

Kangra Coal - Proposed Expansion of Mining Works to Include the Kusipongo Resource – Draft Scoping Report

December 2012

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Kangra Coal (Pty) Ltd.

Proposed Expansion of Mining Works to Include the Kusipongo Resource – Draft Scoping Report

December 2012

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Prepared by: ERM Southern Africa

For and on behalf of Environmental Resources Management
Approved by: Mike Everett

Signed:
Position: Partner
Date: December 2012

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1

INTRODUCTION

1.1

TERMS OF REFERENCE

Kangra Coal (Pty) Ltd. (Kangra Coal) is considering expanding their coal mining operations at the Savmore Colliery, located within the Mkhondo and Dr. Pixley Kalsaka Seme Local Municipalities (which form part of the Gert Sibane District Municipality) in Mpumalanga to include the Kusipongo coal resource, situated to the west of existing operations (proposed Project). The proposed Project will be restricted to underground mining; however, surface infrastructure to support this underground expansion will include:

- An Adit (entrance to the underground mine which is inclined and through which people, equipment and coal will pass);
- Associated Adit infrastructure (offices, workshops, stores, change house, silos, etc);
- A ventilation shaft;
- A conveyor belt of approximately 8.4km in length, to transport coal from the underground operations to the existing Maquasa West Adit and conveyor system, which will transport the coal to the existing plant facilities at the Savmore Colliery; and
- A construction camp (to provide accommodation for semi-skilled and skilled/artisanal and supervisory workers) during the construction phase of the Project, provisionally located 6km away (towards the east) from the proposed site for the Main Mine Adit A along the extension of the D2548.

Fundamental for this project

***Please Note** – the management of discard is a fundamental part of the proposed Project. All discard produced by the proposed Project will be handled at the existing Maquasa Plant and associated discard facility. The detailed assessment of the final option relating to the discard dump will not be included in this study, as it is currently being undertaken by Groundwater Consulting Services (Pty) Ltd. (GCS) as part of their application for amendment to a Section 102 application in terms of the Mineral and Petroleum resources Development Act, 2002 (Act No. 28 of 2002) (MPRDA), to include an additional eight new opencast pits and potential two new underground mining areas accessed from the opencast pits ⁽¹⁾.*

The motivation behind the proposed Project is attributed to the declining resource capacities at Kangra Coal's existing operations in the area.

In terms of the MPRDA, the proposed Project requires a mining right from the National Department of Minerals Resources (DMR). In addition, certain aspects of the proposed Project constitute scheduled activities in terms of the National Environmental Management Amendment Act (NEMA)

(1) The details of this application are discussed in further detail in *Chapter 2* of this report.

Environmental Impact Assessment Regulations GN.R544 and GN.R545; the National Environmental Management Waste Act (NEMWA) Regulations GN.R718; and the National Water Act (No.36 of 1998).

Environmental Resources Management Southern Africa (Pty) Ltd. (ERM) were appointed by Kangra Coal to undertake the function of independent Environmental Assessment Practitioner (EAP) to facilitate the Mining Rights Application, Waste License Application, Environmental Approval and Water Use License Application (WULA) processes in accordance with the NEMA Regulations.

1.2 SCOPING PHASE

The scoping phase is designed to determine the “scope” of the subsequent Environmental Impact Assessment (EIA), conducted in fulfilment of the application for authorisation.

The scoping procedure identifies potential:

- Issues;
- Impacts; and
- Alternatives, regarding a development.

An integral part of the scoping phase is the initial public participation process. This process ensures that all possible interested and affected parties (I&APs) are informed of the proposed Project and provided an opportunity to comment.

1.3 STRUCTURE OF THIS SCOPING REPORT

This report fulfils the requirement of NEMA (and MPRDA⁽¹⁾) for the documentation of the scoping phase. The structure of this report has been based on Section 28 of GN.R543 of the Environmental Impact Assessment Regulations (2010), which clearly specify the required content of a scoping report.

1.4 DETAILS AND EXPERTISE OF THE ENVIRONMENTAL ASSESSMENT PRACTITIONER

In terms of the NEMA (Act No. 107 of 1998), as amended, Environmental Impact Assessment Regulations (GN.R543), Section 17, - *An EAP appointed in terms of regulation 16 (1) must be independent, have expertise in conducting*

(1) *Please Note* - a separate Scoping Report will be submitted to the Department of Minerals and Resources (DMR). The DMR Scoping Report is as per the recently published template on the DMR's website - <http://www.dmr.gov.za/samrad-online-guidelines-and-templates/viewcategory/176-samrad-online-guidelines-and-templates.html>. Information included in the DMR Scoping Report is consistent with information included in this report.

environmental impact assessments, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity.

ERM has been providing businesses and governments with specialist advice on all aspects of the environment since 1971. ERM is the worlds leading global provider of environmental, health and safety (EHS), risk and social services, delivering independent advice to clients from 137 offices in 39 countries. More specifically, the project team selected for this project possesses all the relevant expertise and experience to undertake this EIA. As such, ERM has signed the legally required declaration of independence to function as an objective Environmental Assessment Practitioner (EAP).

The EAP for the applicant is:

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1.5

THE PROPONENT

The proponent in the application is Kangra Coal (Pty) Ltd. Kangra Coal was previously a privately owned company called Zinzan Property Holdings Incorporated, and the name was changed to Kangra Coal (Pty) Ltd on 21 January 2003. In 2004 the South African investment company Shanduka Group entered into the company. In 2007, the Spanish utility Union Fenosa (now known as Gas Natural Fenosa) acquired the majority stake, with Kangra Coal becoming a subsidiary of Union Fenosa Minería (mining brand of the main group). The current share allocation is 30 percent Shanduka Group and 70 percent Gas Natural Fenosa.

Kangra Coal's sole business is the mining of coal and the sale thereof to the export and domestic markets. The company has three main streams to its business: it exports coal through trade contacts given its ownership of 2.13% of Richards Bay Coal Terminal (RBCT), it supplies the domestic market and it also exports coal to India.

Kangra Coal produces approximately 3 million tons of coal per annum, of which approximately 2 million tons is exported through the Richards Bay Coal Terminal, whilst the remainder is sold into the local market. Domestic clients are predominately coal traders, cement and timber factories and sugar mills; one of their largest local clients is Mondi, where coal is used in their paper mills.

Currently, Kangra Coal has mining operations in the Piet Retief area and on the southern side of the Ermelo coal fields. The current mine, known as the Savmore Colliery, is developed in the mining rights known as Maquasa West and Maquasa East Extension. The current beneficiation plants are situated in Maquasa East Extension mining right.

Kangra Coal is working intensively on the development of new mining areas as a natural extension of the current mine workings. The development of new mining areas will enable an extension to the life span of the mine. One such area is the Kusipongo coal reserve, which is situated to the west of existing operations, and which is the subject of this Scoping report.

The proponent in the application is:

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1.6

RELEVANT AUTHORITIES

The proposed Project will require environmental authorisation from the Mpumalanga Department of Economic Development, Environment and Tourism (DEDET), a Waste License from the National Department of Environmental Affairs (DEA) and Mining Rights from the Mpumalanga Department of Minerals and Resources:

**The Mpumalanga Department of Economic Development, Environment and
Tourism (DEDET)**
13 Dejager Street,

Ermelo,
2350

Contact Person:

Mr. Bhekinkosi E Mndawe
Tel (w): +27 (0)17 811 3944
Mobile: +27 (0)72 814 5409
Email: bemndawe@mpg.gov.za

Application for Environmental Authorisation Reference Number:
17/2/3 GS-52

National Department of Environmental Affairs (DEA)

Fedsure Building
315 Pretorius Street
Pretoria
0002

Contact Person:

Mr. Matjelele Phaladi
Tel (w): +27 (0)12 310 3870
Email: pmatjile@environment.gov.za

Application for Waste Management License Reference Number:
12/9/11/L719/6

Mpumalanga Department of Minerals and Resources (MDMR)

Private Bag X7279
eMalahleni (Witbank)
1035

Contact Person:

Mrs. J du Plessis
Tel (w): +27 (0)13 653 0500
Fax: +27 (0)13 690 3288

Application for Mining Rights Reference Number:
MP30/5/1/2/2/10046MR

In addition to the above mentioned, Water Use Licenses for a variety of water uses will be lodged with the National Department of Water Affairs. Once these have been lodged the details of the authority contacts will be communicated to RI&APs.

2.1 CURRENT COAL MINING OPERATIONS

Kangra Coal has been extracting coal from the Savmore Colliery and operating the current washing plant neighbouring the Driefontein community since the late 1990's. The Savmore Colliery currently operates on the Maquasa East (27° 01' 22.61"S and 30° 24' 55.91"E), Maquasa West and Maquasa West Extension (27° 00' 33.90"S and 30° 21' 18.17"E) properties. The Colliery is situated in the Gert Sibande District Municipality, Mpumalanga, and is approximately 51km west-south-west from Piet Retief and 64km south east from Ermelo (refer to *Figure 2.1*).

Current operations entail both underground and open pit mining methods, which produce less than five million tons per annum (Mpta) run-of-mine (ROM) of which 70% is product and 30% discard. The current mining operations produce approximately 3Mtpa of product, of which less than 2 million tons are exported through RBCT and the remainder is for the local market. Currently mined coal is directed to a washing plant by the use of a conveyor. The current life of these existing mining operations is estimated to be approximately another 3 to 5 years.

2.2 DESCRIPTION OF THE PROPOSED PROJECT

The scope of the proposed Project involves the development of an underground working in the Kusipongo Resource at Adit A, which is situated westwards of existing operations, and a ventilation Adit (Adit B) (refer to *Figure 2.1*). The resource consists of two coal seams, namely the Gus Seam – which is typically 3.5 to 4m thick, and the Dundas Seam – which is typically 1.6m to 2.0m thick. The proposed Project will be restricted to underground mining, with coal reserves having been located up to a depth of 300m below the surface. The anticipated ROM production volume is expected to be between approximately 3.6 and 3.8Mtpa (provided both seams are mined concurrently), with the majority of product being exported for use as thermal coal. The proposed Project is estimated to have a lifespan of approximately 10 to 20 years. The means of underground mining will employ board and pillar methods, using continuous mining equipment.

2.3 PROJECT LOCALITY

During a project pre-feasibility assessment carried out by Hatch in 2010/11/12 a single main mine Adit, associated ventilation shaft and a connecting conveyor belt were identified as the core infrastructure for the proposed Project. The centre point localities of the aforementioned Adits are included in *Table 2.1* and the location of the proposed Kusipongo Expansion Project site infrastructure is provided in *Figure 2.1*.

Table 2.1 *Infrastructure Locations*

Infrastructure	Latitude	Longitude
Adit A (Main Mine Adit)	27° 01' 01.38" S	30° 17' 08.88" E
Adit B (Ventilation)	27° 3' 33.7" S	30° 18' 42.8" E
Overland Conveyor Route	27° 00' 55.64" S	30° 17' 15.07" E (start pt.)
	27° 00' 34.54" S	30° 18' 12.86" E
	27° 00' 08.84" S	30° 18' 59.86" E
	27° 00' 37.88" S	30° 21' 04.45" E
	27° 00' 38.02" S	30° 21' 24.09" E (end pt.)
Proposed contractor camp (temporary)	26° 59' 44.29" S	30° 20' 30.15" E

2.4 *DESCRIPTION OF GENERAL INFRASTRUCTURE AND SITE REQUIREMENTS (PREFERRED ALTERNATIVE) FOR THE PROPOSED ACTIVITY*

2.4.1 *Existing Surface Infrastructure*

The majority of the surface infrastructure associated with the proposed Project, such as a coal beneficiation plant and material handling facilities, is located on the existing Maquasa East, Maquasa West and Maquasa West Extension properties. This infrastructure will continue to be used for the processing of coal reserves from the proposed Kusipongo Resource.

Coal will be transported from the proposed Main Mine Adit (Adit A) in the Kusipongo Resource to the existing Maquasa West Adit via the proposed new overland conveyor system. From there it is proposed that the overland conveyor system feeds into the existing overland conveyor system, which will then transport coal to the existing Maquasa East Coal beneficiation plant. Washed coal will continue to be trucked to the existing Panbult siding for distribution to both the inland market and the RBCT for export.

