Tourism (MDEDET) and has been allocated the reference number 17/2/3 N-122.

## Project location

Kriel is located between the towns of Ogies, Bethal and Witbank in Mpumalanga and lies within the Highveld Coalfield. Kriel has mining rights over more than 18 000 hectares of the Kriel coalfield, although only the No. 4 seam is mined using opencast and underground mining methods. The depth of the coal seam ranges from 6 m to 85 m and the average seam thickness is 4.9 m.

The proposed Beneficiation Plant is located within this Mining Right area on the farm Driefontein 69 IS (portions 8 and 31) and on the Matla Power Station 141 IS, in between the Kriel and Matla Power Stations, North West of Kriel town. The project area falls within the eMalahleni Local Municipality (which is under the jurisdiction of the Nkangala District Municipality).

## Project description

Kriel supplies coal to Eskom's Kriel Power Station. Eskom has requested that Kriel extend their life of mine (LOM) for an additional 20 years until 2039 to supply coal to the Kriel power station. A coal Beneficiation Plant (also known as a Wash Plant or Coal Processing Plant) is required to meet the quality specifications of the power station. The quality of coal from current operations is higher than that of future operations and thus the plant is required due to the quality of coal required by the power station. The plant is to produce first washed coal in 2016 and is planned to continue until 2039. The footprint of the proposed plant and discard disposal facility is estimated to be approximately 150ha however this figure is subject to change.

Raw and product coal from underground (Kriel Block F; MDEDET reference number: 17/2/3 N-51) and opencast (Kriel Pits 11 and 13, MDEDET reference number: 17/2/3 N-69) operations will be conveyed to the wash plant, thus no trucking will take place. Coal will be stockpiled before entering the plant, while discard will be placed in a new waste dump facility. Two discard dumps, with a whaleback design and with capacities of 4 million tonnes and 26 million tonnes respectively are planned.

The proposed activities include:

- The construction and expansion of facilities or infrastructure for the bulk transportation of water and storm water
- The construction of facilities or infrastructure for the off-stream storage of water e.g. dams
- The construction of infrastructure for the storage of dangerous goods (fuel, concentrators used within the process) and the decommission thereof at closure
- The infilling or depositing of material in and around the Stockpiles and Discard Dumps
- The construction of a road for access to the discard dumps and stockpiles
- The expansion of buildings and infrastructure from previous operations. This infrastructure will be used for the plant as well as workshops, offices and other associated infrastructure
- Physical alteration of undeveloped land

Some new staff may be recruited for the plant as this is a new project and not an extension of life project. The exact staffing requirements are yet to be determined.

## Baseline Environment

The table below details the baseline conditions of the Kriel Mining right area.

**Table 0-1. Summary of Baseline environment characteristics at Pits 11 and 13 and over the Kriel Mining Right Area**

Characteristic	Description
Soils and land capability	The soils tend to be stable and not susceptible to compaction. The majority of the Kriel area has been previously cultivated and is classified as arable, although grazing is also prevalent. There are also many wetlands in the area from hillslope seeps to permanent pans.
Geology	Kriel Colliery falls within the Highveld coalfield with coals seams 1 – 5 present. The lithology consists of an inter-bedded succession of sandstones with subordinate siltstones, grit and mudstones with minor faults and a number of doleritic intrusions.
Groundwater	Water rest levels are typically within 5 – 15m of the ground surface. The perched aquifers have a relatively high recharge while deeper fractured rock aquifers have a slightly lower recharge rate. Borehole yield is generally low and used for stock watering. The groundwater appears as base flow in streams and is generally of a high quality.
Surface Water	The Kriel area is crossed by many streams including the Steenkoolspruit, the Dwars-in-die-Wegspruit, the Rietspruit and the Onverwachtspruit. Mean annual runoff varies between 7.51 million and 12.18 million m <sup>3</sup> /annum. The water quality is generally high with all water entering the mining rights area exceeding the resource quality guidelines and most of these parameters met downstream.
Wetlands	Wetlands cover a large proportion of the mining right area with the majority of wetlands forming hillslope seepages, followed by pans, unchannelled valley bottoms, channelled valley bottoms and floodplains. Many of these have been cultivated or are used for livestock grazing.
Biodiversity	The greater Kriel area is classified as Themeda Veld or Turf Highveld and is dominated by <i>Themeda triandra</i> and <i>Eragrostis</i> spp. Bothe the grasslands and wetlands in the area are viewed as sensitive areas. Although distribution records show that threatened floral species may occur in the area, none have been identified, although protected species have been found. Various faunal species have been recorded, including various threatened species. Most of the area has been heavily impacted by agricultural practices. There is no evidence of significant exotic species establishment.