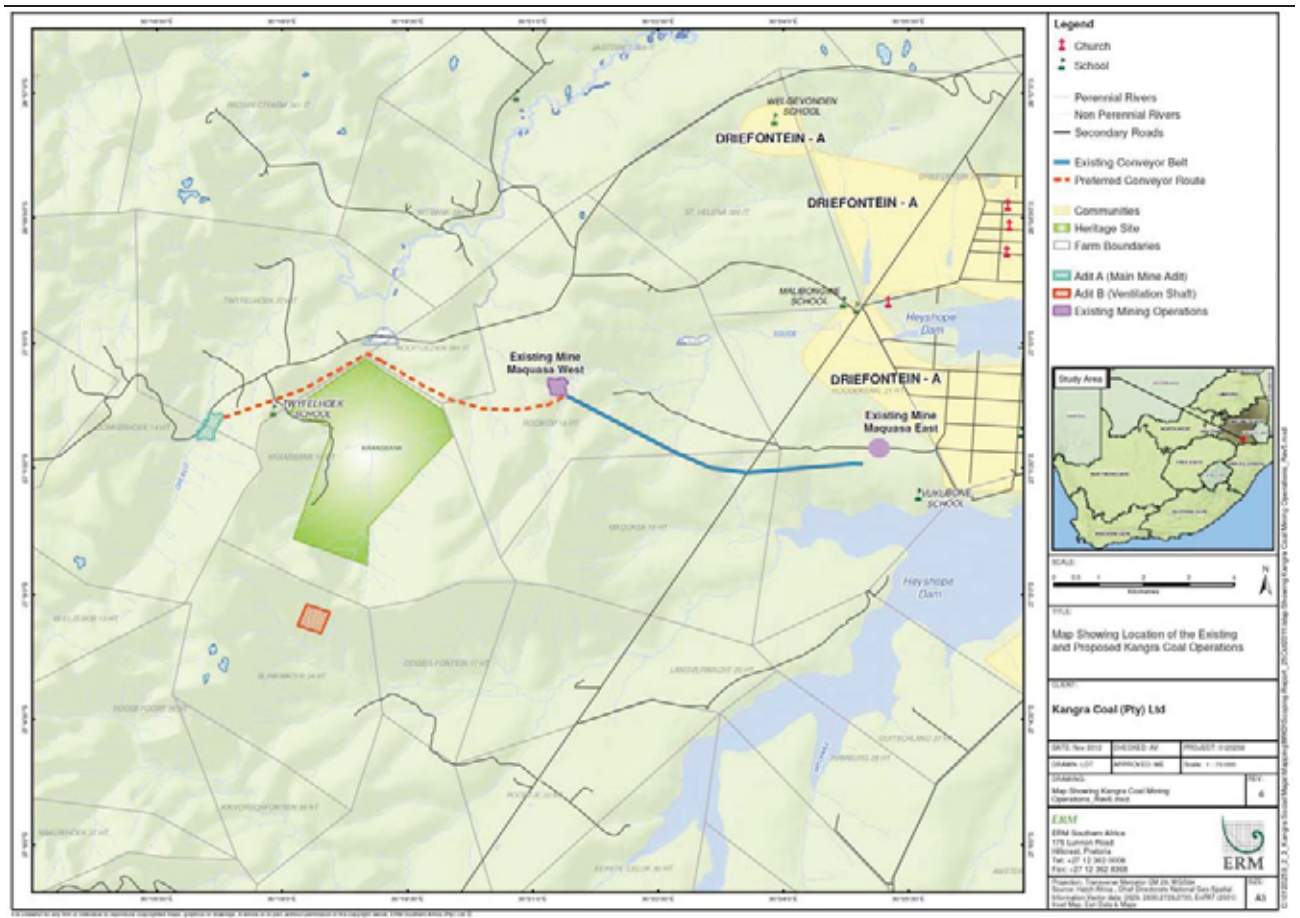
It is proposed to use the following facilities that *already exist* at the Maquasa West and East sites:

- Main administration building;
- Induction, medical and training facilities;
- Electrical substation;
- Light vehicle workshops;
- Main mine stores;
- Discard dump (this will need to be expanded to accept coal discard over a period of 20 years at an average rate of 1,550,000m³ per year) ⁽¹⁾;
- Coal beneficiation plant; and
- Materials handling facilities.

(1) As is mentioned in Chapter 1 - the detailed socio-environmental assessment of the final option relating to the discard dump is currently being undertaken by GCS and will not form part of this Study.

The location of the proposed new infrastructure, relative to the infrastructure that already exists, and the proposed links between the new and old infrastructure, are indicated in *Figure 2.2*.

Figure 2.2 Location of Mine Site Infrastructure



2.4.2

Properties Potentially Affected by the Proposed Project

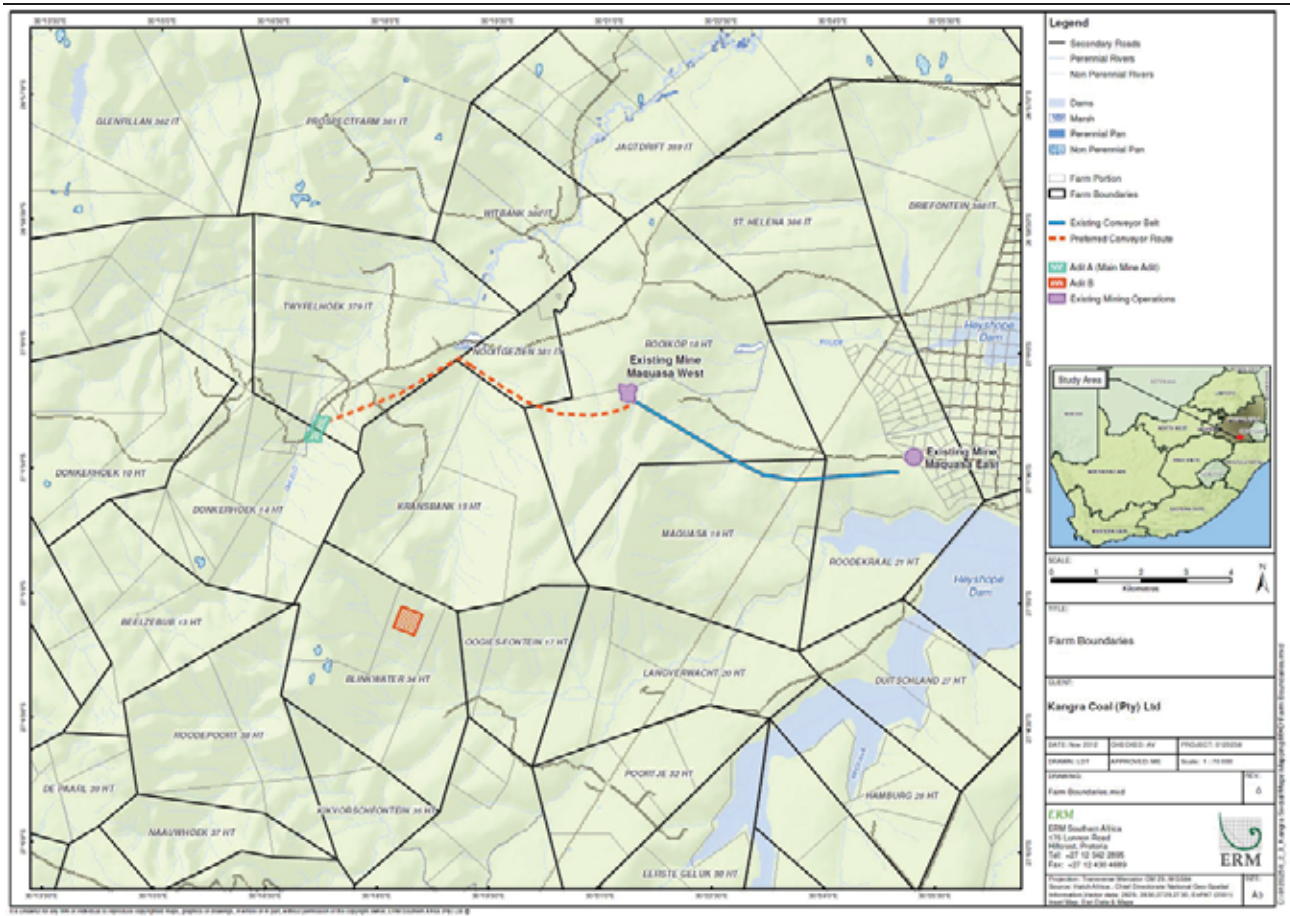
As previously mentioned, the proposed Project will consist of the development of the Main Mine Adit A, ventilation Adit B and an overland conveyor. Furthermore, a contractor’s camp will be required for during the construction phase of the proposed Project. As such, the following infrastructure is proposed on the following properties (as summarised in *Table 2.2*).

Table 2.2 *Project Infrastructure Summary Description*

Property	Surveyor 21 Digit Code	Title Deed Number	Infrastructure Development Footprint (m ²)
Adit A			
Donkerhoek No. 14-HT, Portion 4	T0HT0000000001400004	T102893/2005	81,653
Twyfelhoek No. 379-IT, Portion 3	T0IT0000000003790003	T53617/1998	92,047 (incl. 10, 200 on adjacent side of D2548 road for water storage)
Twyfelhoek No. 379-IT, Portion 2	T0IT0000000003790002	T53617/1998	11,009
Adit B			
Blinkwater No.34-HT, Portion Remainder	T0HT0000000003400000	T002752/2011	±2 8, 600
Conveyor Route			
Twyfelhoek No.379-IT, Portion 2Re	T0IT0000000003790002	T53617/1998	53,474
Twyfelhoek No.379-IT, Remainder	T0IT0000000003790000	T53617/1998	42,009
Nooitgezien No. 381-IT, Remainder	T0IT0000000003810000	T36896/2006	82,718
Rooikop No. 18-HT, Portion 1	T0HT0000000001800001	T1131/2004	13,424
Rooikop No. 18-HT, Remainder	T0HT0000000001800000	T78816/2004	32,712
Contractors Camp During Construction (Temporary)			
Rooikop 18HT, Portion 1	T0HT0000000001800001	T001131/2004	30,000

The location of these properties relative to the siting of the proposed permanent infrastructure (barring the contractor’s camp, which will not be permanent) is provided in *Figure 2.3*.

Figure 2.3 Location of Properties Relative to Proposed New Mine Site Infrastructure



2.4.3 *Proposed Infrastructure*

The proposed Adit A, ventilation Adit B and conveyor system are described in more detail below.

Adit A – Main Mine Adit

Adit A will also include within its footprint ventilation shafts; however, it will be designed in such a way to allow workers, materials and machinery access to underground mining operations (inclined Adit). *Figure 2.4* and *Figure 2.5* are examples of a Main Mine Adit. These figures are intended to provide examples of the layout of the Adit. The inclined adit will provide for a conveyor to bring mined coal to the surface (*Figure 2.4* and *Figure 2.5*). The construction footprint of the Adit A is approximately 184,709m² (refer to *Figure 2.6*, showing the layout of Adit A).

Figure 2.4 *Example of the Infrastructure and General Site Layout Associated with a Main Mine Adit*



Figure 2.5 Typical Portal Entrance of a Main Mine Adit

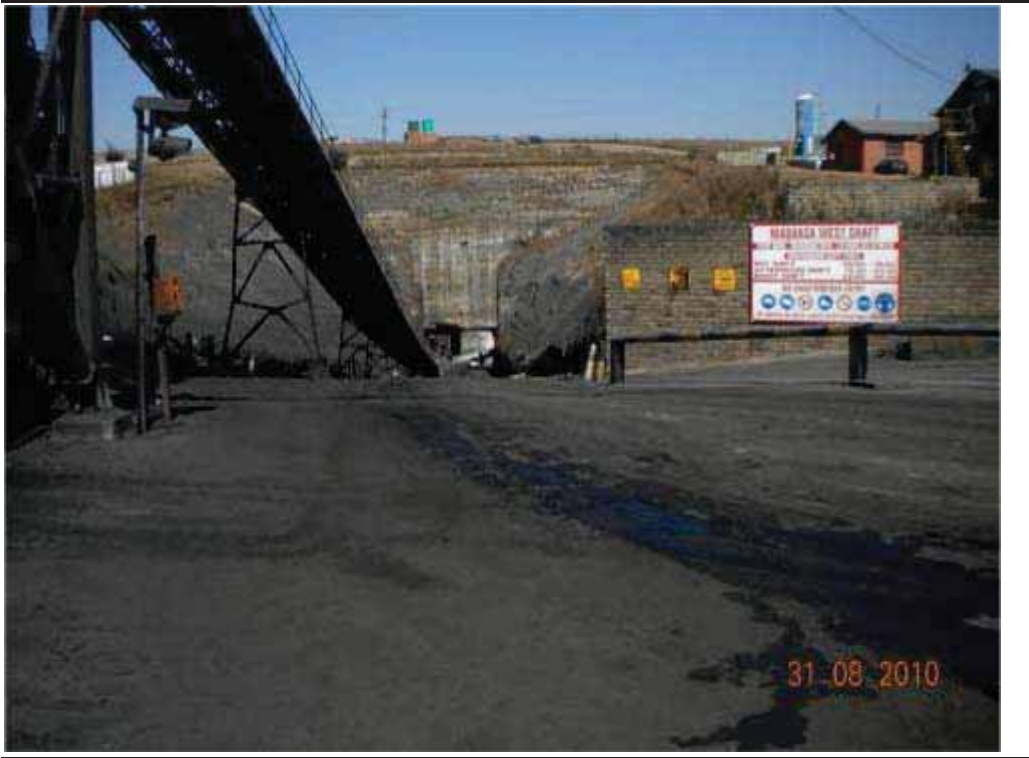
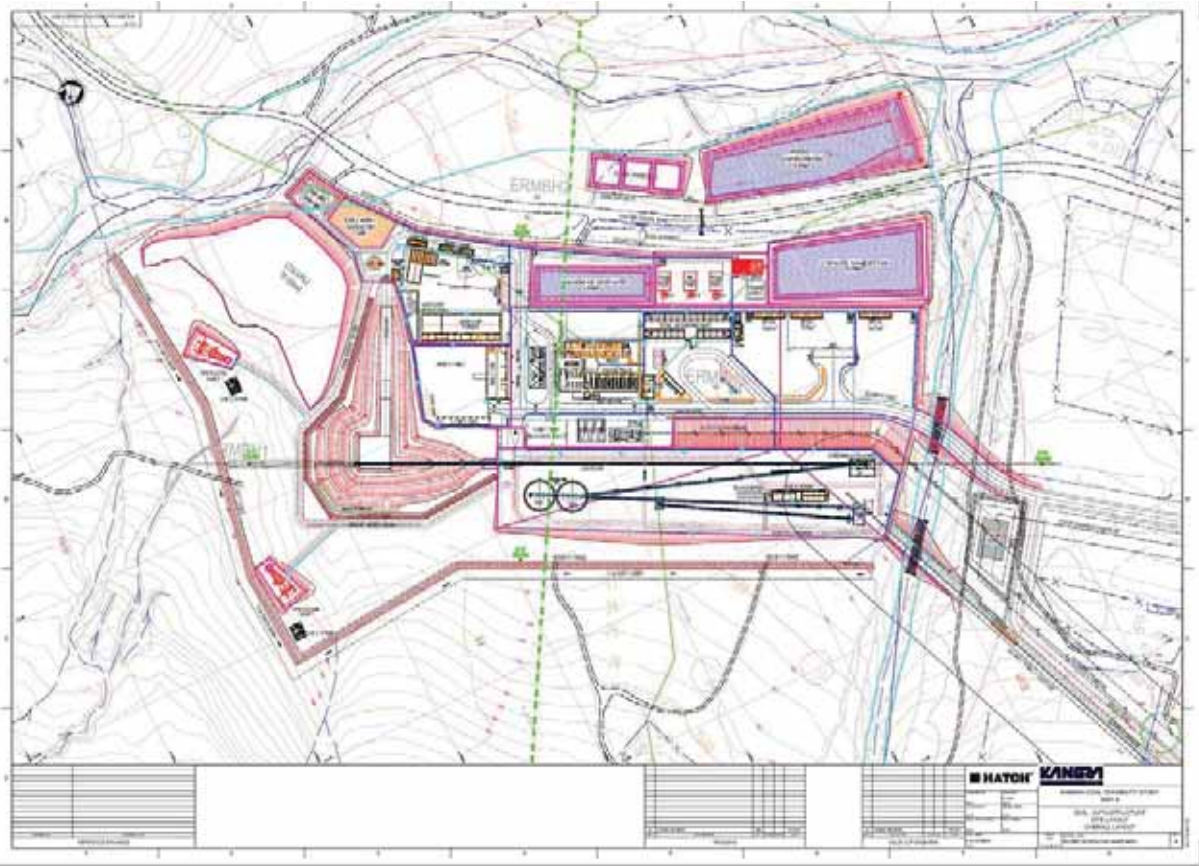


Figure 2.6 Site Layout for the Proposed Main Mine Adit (Adit A)



In addition, the following facilities are proposed and will be developed in association with Adit A:

- Electrical distribution substation, switch gear and step-down transformers. Emergency back-up generators will also be included. These will be installed in the form of an electrical substation and generator building (*Figure 2.7*) ⁽¹⁾;
- Mechanical and electrical workshops for underground mining equipment;
- Satellite stores and a magazine building, associated storage and salvage yards;
- Locker-room facilities for 300 mine workers, including a sanitation system, sewage treatment plant with an associated sewage sludge treatment facility;
- Lamp room and crush facilities;
- Ventilation fans and associated ducting (4x ventilation fans);
- Administration offices;
- First aid facilities;
- Chemical and paint stores and a fuel and oil depot to accommodate a cumulative volume of between 80 to 500m³;
- A security fence around the perimeter of the property and substation;
- A security (guard) house;
- A bus shelter and bus turnaround facility;
- A total of 48 above ground parking bays;
- Additional parking for underground vehicles located near the surface workshops;
- Truck lay bye areas;
- Silt traps which will accommodate and settle out fines;
- The stormwater management system is designed to have a total storage capacity of 21,200m³ over two ponds. The smaller stormwater management pond will be 8,200m³ in size, whereas the bigger pond (Emergency Evaporation Pond) will be 13,000m³ in size. The Emergency Evaporation Pond will only be used once capacity in the 8,200m³ has been reached;
- A groundwater balancing dam with an approximate size of 4,000m³;
- A wash bay that will be used for the washing of mining equipment and light duty vehicles;
- Brake test ramp for mine vehicles;
- Temporary waste facilities to accommodate general (domestic, recyclables, etc.) and hazardous waste (used oil, solvents, spent batteries, contaminated rags, overalls, descants, etc). The area designated for the storage of hazardous will not be greater than 35m³; however, the area designated for the temporary storage of general waste will exceed 100m³ ⁽²⁾;
- Lime silo (used for white-wash and dust control underground);

(1) *Please Note* - this does not include the Eskom Substation (illustrated on *Figure 2.6*) which will be constructed in parallel to the proposed Project. The Eskom Substation is subject to the Eskom EIA approval process and is outside the scope of this application.

(2) Refer to *Section 2.4.4* for a breakdown on waste types and quantities

- A single silo with approximately a 7,000 ton carrying capacity for the storage of mined coal;
- Primary and secondary screening and crushing positioned on conveyors plus a recycle conveyor belt, feeder breaker and recycle chute;
- Adit rock dump (area – 12,738m² and volume – 70,000m³) in the north western corner of the Main Mine Adit; and
- An access road through to the Adit.

Figure 2.7 Typical Electrical Substation associated with a Main Mine Adit

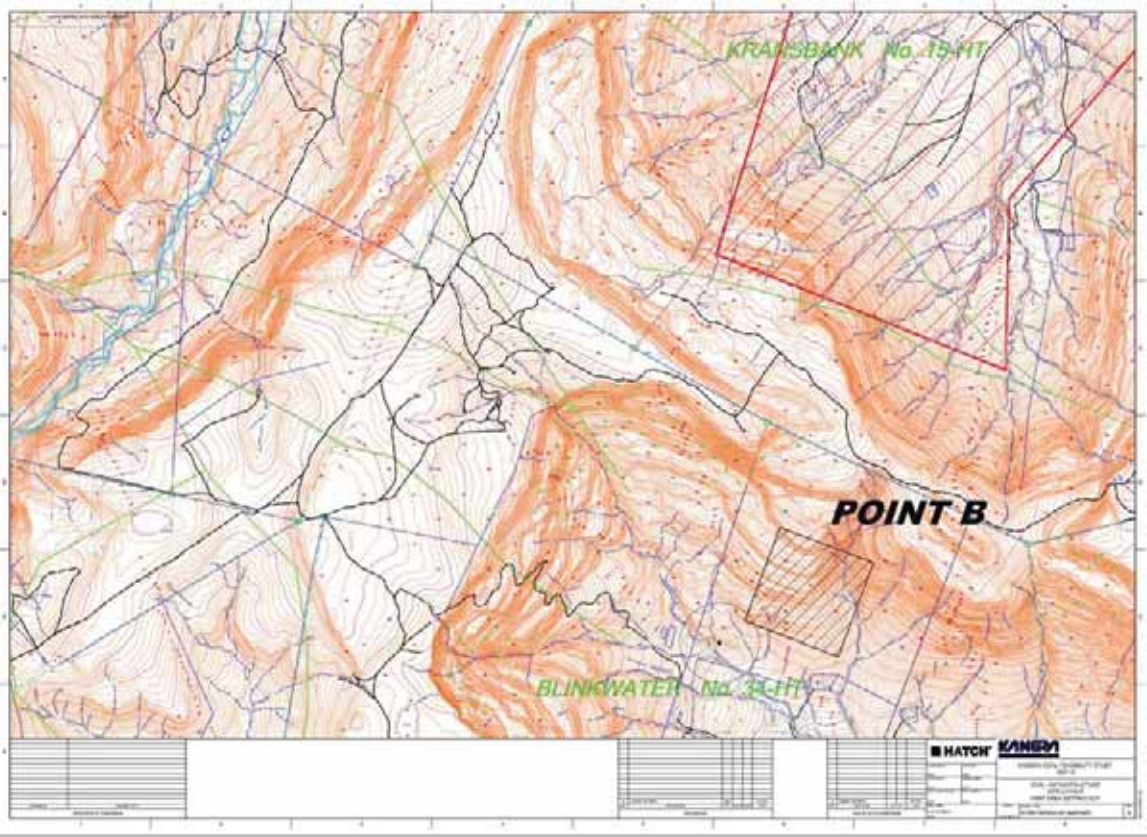


Example of Ventilation Adit (i.e. Adit B)

Ventilation at Adit A will supply the main fresh air ventilation intake and exhaust; however, ventilation Adit B will be used solely for ventilation intake. Adit B will include only a ventilation opening. Access to the underground working via this ventilation opening will be restricted by the installation of a metal grid that will prevent access by humans and animals. Adit B will require approximately 28,600m² in surface area. Fresh air drawn in through this Adit will be returned directly to the main exhaust fans at Adit A. Ventilation design has taken into account parameters such as known in-seam methane gas contents, which is evident in the neighbouring Maquasa West mine.

Please Note – It is estimated that *ventilation Adit B will be constructed approximately five years after construction of the Main Mine Adit (Adit A) is initiated; or approximately six years after the first coal is produced from Adit A.*

Figure 2.8 Site Location for Ventilation Adit B⁽¹⁾



(1) Please Note - this drawing only indicates the locations of the vent - the layout will be much smaller and will be located within the box provided.

Conveyor Route

In order to transport mined coal from Adit A to the coal beneficiation plant on the existing Maquasa East site, it is proposed to construct an overland conveyor belt (*Figure 2.9*), which will tie into the existing conveyor system at the existing Maquasa West Adit. Included in this conveyor corridor will be overhead transmission lines (OHTL), gravel service road and a security fence (fenced width of 32 meters). This proposed corridor will encompass implement/vehicle crossings. Access routes and OHTL routes are discussed in more detail in *Section 2.4.6*. Coal will then be transported along the existing conveyor system from the Maquasa West Adit through to the Maquasa East coal beneficiation plant.

Water will be initially supplied to the proposed Adit A from the existing facilities at Maquasa West Adit. The pipeline will follow the proposed new conveyor corridor between the Maquasa West Adit and Adit A.

Figure 2.9 Typical Conveyor Belt System in the Background Transporting Coal to a Wash Plant



Road Crossings

The service road that follows the length of the conveyor corridor will be comprised of gravel and be approximately 8m wide. As mentioned above, it is anticipated that the proposed conveyor route will need to accommodate road crossings allowing access to both sides of the conveyor route. This will be achieved by constructing and placing two rows of 3.6m wide x 3.0m high portal culverts next to one another. These two rows will be used for the access

road and conveyor route respectively. Guardrails will be placed on either side of the ramps over the conveyor route crossing.

Stream and Wetland Crossings

The proposed conveyor route is planned to traverse streams and wetlands. The section of conveyor that traverses a stream, and that is situated within a distance of 12m from the edge of the 1:100 year flood level, will be fully enclosed and raised on a steel gantry. Furthermore, the entire raised section will have a bunded concrete floor to catch any potential coal spillage. Spilled coal will be hand swept into a concrete bunded area, which is positioned at ground level, outside the 1:100 year flood line. Any potentially spilled coal will then be removed from the bunded area and returned to the Main Mine Adit (Adit A). The gravel service road running parallel to the conveyor will traverse the stream over concrete culverts. The gravel road and conveyor terrace will be reduced in width so as to minimise culvert lengths.

When the gravel service road and conveyor crosses the *wetland to the north of the Kransbank National Natural Heritage Site* the following environmental precautions will be adopted:

- As the road approaches the 1:100 year floodline adjacent to the wetland, it will be diverted out to district road D2548;
- The access road that runs between the conveyor corridor and the district road will be unfenced, and built to the same standard as the conveyor gravel service road;
- The fence that restricts access to the conveyor corridor, including the service road, will come to an end outside the 1:100 year floodline as the conveyor gantry ramps up to cross the wetland;
- The gantry support structure consists of pylons that will be spaced approximately 23m apart within the 1:100 year floodline and wetland, which is the maximum distance they can be spaced to provide support to the structure;
- The base footing of each pylon will measure approximately 4m x 2m, and will be established lengthwise, parallel to the flow in wetlands; and
- From these base footings, two columns will extend from each up to support the gantry.

The following environmental precaution measures will be adopted for *other water/river crossings*:

- Unlike the crossing detailed above, all other water crossings occur within a defined valley;
- Rectangular culverts will be installed in parallel (lengthwise in line with the flow);
- Culverts will span the distance between the 1:100 year floodlines so that no damming occurs during flood conditions;

- Erosion protection gabion structures will be installed at the entrance and exit points of culverts. “Reno” mattresses will also be installed so as to reduce flow velocities and turbulence; and
- The service road will be narrowed to one lane (approximately 4m) over water crossings.

Further mitigation measures (over and above those mentioned above) will be proposed during the detailed impacts assessment in the Environmental and Social Impact Assessment Report.

2.4.4 *Waste Management*

Cleaner Production Principles

In accordance to *Section 16* of the NEMWA, Kangra Coal will take all reasonable measures to –

- Avoid the generation of waste – and where such generation cannot be avoided, to minimise the toxicity and amounts of waste that are generated;
- Reduce, reuse, recycle and recover waste;
- In the case where waste has to be disposed of, ensure that waste is treated and disposed of in an environmentally sound manner; and
- Employ waste management techniques that ensure waste management does not endanger health of the environment or cause a nuisance through noise, odour or visual impacts.

Design aspects of the proposed Project will take into account measures that will ensure that waste generation during the operational (mining) phase is kept at a minimum and effectively managed.

Kangra Coal will establish a waste management programme, which will identify opportunities to avoid, reduce, reuse, recycle, recover or suitably dispose of each waste type produced. All waste generated on-site will be segregated into either hazardous or non-hazardous waste and temporarily stored in dedicated on-site waste storage facilities. Waste materials that can be recycled or reused in a manner that will not result in unnecessary environmental pollution will not be disposed of. For those waste types that cannot be reused or recycled, these will be disposed of at a suitably licensed waste disposal facility.

General (Non-hazardous) Waste

To ensure that general waste is suitably disposed, bins will be strategically placed at various locations around the Adit A property (e.g. near contractor offices, etc.) and labelled as “Waste” in English and Zulu.

General waste from the above mentioned bins will be collected and temporarily stored in waste skips. Skips are located near the centre of Adit A, between the office building and the stores (*Figure 2.6*). Skips will be labelled so

that recyclable and reusable items are separated out from wet waste designated for disposal at a licensed landfill.

A site designated for the temporary storage of general industrial waste will be located adjacent to the general waste skips to the south (*Figure 2.6*). General industrial waste will include waste items that are too large to place in skips.

It is anticipated that the allowable storage volume for the temporary storage of general waste (including general industrial waste) onsite will exceed 100m³. General waste types anticipated to be generated onsite are listed in *Table 2.3* and *Figure 2.10*.