Cultural	Various grave sites have been identified in the mining rights area, but no other archaeological, historical or cultural sites, structures or objects of any significance were identified.
Noise	Although the character of noise varies over the mining area, surrounding farms and the town, the ambient noise level is homogenous and in accordance with the SANS 10103 guidelines (40dBA).
Air Quality	Various industries in the region contribute to the air quality including various steel plants, brick makers, refineries, numerous collieries and power stations. Other contributors include vehicle emissions, fuel combustion, biomass burning and agricultural practices.
Visual	The current visual landscape is dominated by coal mining activities, including power stations, and agricultural activities.
Socio-Ecology	Kriel and Thubelihle are dependent on the Kriel and Matla Power Stations and Collieries, along with agriculture, for employment and economic activities. Although there are both primary and high schools in Kriel, there is no hospital.
Climate	Wind roses indicate north westerly and the easterly winds with moderate speeds. February is generally the warmest month and July the coldest. The mean annual precipitation is 707mm.
Topography	The topography is gently undulating with an average elevation of around 1540mamsl.

The data above is sourced from the amended EMPR submitted in April 2012.

## Alternatives

Project Alternatives have been considered include:

- **Plant Location:** Various options have been investigated, but due to the space required and stability of underlying geology due to previous undermining, the present site was selected. There was the possibility of the plant being located within the Kriel Power Station area but due to space requirements and the availability of infrastructure at the present site, this option has been rejected.
- **Discard Dumps:** There are various other options being investigated for the location of discard including dewatering the final voids of pits 4, 23 and 23 extension and filling the voids with discards to just below the level of the water table and backfilling old underground workings. A combination of the methods may be used.
- **Stockpiles:** the shape and size of stockpiles is being optimised to minimise any effect on surrounding pans
- **Water Sources:** Alternative water sources that will be investigated and evaluated for the mine include supply from existing raw water sources in the area; treatment and re-use of water that has accumulated in abandoned Pits and underground workings and supply from Rand Water Board.
- **Land Use Alternatives** considered include agriculture and mining.
- **Post Closure Alternatives** including rehabilitation options will be considered in the EIA phase

## Key environmental sensitivities of the area

Environmentally sensitive aspects include:

- **Wetlands:** There are wetlands and pans in the area, especially close to the proposed Run of Mine Stockpile and the larger of the discard dumps.
- **Geology:** The stability of the underlying geology needs to be investigated before the discard dump position can be confirmed.
- **Land use:** The predominant land use in the area is agriculture, consisting of cultivated land

(40.46%) and natural vegetation use for grazing (52.94%). Specifically, the area for the proposed discard dumps is currently being used for grazing.

- **Fauna and Flora:** The proposed stockpiles and discard dumps occur on highly disturbed agricultural areas and it is unlikely that there are any red listed species utilising the habitat, although several are known to occur in the greater Kriel area. There are however pans in the area and these need to be avoided and disturbance minimised as far as possible.
- **Surface Water:** The mine is part of the greater Olifants catchment and is located on two quaternary sub-catchments with all streams eventually draining into the Witbank Dam. Catchment activities include agriculture, livestock farming, sandworks, brickworks, township developments, several Eskom power stations and several mining operations from different mining houses. These all have an influence on both the quantity and quality of the water in the catchment.
- **Dust:** There is only one sensitive dust receptor in the vicinity of the stockpiles and discard dumps. These have been designed and aligned with the prevalent wind direction in mind to minimise potential impact.

## Plan of study for the EIA and EMP

### Scope of Studies

A framework for the plan of study for the EIA and EMP is set out below:

- EIA Management and integrated report writing: planning of the project and the compilation of the various reports into one, integrated assessment
- Public consultation
- Desktop studies: Proposed desktop studies include climate, topography, land use, socio-economic and visual
- Specialist studies: Specialist studies include soils, biodiversity, wetlands, geotechnical and cultural history
- Detailed studies with survey and modelling: Surface and groundwater, geotechnical, noise studies and air quality
- Cumulative assessment: Both the MPRDA and the NEMA regulations require an assessment of the cumulative impacts of the development. These will be assessed as far as possible as cumulative effects are also subjective based on data availability from third parties, the specialist knowledge and experience. For this reason, specialists familiar with the Kriel area have been appointed.

### Study Team

The proposed specialist study team includes:

- Noise: Ben Van Zyl (Acusolv)
- Soils: Ian Jones (ESS)
- Surface water: Mike Palmer (Jones and Wagener)
- WULA: Jacqui Hex (Jones and Wagener)
- Groundwater: Jaco van der Berg (JMA Consulting)
- Biodiversity: George Bredenkamp (EcoAgent)
- Wetlands and Aquatic: Dieter Kassier (Wetland Consulting Services)
- Archaeological and Cultural Heritage: Anton Van Vollenhoven (Archaeos)
- Air Quality: Nick Grobler (Airshed)

## Conclusion

The Draft Scoping Report (DSR) sets out the proposed scope of the EIA and EMP that will be undertaken for the proposed Kriel Expansion Project. This includes the range of alternatives that will be evaluated for various aspects of the projects, the key environmental impacts and issues that need to be addressed, the studies that will be undertaken, terms of reference of the specialist studies and the qualifications and experience of the study team.

The DSR will be corrected after the review, on the basis of comments received, finalised and submitted to the authorities for comment.