Table 2.3 **General Waste Types**

Waste Type	End Use	Approximate Quantity / month
General food and office waste	Disposal to landfill	5 tons
Used Uncontaminated PPE	Disposal to landfill	Unknown *
Paper and cardboard	Recycle	5 tons
Steel Strapping	Recycle	Unknown *
Plastic	Recycle	1.2 tons
Pallets	Reuse/Recycle	Unknown *
Wood	Reuse/Recycle	Unknown *
Conveyor belting	Disposal to landfill	1.4 tons (350m)
Waste tyres	Recycle	0.25tons (50 tyres)
Conveyor Idlers	Recycle	Unknown *
Electrical cables	Recycle	Unknown *
Steel rope	Recycle	Unknown *
General scrap steel	Recycle	8 tons
Pipe work	Recycle	Unknown *
Chains	Recycle	Unknown *
Wire mesh	Recycle	Unknown *
Scrap drills	Recycle	Unknown *
Pumps	Refurbish/reuse	Unknown *
Winches	Refurbish /reuse	Unknown *
Electrical motors	Refurbish /reuse	Unknown *
Bearings	Recycle	Unknown *
Hoses	Recycle	Unknown *
Cutter tips	Recycle	Unknown *
Fluorescent tubes	Recycle	18.5kg (74 tubes)
Fuses and electrical	Recycle	Unknown *

* Unknown - These waste types will be produced on an *ad hoc* basis, as such, approximating the quantity produced is not possible at this stage. As is mentioned below the temporary storage of general waste onsite will exceed the 100m³ legislative threshold.

In the case of mechanical industrial waste, all hazardous materials (such as residual oil) will be drained (and stored in the hazardous waste storage area) prior to placement in this location.

In terms of waste tyres, Kangra Coal will manage this waste type in accordance with the NEMWA Waste Tyre Regulations (GN.R149 of 2009). Kangra Coal will identify a certified waste tyre processor who can reuse,

recycle or recover waste tyres produced on-site. The waste tyre processor will be contracted to periodically remove waste tyres from the main mine Adit. As such, there is no need for Kangra Coal to register any waste tyre stockpiles (defined as a site of waste tyres stored for a period greater than 2 years and which covers an area greater than 500m²).

Hazardous Waste

All wastes that are considered hazardous will be kept separately and stored in sealed containers designated for the storage of such waste. These containers will be stored in a bunded and roofed facility that is designated for the temporary storage of hazardous waste. All hazardous waste that can be recycled or reused will be regularly collected by certified waste processor for reuse. In the case of disposal, a licensed hazardous waste handling company will be contracted for transport and disposal to a licensed hazardous waste disposal facility.

The hazardous waste storage area has been strategically located near the workshops and the vehicle wash bay (*Figure 2.6*). This area will be bunded and fitted with a sump containing an oil and water separator. Stormwater will be referred to the stormwater management pond, while spills will be captured for appropriate disposal. The three skips located to the north of the general waste storage area will be used for the temporary storage of contaminated Personal Protection Equipment (PPE), rags, used desiccants, etc. These three skips will be separated from the others by a solid wall.

It is anticipated that the allowable storage volume for the temporary storage of hazardous waste on-site will not exceed 30m³. Hazardous wastes types that may be generated at the site are listed in *Table 2.4* and *Figure 2.10*.

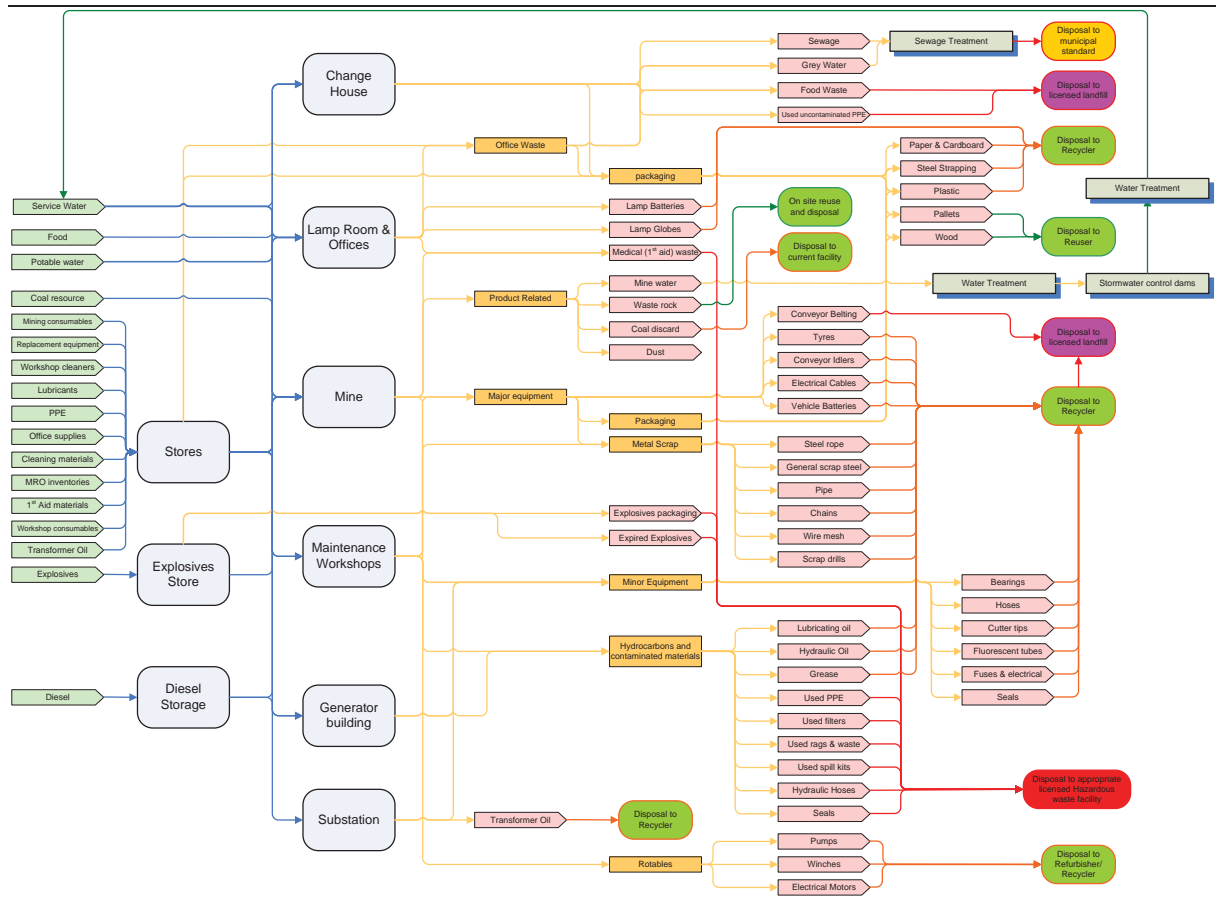
Table 2.4 *Hazardous Waste Types*

Waste Type	End Use	Approximate Quantity / month
Other hazardous waste: <ul style="list-style-type: none"> Contaminated PPE Used filters Used rags Used spill kits Hydraulic hoses Seals Waste solvents Aerosol cans Hydrocarbon contaminated soils 	Disposal to hazardous waste facility	2 tons
Waste oil (hydraulic and lubricating) and grease	Refine/reuse	2 tons
Batteries	Recycle	0.3 tons (12 vehicle and 14 lamp batteries)
Medical (first aid) wastes	Disposal to licensed disposal facility	15 kg

Expired Explosives

During the operational phase, expired explosives may need to be suitably disposed of. The NEMWA does not make provision for the disposal of explosives; this is regulated by the Explosives Act (Act No. 15 of 2003) (EA). Section 10 of the EA requires that all explosives be kept, stored and transported in accordance with the conditions of an issued permit and any other applicable regulations. Kangra Coal will suitably store and dispose of expired explosives in accordance with their current permit conditions (reference number 28/1/3/8/3/1/195999).

Figure 2.10 Waste Flow Diagram



Mining Wastes

Waste Rock Dump

As is mentioned in *Section 2.4.3* an Adit rock dump with an area and volume of 12, 738m² and 70, 000m³ respectively is proposed at the north western corner of the Main Mine Adit A.

Coal Discard Dump

As is mentioned in *Chapter 1* the management of discard is a fundamental part of the proposed Project. All discard produced by the proposed Project will be handled at the existing Maquasa Plant and associated discard facility. The detailed assessment of the final option relating to the discard dump will not be included in this study, as it is currently being undertaken by GCS as part of their Study as discussed in *Section 2.5*.

2.4.5 Water Management

Potable Water Supply

Potable water requirements were estimated based on an assumed consumption of 150 L/capita/day. The labour force is anticipated to have around 310 people for the morning shift (10 hrs), 130 people for the afternoon shift (10 hrs), 15 people for the maintenance shift (4 hrs) and 85 people at all time for the Main Mine Adit. As such, 45m³ is determined to be the daily potable water requirement. Boreholes are envisaged to be the only source for potable water. Potable water will be sourced from a groundwater borehole identified as ERMBH03 (27° 00' 38.4455" S and 30° 17' 14.1128" E). This borehole was suggested by ERM as the best suited borehole for providing potable water to the complex. The borehole meets the required yield of 0.52 L/s pumped continuously over 24 hours a day. The borehole yield test was performed by ERM. The volume available has been estimated at 45m³/day.

A 24-hour, elevated potable water supply tank will be erected at the complex and will serve to accommodate peak flow requirements.

Surface Water Management at the Main Mine Adit

Surface water management within the Main Mine Adit will restrict any *unpolluted water* to a clean water system external to the Adit complex. This will be accomplished with earthfill berms, designed to divert clean stormwater runoff associated with a 1-in-100, 24 hour storm event. An interior/exterior diversion berm slope of 3:1 (H:V) will be assumed.

Impacted 'dirty' stormwater runoff within the Main Mine Adit footprint (including waste water emanating from the waste rock dump) will be collected and routed to the two stormwater management ponds for sedimentation of insoluble particulate. The 'dirty' stormwater will pass through a silt trap before entering the stormwater management pond.

The two stormwater management ponds are sized to accommodate the 1-in-100, 24 hours rainfall event. The two ponds are therefore designed to have a total storage capacity of 21,200 m³. The smaller stormwater management pond will be 8,200 m³, whilst the larger Emergency Evaporation Pond will be 13,000m³. The larger Emergency Evaporation Pond will only be used in the event that capacity in the smaller 8,200m³ pond is reached.

Upon sedimentation of solids at the Stormwater Management Pond, it is expected that the stormwater will meet the discharge requirements, prior to release to the natural environment. In the 1:100, 24 hours rainfall event, the retained water volume is expected to flow from the Stormwater Management Pond to the Emergency Evaporation Pond. The Emergency Evaporation Pond should be operated such that retained water is released as soon as possible after each storm event.

Mine Inflow Management

The mine inflow is expected to supply cooling water for the continuous miners. Underground storage of excess water is possible and will be considered in the overall water balance. A portion of the water will be reused underground for dust suppression and in cooling mining machinery. This decanted groundwater will also be used on surface for service water and dust suppression. Chemical treatment is not necessary for these two uses. The balancing and service water dam is sized to be 4,000 m³.

None of the decanted groundwater will be used in coal beneficiation at Maquasa East. Water used for beneficiation at Maquasa East is obtained from the current discard facility return water and a licensed abstraction from the Heyshope Dam.

Sewage Treatment

Sewage generated from offices, change houses and ablution blocks at the Main Mine Adit will be collected and routed to a pump station and pumped to an above ground sewage treatment plant (STP; refer to *Figure 2.6*). The STP will be a packaged plant based on extended aeration or sequencing batch reactor processes, designed to treat a daily flow rate of 41m³ (or 14,965m³ per annum). The STP will include an inlet bar screen, equalisation tank, pumps and blowers for the primary and secondary treatment of raw sewage to reduce total suspended solids (TSS) and the biochemical oxygen demand (BOD). The equalisation tank will provide normalisation of the influent sewage flow rate, and homogenisation of the sewage characteristics. Secondary treatment will provide aeration for the biological treatment of organic matter and the reduction of BOD. Tertiary treatment will provide disinfection of the treated effluent prior to discharge to the natural water course, as per the DWA limits. The STP will also include aerobic sludge stabilisation, suitable to render the product acceptable for final disposal in agricultural use. The aerobically stabilised (digested) sludge will be available for use as a partial fertiliser.

Toilet facility requirements for the underground workings will be met with water-less toilets that will be periodically brought to the surface for pumping to the STP.

Wastewater Treatment

It is not envisioned at this stage of design that wastewater treatment will be required; however, should this be unavoidable, several treatment technologies are available for the removal of iron and other metals as well as sulphate from waste water.

The selection of an appropriate water treatment process will be dependent on the final design conditions around the pumped mine water volume, water qualities and the flow conditions in the receiving watercourse. ERM will provide the parameters from their water models. Several 'best available' technologies were considered, including:

- Nanofiltration and precipitation of gypsum ($\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$) from the resulting concentrated brine;
- Precipitation of sulphate as barium sulphate (BaSO_4);
- BiOx sulphate removal; and
- Ion exchange.

Nanofiltration and precipitation of gypsum was selected as the preferred technology for this phase of the proposed Project; however, this should be reviewed once advanced data is available on the excess water quantity and quality. This process will produce brine and filter press cake which will be temporarily stored and removed from the premises by a licensed waste management company.

Excess Water Discharges into the Natural Water Resource

As a last resort, excess decanted mine water will be discharged into a natural water source. Treated sewage shall be discharged as per treated municipal sewage.

The daily volume of treated sewage water, is expected to be approximately 41m³/day and will report to the balancing dam for use as service water (as above).

2.4.6 Associated Services and Infrastructure

In order to accommodate the Adit configuration the following associated services and infrastructure is proposed.

Access Routes

- Access to Adit A is proposed to be along the existing district road (D2548).
- Gravel service roads through to ventilation Adit B are proposed to follow the alignment of existing farm tracks.

Transmission Lines

- Overhead 22kV transmission lines (OHTL) are proposed to supply power from Maquasa West to Adit A (along the conveyor route).

2.4.7

Contractors Camp (Temporary)

In order for the aforementioned infrastructure to be developed, a temporary contractor's camp will need to be established during the construction phase of the proposed Project. The camp will be used to accommodate semi-skilled, skilled/artisanal and supervisory workers for the duration of construction. The motivation for having to have a contractor's camp onsite is as follows:

- There is insufficient existing accommodation that is appropriate for the construction labour force in nearby communities (like Driefontein).
- It is preferable to accommodate the construction labour force on-site, so as to reduce the potential negative impacts associated with worker-community interaction.
- On-site accommodation will reduce the amount of travel required by workers to get to the construction sites which greatly improves the efficiency of the construction programme.

Design Assumptions

The design of the contractor's camp has taken into account the following assumptions:

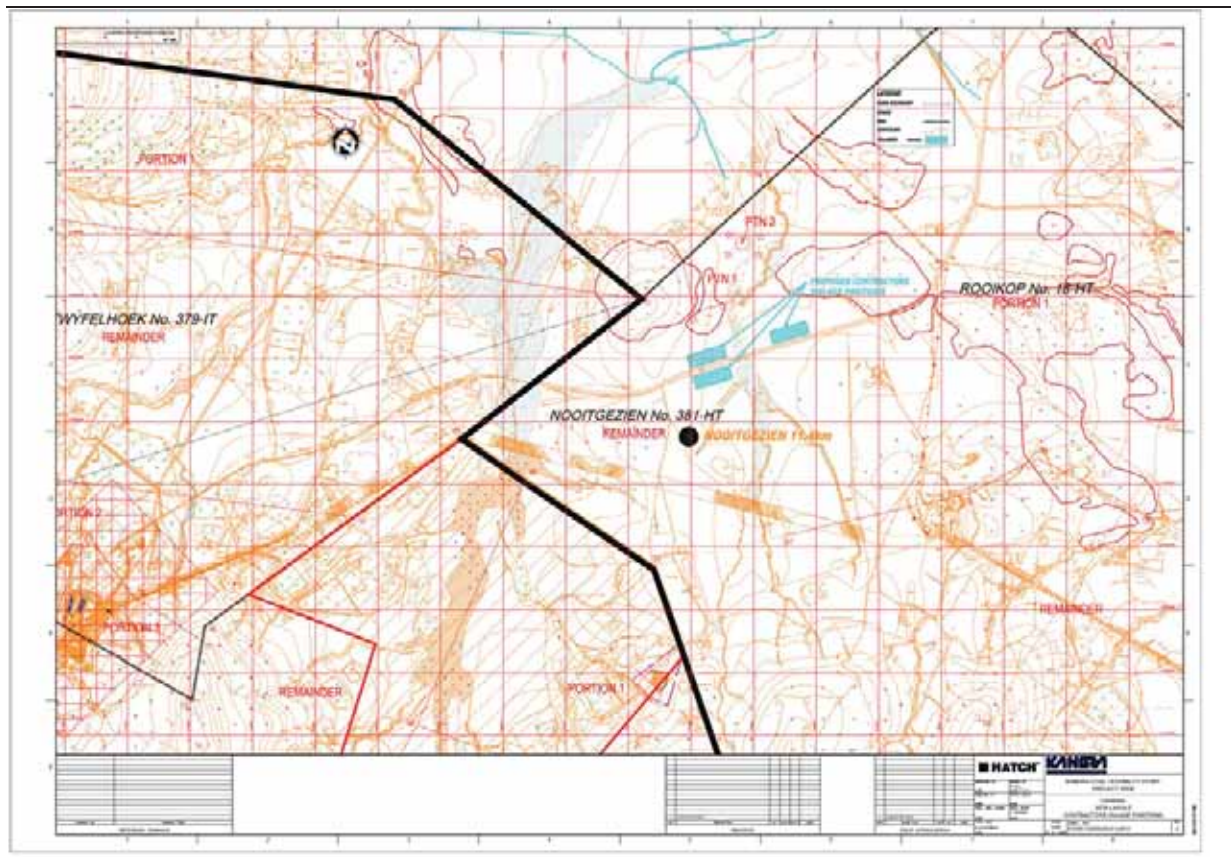
- The camp will not accommodate workers from the local community. These workers will reside in their communities and travel to site on a daily basis. This will ensure that local family units are maintained during the construction phase.
- The construction phase is approximately 2 years.
- The construction workforce will comprise of a maximum number of approximately 450 people. Of this, it is estimated that approximately 250 skilled people will come from outside the local area or region and will require accommodation on-site with the remainder of the workforce being accommodated in their local community or in the case of engineers and related professions, in guesthouses in Piet Retief.
- Of the 250 people on site, 50 are expected to be supervision staff, 100 skilled staff and 100 semi-skilled staff.
- All accommodation structures installed as part of the construction village are likely to be of a temporary nature and will be removed by the relevant service providers.
- As a general rule, accommodation units are categorised as follows:

- ***Supervision Staff*** – One per room with a shared ablution facility (two per ablution unit).
- ***Skilled/Artisan Staff*** – Two per room with shared ablution facility (four per ablution unit).
- ***Semi-skilled Staff*** – 22 per dormitory-type unit with a common ablution facility.

Proposed Location

Three locations for the contractor's camp are proposed (*Figure 2.11*). All of these three options are located on Kangra Coal property. These options are greater than one kilometre away from the Kransbank Reserve.

Figure 2.11 Proposed Locations for the Contractors Camp



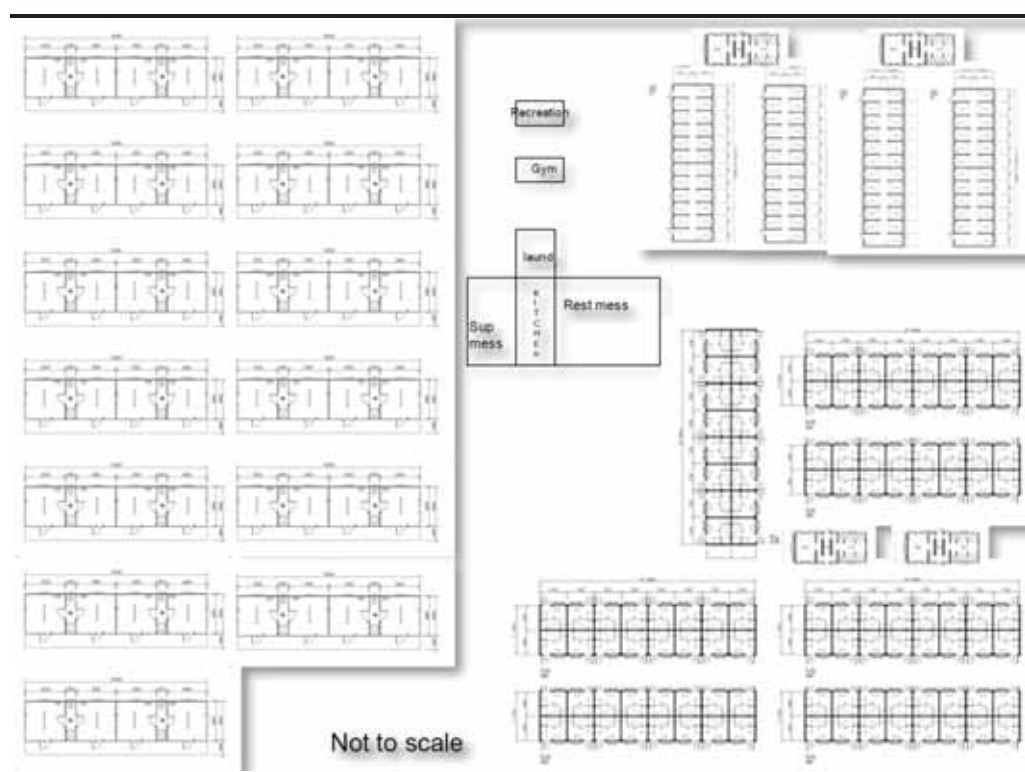
Surface Area Requirements

The total surface area requirement for the contractor’s camp is approximately 2.5ha. Estimated surface area requirements for infrastructure associated with the camp and an indicative layout schematic are provided in *Table 2.5* and *Figure 2.12* respectively.

Table 2.5 *Surface Area Requirements for Infrastructure associated with the Contractors Camp*

Infrastructure	Size (m ²)
Accommodation structures	2,000
Kitchen, laundry and eating areas	700
Recreational areas	5,000
Laydown area	100
Parking areas	1,500
Bus laydown and turning area	3,200
Ablutions	270
Other, including spacing between facilities	12,000
Total	24,770

Figure 2.12 *Indicative Schematic Illustrating the Layout of the Contractors Camp*



Potable Water

The construction village will require approximately 35m³ of potable water per day to be obtained from the same borehole that is to be used for the Main Mine Adit A. A storage volume of 66m³ will be provided in aboveground tanks.

Solid Waste

Solid waste will comprise of typical domestic waste including glass and plastic bottles, food waste, packaging, waste timber and waste cabling. Hazardous wastes produced within the construction village which will require disposal are expected to be limited to aerosol containers, batteries, and empty hazardous chemical (paint, cleaning products etc.) containers.

The estimated quantity of general solid waste ⁽¹⁾ expected to be produced on site on a monthly basis is 23 m³. The estimated quantity of hazardous waste to be produced on a monthly basis is 3m³.

General and hazardous waste will be segregated and suitably stored in a temporary waste handling facility on-site and collected by a reputable waste contractor for suitable disposal to an appropriately licensed waste disposal site.

Waste Water

The contractor's camp will produce sewage effluent (black water) and effluent from the kitchen, laundry, showers and basins (grey water). Approximate quantities of the effluent types are as follows:

- Sewage (black water) – 180m³/month
- Kitchen, laundry, showers (grey water) – 690m³/month

A portable sewage treatment package plant comprising of tanks fitted in series will be utilised for treatment of the sewage. Treatment will consist of 4 phases, namely – a septic tank, a bioreactor, a clarifier and sterilisation. Treated effluent from this process is anticipated to have the following characteristics:

- COD: <75
- Total Suspended Solids: <25
- NH₃: 6
- *E Coli*: <1,000

Treated effluent will be used for irrigation within the contractor's camp (gardens, recreational sports field etc). Grey water will be treated in a separate treatment plant and the treated water pumped back for reuse in the showers, and kitchens.

Electricity

Power on-site may be provided *via* a diesel generator capable of producing 164 kW of continuous power. Alternatively, the contractors camp will be

(1) Based on an estimated waste generation figure of 30 kg per day for a 30 day month and a waste density of 40 kg/m³

linked to the overhead power line to be installed within the proposed overland conveyor servitude.

2.5

PROPOSED MINE EXPANSION PROJECTS AT MAQUASA

Please Note – this section provides detail relating to another Kangra Coal project. The project detailed in this section ***does not*** form part of the scope of this Project and associated ESIA. The reason for including details of this project is merely for transparency reasons. Kangra Coal has contracted **Groundwater Consulting Services (Pty) Ltd.** to act as the independent environmental practitioners for the project detailed in this section.

Kangra Coal has approved Environmental Management Programmes (EMPs) for its Maquasa West, Maquasa East, Rooikop and Nootgezien mining areas. Kangra Coal submitted a Section 102 application in terms of the MPRDA to the DMR in March 2012 to apply for a consolidation of all existing EMPs into a single EMP.

Since submission of the Section 102 application, Kangra Coal have proposed expanding their existing mining operations with the addition of eight new opencast pits, two new underground mining areas ⁽¹⁾ (accessed from the opencast pits) and the provision of an expanded or new discard dump(s) (refer to *Figure 2.13*). As such, Kangra Coal needs to amend their existing Section 102 application to include the aforementioned proposed mining projects.

Kangra Coal have contracted GCS to amend the Section 102 application to include the abovementioned opencast mines, underground mines, provision of an expanded or new discard dump and consolidation of all Maquasa operations into a single EMP.

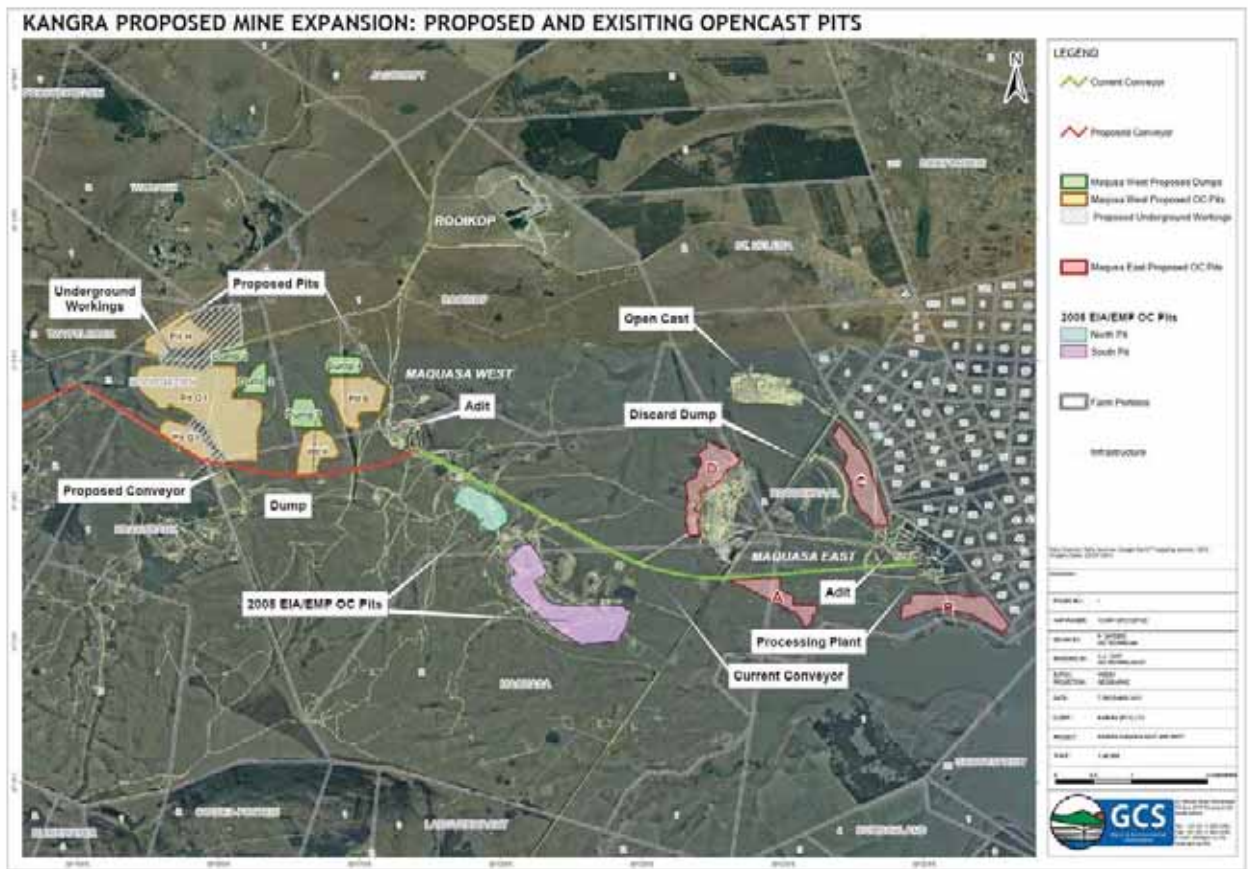
As is mentioned above, the proposed Maquasa expansion project will entail the expansion of existing opencast pits as well as the addition of eight new opencast pits. The mine will utilize all existing ancillary infrastructure such as workshops, offices, sewage facilities, power supply and water supply; however, additional dewatering may take place on the site in the vicinity of the proposed opencast areas. Diesel storage will be required as well as access roads and an extended conveyor line between the proposed opencast and existing mining blocks/infrastructure.

The underground resource areas identified for proposed underground mining are located at the Maquasa West section. These resources will be accessed through the highwall of the opencast pit and the extracted coal will be transported along the conveyor system to the Maquasa East coal washing plant. With the proposed pits and underground areas it is envisaged that

(1) these two new underground mining areas does not include the proposed Kusipongo Expansion Project

additional access routes will be required in order to access the Maquasa West proposed opencast and underground areas.

Figure 2.13 Proposed Mine Expansion Projects at Maquasa



The proposed opencast and underground mines and discard dump requires authorisation in terms of the following legislation:

- The Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002) (MPRDA);
- The National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA);
- The National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004) (NEM:AQA);
- The National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) (NEM:WA); and
- The National Water Act, 1998 (Act No. 36 of 1998) (NWA).

However, GCS will be carrying authorisation processes in terms of the MPRDA and the NEMA. Authorisations in terms of the NEM:AQA, NEM:WA and the NWA are being undertaken as separate processes.

Coal is one of the most precious minerals in the world and is the largest source of energy, providing 27% of the global primary energy needs and generating 41% of the world's electricity (World Coal Association, 2011) ⁽¹⁾. South Africa possesses Africa's only significant coal reserves; over 70% of Africa's coal reserves are found in South Africa (Snyman and Botha, 1993) ⁽²⁾, with coal reserves of 30,408 million tonnes at the end of 2009, which represents 3.68% of the world's total coal production. Coal production in South Africa was valued at approximately ZAR 59.9 billion in 2009 (BP Statistical Energy Survey, 2010) ⁽³⁾. South Africa is the world's sixth largest coal producer, and produced 4.3% of the world's coal in 2009 (247 million tonnes) (World Coal Association, 2011).

Conversely, South Africa is Africa's only significant coal consuming country, with a coal consumption of 99.43 million tonnes in 2009, which represents 3.3% of the world's total (Mbeni Information Services, 2011). In 2008, South Africa used coal for 93% of its electricity generation needs, and was the most dependent coal to electricity country in the world (World Coal Association, 2011). Apart from its domestic needs, South Africa is still the world's fifth largest coal exporting country, with exports in excess of 60 million tonnes of coal in 2009 (World Coal Association, 2011).

Coal plays a crucial role in the South African energy-economy and is fuelling local industry. The consumption of coal in South African coal-fired power stations will continue in the near future (Eberhard, 2010) ⁽⁴⁾. Increased demand in Eastern countries (driven by rapid economic growth rates) will result in an increased demand for South African coal exports (Eberhard, 2010). As such, exports are expected to increase to 105 million tonnes per annum by the year 2020. This will increase the country's export earnings, which in turn will reduce the country's negative trade balance and current account deficit (Eberhard, 2010).

Both local and international markets are, at present, highly dependant on South Africa being a main provider of coal, now and in the future. The identification and exploitation of new coal reserves in South Africa is thus a prerequisite in meeting this demand.

The proposed Project is a key factor from a strategic point of view for Kangra Coal. Given that the current mining areas have reserves sufficient to ensure mining can continue for approximately the next 3 to 5 years, the proposed

(1) WORLD COAL ASSOCIATION. (2011). *Coal Statistics*. <<http://www.worldcoal.org/resources/coal-statistics/>>. Accessed on 2011-03-17

(2) SNYMAN C.P. & BOTHA W.J. (1993). *Coal in South Africa*. Geology and Development in South Africa (V.16 - Issues 1-2, pages 171-180).

(3) MBENDI INFORMATION SERVICES. (2011). *Coal Mining in South Africa*. <<http://www.mbeni.com/indy/ming/coal/af/sa/p0005.htm>>. Accessed on 2011-03-17

(4) EBERHARD A. (2010). South African Coal: Market, Investment and Policy Challenges. <http://gsbnet.uct.ac.za/MIR/admin/documents/South%20African%20Coal%20Paper_15_12_2010_17821.pdf>. Accessed on 2011-03-17

Project would extend the life of mine for approximately an additional 10 to 20 years – obviously this is dependant on market conditions and the outcomes of the feasibility Project. The proposed Project will also have an impact on the overall South African coal export figures, as Kangra Coal plans to export approximately 1.6 Mtpa through the export trade seams.

From a social perspective, Kangra Coal constitutes one of the main sources of employment in the Dr. Pixley Kalsaka Seme and Mkhondo Local Municipalities. In an attempt to increase the skills and capabilities of current and potential employees, Kangra Coal maintains ongoing education and training programmes and economic contributions to development projects in surrounding communities.

The environmental authorisation process associated with the proposed Kusipongo Expansion Project is being carried out in line with South Africa's environmental legislation so as to ensure that reasonable measures are taken to warrant environmental protection and to promote sustainable development.

Furthermore, ERM has taken into account guidelines and standards from the International Finance Corporation (IFC) into consideration, thus aligning the Project with international good practice.

The following constitutes a legal framework for the proposed Project.

4.1**CONSTITUTION OF THE REPUBLIC OF SOUTH AFRICA (NO. 108 OF 1996)**

The Constitution of the Republic of South Africa is the legal source for all law, including environmental law, in South Africa. The Bill of Rights is fundamental to the Constitution of the Republic of South Africa and in, Section 24 states that:

Everyone has the right (a) to an environment that is not harmful to their health or well-being; and (b) to have the environment protected, for the benefit of present and future generations through reasonable legislative and other measures that (i) prevent pollution and ecological degradation; (ii) promote conservation; and (iii) secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development.

4.2**NATIONAL ENVIRONMENTAL MANAGEMENT ACT (ACT 107 OF 1998)**

The National Environmental Management Act (NEMA) creates the legal framework that ensures the environmental rights guaranteed in Section 24 of the Constitution are abided by.

As such the fundamental principles that apply to environmental decision making are laid out, the core environmental principle being the promotion of ecological sustainable development. These principles serve as a guideline for any organ of state when exercising any function in the process of decision making under NEMA.

NEMA introduces the duty of care concept which is based on the policy of strict liability. This duty of care extends to the prevention, control and rehabilitation of significant pollution and environmental degradation. It also dictates a duty of care to address emergency incidents of pollution. A failure to perform this duty of care may lead to criminal prosecution, and may lead to the incarceration of managers or directors of companies for the conduct of the

legal persons. Table 4.1 below includes the sections of the NEMA that are applicable to the Project.

Table 4.1 Relevant Sections Applicable to the Proposed Kusipongo Expansion Project

Section No (s) (in terms of the NEMA) :	Section Detail	Relevance to the Project
Section 2 (2)	<i>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.</i>	As these principles are utilised as a guideline by the relevant decision makers in ensuring the protection of the environment, the proposed project should reflect these principles. Where this is not possible, deviation from these principles will be strongly argued.
Section 2 (3)	<i>Development must be socially, environmentally and economically sustainable.</i>	
Section 2 (4) a	<p><i>Sustainable development requires the consideration of all relevant factors including the following:</i></p> <p><i>(i) that the disturbance of ecosystems and loss of biological diversity are avoided, or, where they cannot be altogether avoided, are minimised and remedied;</i></p> <p><i>(ii) that pollution and degradation of the environment are avoided, or, where they cannot be altogether avoided, are minimised and remedied;</i></p> <p><i>(iv) that waste is avoided, or where it cannot be altogether avoided, minimised and re-used or recycled where possible and otherwise disposed of in a responsible manner;</i></p> <p><i>(vii) that a risk-averse and cautious approach is applied, which takes into account the limits of current knowledge about the consequences of decisions and actions;</i></p> <p><i>(viii) that negative impacts on the environment and on peoples' environmental rights be anticipated and prevented, and where they cannot be altogether prevented, are minimised and remedied.</i></p>	
Section 2 (4) b	<i>Environmental management must be integrated, acknowledging that all elements of the environment are linked and interrelated, and it must take into account the effects of decisions on all aspects of the environment and all people in the environment by pursuing the selection of the best practicable environmental option.</i>	
Section 2 (4) c	<i>Environmental justice must be pursued so that adverse environmental impacts shall not be distributed in such a manner as to unfairly discriminate against any person, particularly vulnerable and disadvantaged</i>	

Section No (s) (in terms of the NEMA) :	Section Detail	Relevance to the Project
	<i>persons.</i>	
Section 2 (4) e	<i>Responsibility for the environmental health and safety consequences of a policy, programme, project, product, process, service or activity exists throughout its life cycle.</i>	
Section 2 (4) f	<i>The participation of all interested and affected parties in environmental governance must be promoted, and all people must have the opportunity to develop the understanding, skills and capacity necessary for achieving equitable and effective participation, and participation by vulnerable and disadvantaged persons must be ensured.</i>	
Section 2 (4) g	<i>Decisions must take into account the interests, needs and values of all interested and affected parties, and this includes recognising all forms of knowledge, including traditional and ordinary knowledge.</i>	
Section 2 (4) i	<i>The social, economic and environmental impacts of activities, including disadvantages and benefits, must be considered, assessed and evaluated, and decisions must be appropriate in the light of such consideration and assessment.</i>	
Section 2 (4) p	<i>The costs of remedying pollution, environmental degradation and consequent adverse health effects and of preventing, controlling or minimising further pollution, environmental damage or adverse health effects must be paid for by those responsible for harming the environment.</i>	

4.3

NATIONAL ENVIRONMENTAL MANAGEMENT AMENDMENT ACT (ACT 62 OF 2008) **EIA REGULATIONS**

The NEMA provides the environmental legislative framework for South Africa. The NEMA Environmental Impact Assessment (EIA) Regulations provide two categories of activities, namely GN.R544 activities, which potentially only require a Basic Assessment before authorisation, and GN.R545 activities, which potentially require a comprehensive assessment (Scoping and an EIA). In other words, GN.R544 activities are perceived to have a lower impact than GN.R545 activities. *Table 3.1* includes listed activities that are deemed to be applicable to the proposed Project.

Table 4.2 Relevant Legislation Applicable to the Proposed Kusipongo Expansion Project

Relevant Notice:	Activity No (s) (in terms of the relevance or notice) :	Description of Listed Activity:	Relevance to the Project	Applicable (Y/N)
GN.R544	2	<i>The construction of facilities or infrastructure for the storage of ore or coal that requires an atmospheric emissions license in terms of the National Environmental Management: Air Quality Act (Act No. 39 of 2004).</i>	<u>This activity will not be triggered</u> , as the proposed product silo will not be classified as a listed activity in terms of Section 21 of the National Environmental Management: Air Quality Act, as facilities will not have a cumulative carrying capacity exceeding the threshold detailed in Subcategory 5.1 (Storage and handling of ore and coal) of more than 100,000tons.	N
GN.R544	10	<i>The construction of facilities or infrastructure for the transmission and distribution of electricity – (ii) Inside urban areas or industrial complexes with a capacity of 275kV or more</i>	<u>This activity will not be triggered</u> , as the capacity of electricity transmitted will not exceed 22kV.	N
GN.R544	11	<i>The construction of – (iii) bridges; (v) weirs; (x) buildings exceeding 50 square meters in size; or (xi) infrastructure or structures covering 50 square meters or more. Where such construction occurs within a watercourse, measured from the edge of a watercourse, excluding where such construction will occur behind the development setback line.</i>	<u>This activity will be triggered</u> , as the infrastructure proposed is in excess of 50m ² . Furthermore, culverts will be constructed across streams to allow access over the conveyor system (including the service gravel road, which will run parallel with the conveyor route).	Y

Relevant Notice:	Activity No (s) (in terms of the relevance or notice) :	Description of Listed Activity:	Relevance to the Project	Applicable (Y/N)
GN.R544	13	<i>The construction of Facilities or infrastructure for the storage, or for the storage and handling, of a dangerous good where such storage occurs in containers with a combined capacity of 80 but not exceeding 500 cubic meters.</i>	<u>This activity will be triggered</u> , as the proposed project includes the construction of a fuel depot, oil store, chemical store and a paint store. At this stage, the quantity of dangerous goods that are to be stored onsite is uncertain. For this reason, the assumption will be made that capacity will be between 80 and 500m ³ .	Y
GN.R544	20	<i>Any activity requiring a mining permit in terms of Section 27 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002) or renewal thereof.</i>	<u>This activity will not be triggered</u> , as the applicant will be submitting an application for mining rights in terms of Sections 22 and 24 of the Mineral and Petroleum Resources Development Act.	N
GN.R544	22	<i>The construction of a road, outside urban areas,</i> <i>(i) with a reserve wider than 13.5 meters; or</i> <i>(ii) where no reserve exists where the road is wider than 8 meters; or</i> <i>(iii) for which an environmental authorisation was obtained for the determination in terms of Activity 5 in Government Notice 387 of 2006 or Activity 18 in Notice 545 of 2010.</i>	<u>This activity will be triggered</u> , as roads which are 8m wide will be constructed.	Y
GN.R544	23	<i>The transformation of undeveloped, vacant or derelict land to –</i> <i>(ii) residential, retail, commercial,</i>	<u>This activity will not be triggered</u> , as the area to be transformed is greater than 20 hectares.	N

Relevant Notice:	Activity No (s) (in terms of the relevance or notice) :	Description of Listed Activity:	Relevance to the Project	Applicable (Y/N)
		<i>recreational, industrial or institutional use, outside an urban area, and where the total area to be transformed is bigger than 1 hectare but less than 20 hectares or,</i>		
GN.R544	24	<i>The transformation of land bigger than 1000 square meters in size, to residential, retail, commercial, industrial or institutional use, where, at the time of the coming into effect of this Schedule such land was zoned open space, conservation or had an equivalent zoning.</i>	<u>This activity will be triggered</u> , as the proposed Project will be transforming land (in excess of 1,000m ²) which is currently undeveloped to industrial (mining).	Y
GN.R544	47	<i>The widening of a road by more than 6 metres, or the lengthening of a road by more than 1 kilometre –</i> <i>(i) Where the existing reserve is wider than 13.5 metres; or</i> <i>(ii) Where no reserve exists, where the existing road is wider than 8 metres –</i> <i>Excluding widening or lengthening occurring inside urban areas.</i>	<u>This activity will be triggered</u> , as existing farm roads will have to be extended for a length of more than 1 kilometre.	Y
GN.R545	3	<i>The construction of facilities or infrastructure for the storage, or storage and handling of a dangerous good, where such storage occurs in containers with a combined capacity of more than 500 cubic meters.</i>	<u>This activity will not be triggered</u> , as the proposed Project includes the construction of a fuel depot, oil store, chemical store and a paint store. At this stage, the quantity of dangerous goods that are to be stored onsite is uncertain. For this reason, the assumption will be made that capacity will be between 80 and 500m ³ .	N
GN.R545	6	<i>The construction of facilities or infrastructure</i>	<u>This activity will not be triggered</u> , as coal	N

Relevant Notice:	Activity No (s) (in terms of the relevance or notice) :	Description of Listed Activity:	Relevance to the Project	Applicable (Y/N)
		<i>for the bulk transportation of dangerous goods – (iii) in solid form, outside an industrial complex, using funiculars or conveyors with a throughput capacity of more than 50tons a day.</i>	is not considered a dangerous good.	
GN.R545	15	<i>Physical alteration of undeveloped, vacant or derelict land for residential, retail, commercial, recreational, industrial or institutional use where the total area to be transformed is 20 hectares or more;</i> <i>Except where such physical alteration takes place for:</i> <i>(i) linear development activities; or</i> <i>(ii) Agriculture or afforestation where activity 16 in this schedule will apply.</i>	<u>This activity will be triggered</u> , as an area in excess of 20 hectares, which is currently green fields, is proposed to be developed for mining purposes. NEMA does not provide a definition for industrial land use; as a result, for the purpose of this application mining is classified as a variant of industrial use.	Y
GN.R545	20	<i>Any activity which requires a mining right or renewal thereof as contemplated in Sections 22 and 24 respectively of the Minerals and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002).</i>	<u>This activity will be triggered</u> , as the applicant will be submitting an application for mining rights in terms of Sections 22 and 24 of the Mineral and Petroleum Resources Development Act.	Y
GN.R546	4	<i>The construction of a road wider than 4 metres with a reserve less than 13.5 metres</i> <i>ii. Outside and urban area, in critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans.</i>	<u>This activity will be triggered</u> , as the Mpumalanga C-Plan Terrestrial Biodiversity Assessment identifies part of the project area as <i>irreplaceable</i> , whilst other areas are classified as <i>important and necessary</i> . As part of the proposed project roads, which are	Y

Relevant Notice:	Activity No (s) (in terms of the relevance or notice) :	Description of Listed Activity:	Relevance to the Project	Applicable (Y/N)
			wider than 4m, will be constructed.	
GN.R546	12	<i>The clearance of an area of 300 square metres or more of vegetation where 75% or more of the vegetative cover constitutes indigenous vegetation, within critical biodiversity areas identified in bioregional plans.</i>	<u>This activity will be triggered</u> , as the Mpumalanga C-Plan Terrestrial Biodiversity Assessment identifies part of the project area as irreplaceable, whilst other areas are classified as important and necessary. As part of the project an area exceeding 300m ² will be cleared of indigenous vegetation.	Y
GN.R546	13	<i>The clearance of an area of 1 hectare or more of vegetation where 75% or more of the vegetative cover constitutes indigenous vegetation, except where such removal of vegetation is required for.....in any critically endangered or endangered ecosystem listed in terms of section 52 of the NEMBA or prior to the publication of such a list, within a area that has been identified as critically endangered in the National Spatial Biodiversity Assessment 2004; and critical biodiversity areas and ecological support areas as identified in systematic biodiversity plans adopted by the competent authority.</i>	<u>This activity will be triggered</u> , as the Mpumalanga C-Plan Terrestrial Biodiversity Assessment identifies part of the project area as irreplaceable, whilst other areas are classified as important and necessary. Furthermore, the National Spatial Biodiversity Assessment identifies part of the project area as been located on the border of the South African Eastern Escarpment and Moist Grasslands. As part of the project an area exceeding 1 hectare in size will be cleared of vegetation. Over 75% of the vegetation which is proposed to be cleared is deemed to be indigenous. The removal of vegetation is	Y

Relevant Notice:	Activity No (s) (in terms of the relevance or notice) :	Description of Listed Activity:	Relevance to the Project	Applicable (Y/N)
			required for the purposes of expanding existing mining operations.	
GN.R546	14	<i>The clearance of an area of 5 hectares or more of vegetation where such removal of vegetation is required for.... in critical biodiversity areas and ecological support areas as identified in systematic biodiversity plans adopted by the competent authority</i>	<u>This activity will be triggered</u> , as the Mpumalanga C-Plan Terrestrial Biodiversity Assessment identifies part of the project area as irreplaceable, whilst other areas are classified as important and necessary. As part of the project an area exceeding 5 hectare in size will be cleared of vegetation. Over 75% of the vegetation which is proposed to be cleared is deemed to be indigenous. The removal of vegetation is required for the purposes of expanding existing mining operations.	Y

The applicability of certain activities in the above mentioned table requires that both Basic Assessment and a detailed Scoping and EIA be undertaken. As such **a detailed Scoping and EIA will be carried out**, as this will fulfil the legal requirements necessary for all triggered activities.

4.4

THE MINERAL AND PETROLEUM RESOURCES DEVELOPMENT ACT (NO. 28 OF 2002)

The Mineral and Petroleum Resources Development Act (MPRDA) makes provision for equitable access to, and sustainable development of, the nation's mineral and petroleum resources. The fundamental principles of the Act are:

- Recognising that mineral resources are not renewable.
- Acknowledging that mineral resources belong to the nation and that the State is the custodian.

- That the custodian of these mineral resources is obliged to protect the environment for present and future generations, to ensure ecologically sustainable development of mineral resources by promoting economic and social development.
- Promote local and rural development of communities affected by mining activities.
- Reformation of the industry to bring about equitable access to the resources and eradicating any discriminatory practices.
- To guarantee tenure security.

Mining rights, granted by the Minister of Minerals and Resources, is a prerequisite for the proposed mining project. In order to apply for a mining right in terms of Section 22 of the Act, an EIA must be conducted and an Environmental Management Programme must be submitted to the Department of Minerals and Resources (DMR) for approval.

4.5

NATIONAL WATER ACT (NO.36 OF 1998)

The purpose of the National Water Act (NWA) is to ensure that the nation's water resources are protected, used, developed, conserved, managed and controlled in an environmentally sustainable way. In terms of Section 39 of the NWA, there are a number of activities, which are stipulated in GN.R1191, that require a Water Use License. Water uses that need to be licensed under Section 21 of the Act include:

1. Surface- and groundwater abstraction;
2. Water storage;
3. Alteration to the flow of an existing watercourse;
4. Discharge of waste water emanating from industrial processes;
5. Irrigating waste water; and
6. Recharging aquifers with waste water.

Water use licenses will be required for a variety of activities associated with the proposed Project. A specialist has been appointed to fulfil the function of applying for such a license.

Also of relevance to the proposed Project is Section 19 of this Act, which deals with pollution prevention (Part 4).

Part 4 deals with pollution prevention and in particular the situation where pollution of a water resource occurs or might occur as a result of activities on land. The person who owns, controls, occupies or uses the land in question, is responsible for taking reasonable measures to prevent pollution of water resources. If the measures are not taken, the catchment management agency concerned, may itself do whatever is necessary to prevent the pollution or remedy its effects and recover all reasonable costs from the persons responsible for the pollution.

The 'reasonable measures' which have to be taken may include measures to:

- Cease, modify or control any act or process causing the pollution;
- Comply with any prescribed waste standard or management practice;
- Contain or prevent the movement of pollutants;
- Eliminate any source of pollution;
- Remedy the effects of pollution; and
- Remedy the effect of any disturbance to the bed and banks of a watercourse.

With respect to pollution and all alterations of rivers, water courses, water flow systems (above or below ground), the following definition is relevant when considering the potential impacts of development on water resources. Pollution may be deemed to occur when the following are affected:

- The quality, pattern, timing, water level and assurance of flow;
- The water quality, including the physical, chemical and biological characteristics of the water.

A further relevant definition is that of 'waste' which is defined as including:
".....any solid material or material that is suspended, dissolved or transported in water (including sediment) and which is spilled or deposited on land or into a water resource in such volume, composition or manner as to cause, or to be reasonably likely to cause, a water resource to be polluted".

Implications for the proposed development:

- 1) The developer is responsible for taking reasonable measures to prevent pollution of water resources that it owns, controls, occupies or uses on the land in question.
- 2) The developer is required to remedy situations where pollution of a water resource occurs following emergency incidents and where it is responsible for the incident or owns or is in control of the pollutant involved.
- 3) The developer must take all reasonable measures to minimise the impacts of the incident, undertake clean-up procedures, remedy the effects of the incident and take measures as directed by the catchment agency.
- 4) Waste created during construction needs to be controlled adequately to negate the impacts on the ground and surface water.

4.6

NATIONAL HERITAGE RESOURCES ACT (NO 25 OF 1999)

The National Heritage Resources Act (NHRA) aims to introduce an integrated system for the management of South Africa's heritage resources. Further, the Act empowers civil society to nurture and conserve their heritage resources so that they can be passed onto future generations. The Act provides a framework for the management of heritage resources in South Africa and to protect heritage resources of National significance. In order to meet these objectives, the Act introduces an integrated system that can allow for the identification, assessment and management of heritage resources in South Africa.

The Act requires that developments exceeding 0.5ha (including mining developments) undertake a cultural heritage assessment prior to the construction of the development. The assessment should be carried out by a South African Heritage Resources Agency (SAHRA) listed consultant. Should any heritage resources be identified on the proposed site, a permit needs to be acquired from the SAHRA, before the said resource can be removed, reallocated and/or destroyed.

A preliminary cultural and heritage baseline study has been completed (refer to findings in Section 8.3).

4.7 NATIONAL ENVIRONMENTAL MANAGEMENT: WASTE ACT (ACT 59 OF 2008) REGULATIONS

The National Environmental Management: Waste Act is coupled with and supports the legislation to the NEMA. The Act gives legal effect to the White Paper on Integrated Pollution and Waste Management, and provides the basis for the regulation of waste management in South Africa. Further, the Act contains policy elements and provides a mandate for additional waste regulations that are to be promulgated.

Of relevance to the proposed Project is GN.R719 (July 2009), which comprises a list of waste management activities that have, or are likely to have, a detrimental effect on the environment. Activities included in this list require a Waste License. In order to obtain a Waste License, it is necessary that a Basic Assessment (for Category A activities) or Scoping and EIA (for Category B activities) be undertaken, in terms of the NEMA EIA Regulations. Table 4.3 includes those listed activities that are deemed to be applicable to the proposed Project.

Table 4.3 Relevant Legislation Applicable to the Proposed Kusipongo Expansion Project

Relevant Notice:	Activity No (s) (in terms of the relevance or notice) :	Description of Listed Activity:	Relevance to the Project
GN.R718	A(1)	The storage, including temporary storage, of general waste at a facility that has the capacity to store in excess of 100m ³ of general waste at any one time, excluding the storage of waste in lagoons.	<u>This activity will be triggered</u> , as the proposed mine will generate general waste. This waste will be stored (on a temporary basis) onsite at the Main Mine Adit (Adit A); following which, it will be removed for disposal at a licensed disposal facility. At this stage, the quantity of general waste that is to

Relevant Notice:	Activity No (s) (in terms of the relevance or notice) :	Description of Listed Activity:	Relevance to the Project
			be stored onsite at any one time is uncertain; however the carrying capacity of the area designated for the storage of general waste will be in excess of the 100m ³ threshold.
GN.R718	A(2)	<i>The storage including temporary storage of hazardous waste at a facility that has the capacity to store in excess of 35m³ of hazardous waste at any one time, excluding the storage of hazardous waste in lagoons.</i>	<u>This activity will be triggered</u> , as the proposed mine will generate some hazardous waste. This waste will be stored (on a temporary basis) onsite at the Main Mine Adit (Adit A); following which, it will be removed for disposal at a facility licensed to treat and/or dispose of hazardous waste. At this stage, the quantity of hazardous waste that is to be stored onsite at any one time is uncertain; however the carrying capacity of the area designated for the storage of hazardous waste will be in excess of the 35m ³ threshold.
GN.R718	A(3)	<i>The storage including the temporary storage of general waste in lagoons.</i>	<u>This activity will be triggered</u> , as the proposed mine will have settling ponds to allow for the treatment of stormwater emanating from the site.
GN.R718	A(18)	<i>The construction of facilities for activities listed in Category A of this schedule (not in isolation to associated activity).</i>	<u>This activity will be triggered</u> , as designated areas for the storage of general and hazardous waste will need to be constructed on the site. Furthermore, a settling pond for onsite stormwater will need to be constructed.
GN.R718	B(7)	<i>The treatment of effluent, wastewater or sewage with an annual throughput capacity of 15,000 cubic meters or more.</i>	<u>This activity will be triggered</u> . The proposed mine will treat approximately 41m ³ of sewage per day (14,965m ³ /annum). As this annual amount is essentially equal to the applicable threshold, a conservative approach will be adopted and it will

Relevant Notice:	Activity No (s) (in terms of the relevance or notice) :	Description of Listed Activity:	Relevance to the Project
			<p>be assumed that the annual volume of sewage treatment will be in excess of 15,000m³.</p> <p>In addition, decanted groundwater (from mine inflow) will only be chemically treated if necessary and, solids in the water will be settled out in a silt trap and settling pond (20,000m³ volume) prior to on-site use.</p> <p>In the event that excess treated sewage and decanted mine groundwater is evident, this excess water will be discharged into a natural water resource; however, treatment of excess water will take place prior to discharge. The nominal discharge flow is estimated to be between 263 and 503m³ per day.</p>

The applicability of certain activities in the above mentioned table requires that both Basic Assessment and a detailed Scoping and EIA be undertaken. As such, **a detailed Scoping and EIA will be carried out**, as this will fulfil the legal requirements necessary for all triggered activities.

4.8

NATIONAL ENVIRONMENTAL MANAGEMENT: AIR QUALITY ACT (ACT 39 OF 2004)

The National Environmental Management: Air Quality Act (NEM: AQA) aims to protect the environment by providing measures for the prevention of pollution and ecological degradation and for securing ecological sustainability whilst promoting economic and social development. Section 21 of the Act lists a number of activities that will result in atmospheric emissions. Section 22 of the Act explains that no person that does not have a provisional atmospheric emission license (AEL) can conduct any activity detailed in Section 21 of the Act.

The proposed Project is expected to contribute to ambient air quality by means of airborne emissions that will be generated through the mining process.

Section 21 of the NEM: AQA, subcategory 5.1 (storage and handling of ore and coal) stipulates that facilities that are designed to hold more than 100,000 tons of coal will need an Air Emission License (AEL). This activity will not be triggered as the product silo and associated stockpiling area at Adit A will be well below this threshold. As such, it is anticipated that an **AEL will not be required**.

The NEM: AQA does however provide ambient air quality standards that the proposed Project will need to comply with. As such, air quality monitoring will be necessary at the mining expansion, once it is operational.

4.9 *THE INTERNATIONAL FINANCE CORPORATION*

Kangra Coal has elected to align this Project with the International Finance Corporation (IFC) standards, as a framework to 'guide' its EIA process, Project design, construction activities and operations.

The aim of these international standards is to ensure the environmental and social risks associated with major infrastructure development projects are considered and managed by proponents, in line with international good practice. Although the Project is not currently seeking external debt financing, and is therefore not formally required to meet the standards, their application as far as is practicable can serve as a useful risk and performance management tool.

4.9.1 *Performance Standards*

The IFC, a division of the World Bank Group that lends to private investors, has recently released a Sustainability Policy and set of Performance Standards on Social and Environmental Sustainability (January 2012) (*Box 4.1*). These Standards replace the prior IFC safeguard policies and are used to evaluate any project seeking funding through the IFC.

Box 4.1 IFC Performance Standards

- Performance Standard 1: Assessment and Management of Environmental and Social Risks and Impacts;
- Performance Standard 2: Labour and Working Conditions;
- Performance Standard 3: Resource Efficiency and Pollution Prevention;
- Performance Standard 4: Community Health, Safety and Security;
- Performance Standard 5: Land Acquisition and Involuntary Resettlement;
- Performance Standard 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources;
- Performance Standard 7: Indigenous Peoples; and
- Performance Standard 8: Cultural Heritage.

The Performance Standards underscore the importance of managing environmental, social and health issues throughout the life of a project. They

identify the need for an effective social and environmental management system that is dynamic and continuous, *'involving communication between the client, its workers, and the local communities directly affected by the Project'*. They require *'a thorough assessment of potential social and environmental impacts and risks from the early stages of project development and provides order and consistency for mitigating and managing these on an ongoing basis'*.⁽¹⁾

The Performance Standards also reinforce the importance of effective community engagement through disclosure of project-related information and consultation with local communities on matters that directly affect them.

Through the Performance Standards, the IFC requires clients to engage with affected communities through disclosure of information, consultation, and informed participation, in a manner commensurate with the risks to, and impacts on, the affected communities.

4.9.2 *IFC Environmental, Health and Safety (EHS) Guidelines*

The EHS Guidelines are technical reference documents that address IFC's expectations regarding the industrial pollution management performance of its projects. They are designed to assist managers and decision makers with relevant industry background and technical information. This information supports actions aimed at avoiding, minimising, and controlling EHS impacts during the construction, operation, and decommissioning phase of a project or facility. The EHS Guidelines serve as a technical reference source to support the implementation of the IFC Performance Standards, particularly in those aspects related to Performance Standard 3: Pollution Prevention & Abatement, as well as certain aspects of occupational and community health and safety.

When the host country (South African) regulations differ from the levels and measures presented in the EHS Guidelines, projects will be expected to achieve whichever is more stringent. If less stringent levels or measures are appropriate in view of specific project circumstances, a full and detailed justification for any proposed alternatives is required.

General EHS Guidelines also exist which contain information on cross-cutting environmental, health, and safety issues potentially applicable to all industry sectors are listed in *Box 4.2*.

(1) IFC, 2006.

Box 4.2 *IFC General EHS Guidelines*

General EHS Guidelines

- 1. Environmental**
 - 1.1 Air Emissions and Ambient Air Quality
 - 1.2 Energy Conservation
 - 1.3 Wastewater and Ambient Water Quality
 - 1.4 Water Conservation
 - 1.5 Hazardous Materials Management
 - 1.6 Waste Management
 - 1.7 Noise
 - 1.8 Contaminated Land
- 2. Occupational Health and Safety**
 - 2.1 General Facility Design and Operation
 - 2.2 Communication and Training
 - 2.3 Physical Hazards
 - 2.4 Chemical Hazards
 - 2.5 Biological Hazards
 - 2.6 Radiological Hazards
 - 2.7 Personal Protective Equipment (PPE)
 - 2.8 Special Hazard Environments
 - 2.9 Monitoring
- 3. Community Health and Safety**
 - 3.1 Water Quality and Availability
 - 3.2 Structural Safety of Project Infrastructure
 - 3.3 Life and Fire Safety (L&FS)
 - 3.4 Traffic Safety
 - 3.5 Transport of Hazardous Materials
 - 3.6 Disease Prevention
 - 3.7 Emergency Preparedness and Response
- 4. Construction and Decommissioning**
 - 4.1 Environment
 - 4.2 Occupational Health and Safety
 - 4.3 Community Health and Safety

4.9.3 *IFC Sector Guidelines*

In addition to the IFC guidelines noted in the sections above, there are certain sector (industry) specific guidelines that are considered applicable for the proposed Project. The applicable guidelines are presented in *Box 4.3* below.

Box 4.3 *IFC Sector Specific Guidelines*

- 1. Environmental, Health and Safety Guidelines for Mining
- 2. Environmental, Health, and Safety Guidelines for Waste Management Facilities
- 3. Environmental, Health, and Safety Guidelines for Water and Sanitation

4.10

LEGAL REQUIREMENT SUMMARY

On the basis of the legal review the proposed Project will require the following Authorisations:

Statute	Requirement	Competent Authority
NEMA EIA Regulations	Environmental Authorisation through the detailed Scoping and EIA process	The Mpumalanga Department of Economic Development, Environment and Tourism
MPRDA	That an EIA be conducted and Environmental Management Programme be submitted.	National Department of Minerals and Resources
Water Act	Water Use Licenses	National Department of Water Affairs
Heritage and Resources Act	That a Cultural and Heritage Resource assessment be carried out.	South African Heritage Resources Agency
NEMA Waste Act	Environmental Authorisation through the detailed Scoping and EIA process.	The National Department of Environmental Affairs

4.11

PROPONENT CORPORATE ENVIRONMENTAL AND SAFETY POLICIES

The Project proponent has established corporate environmental and social policies. The Environmental Policy commits Kangra Coal to responsible environmental stewardship and sustainable business practices. Furthermore, in this policy, Kangra Coal pledges to improve their overall environmental performance across all business activities. With regards to the Health and Safety policy, this policy aims to provide a healthy and safe working environment for all who may be affected by Kangra Coal's business activities.

ERM is conducting the public participation process (PPP) as part of the Environmental Impact Assessment (EIA), Waste License Application, Water Use License Application (WULA) and the Mining Rights Application Processes for the proposed expansion of Kangra's Kusipongo mine in Mpumalanga. The PPP will be conducted by ERM's specialist PPP team and will be done in conjunction with the technical environmental studies. This team includes consultants from ERM as well as a facilitator and translator from Di-Idea Communications (hereafter included in references to the ERM team).

The PPP has been designed to comply with the regulatory requirements set out in the National Environmental Management Act (NEMA) (Act 107 of 1989) as amended, the Mineral and Petroleum Resources Development Act (Act 28 of 2002) and the National Water Act (Act 36 of 1998). Public participation in an EIA is not only a statutory requirement, but a process that is designed to provide Interested and Affected Parties (I&APs) with an opportunity to evaluate all aspects of the proposed development, with the objective of improving the proposed project by maximising its benefits while minimising its adverse effects. I&APs represents relevant interests and sectors of society and the various relevant organs of state who work together to inform better decisions than if they had acted independently, and better implementation of decisions through I&APs participating in the process.

This chapter provides an overview of the PPP and describes what engagement activities have been undertaken to date. It is concluded by identifying what the next steps in the PPP will be.

5.1

OBJECTIVES OF THE PUBLIC PARTICIPATION PROCESS

The PPP has been designed to achieve the following objectives:

- To ensure that stakeholders are well informed about the proposed development;
- To provide a broad set of stakeholders sufficient opportunity to engage and provide input and suggestions on the proposed project;
- To verify that stakeholder issues have been accurately recorded;
- To draw on local knowledge in the process of identifying environmental and social issues associated with the proposed Project, and to involve stakeholders in identifying ways in which these can be addressed; and
- To comply with the legal requirements.

The public participation process has been designed in four phases, namely:

During Pre-scoping Phase

- Introducing the proposed project and its processes to key stakeholders.
- Identification and consultation of key stakeholders and directly affected landowners.
- Engagements with key stakeholders including representatives from the local municipalities (Mkhondo and Dr. Pixley Kalsaka Seme), relevant traditional authorities and landowners.
- Providing information about the proposed project and the associated processes to stakeholders.
- Invite stakeholders to register as I&APs.

During the Scoping Phase

- Officially initiates and notifies the public of the formal EIA process.
- Make suggestions for enhanced project benefits and reasonable alternatives.
- Verify that issues raised by stakeholders have been accurately recorded.
- Raise issues of concern, suggestions and comments about the proposed project, the draft Scoping Report and the draft Terms of Reference for the EIA specialist studies to be undertaken in the impact assessment phase.

During the Impact Assessment Phase

This phase will allow I&APs to comment on findings of the specialist assessments of anticipated impacts as well as in the development of appropriate mitigation measures.

During the Decision Making Phase

When the lead authority has made a decision stating whether or not the proposed project may proceed, ERM will inform I&APs of the decision, and the opportunity to appeal the decision, should they wish to.

5.2

WHO ARE THE STAKEHOLDERS AND I&APs

One of the key principles informing the PPP is that it should be an inclusive process. Given the location of the proposed project as well as the location of the existing mine, it is important that stakeholders from both Mkhondo and Dr Pixley Ka Seme local municipalities are given the opportunity to participate in the process. Notification activities have been designed to ensure that stakeholders within both municipalities are invited to be involved in the process.

Stakeholders were invited to become part of the process in two ways:

- Through notification activities which were designed to ensure that the broader public were informed of the process and invited to be involved; and

- Through ERM's proactively registering stakeholders identified as potentially interested or affected through the pre-scoping phase.

Members of the public have been notified and invited to register as I&APs in the proposed project and the associated licensing processes through a series of English, Afrikaans, Zulu and Sesotho PPP notification materials as indicated in *Table 5.1*.

Pre-scoping public participation materials are appended to this report as *Annexure A*.

Key stakeholders in the following stakeholder groups have been pre-registered:

- **Government:** Authorising and commenting authorities from selected National, Provincial and Local Departments as well as relevant Ward Councillors and elected political representatives;
- **Traditional Authorities;**
- **Directly Affected Stakeholders:** Landowners and communities;
- **Neighbouring Landowners:** Neighbouring farm owners and communities;
- **Community Based Organisations (CBOs) and Non-Governmental Organisations (NGOs):** Environmental organisations and social focused organisations; and
- **Unions.**

A stakeholder database has been compiled and will continue to be updated throughout the PPP. The existing full stakeholder database is appended as *Annexure B*.

5.3 PUBLIC PARTICIPATION ACTIVITIES

Table 5.1 below provides details of the public participation activities during the EIA. Where activities have already been completed annexures of supporting material are indicated.

Table 5.1 Public Participation Activities

Activity	Details	Reference in DSR
Pre-Scoping Phase		
Distribution of proposed project announcement letter and Background Information Document (BID).	BID and announcement documentation emailed and posted to stakeholders. (Registration period: 29 July – 26 August 2011)	Annexure A BID, letters, registration and comment sheet, adverts, site notices.
Placing of adverts.	Adverts were placed in the Excelsior Newspaper (5 August 2011) and Recorder (5 August 2011) newspapers as well as the municipal circulars (Vuka Pixley Kalsaka Seme and Mkhondo News).	Annexure A BID, letters, registration and comment sheet, adverts, site notices.

Activity	Details	Reference in DSR
Putting up of site notices.	Site notices were put up at local libraries, post offices, municipal offices and frequently visited shops or taxi ranks in Volksrust, Wakkerstroom, Dirkiesdorp, Piet Retief, Driefontein and Daggakraal.	<i>Annexure A</i> BID, letters, registration and comment sheet, adverts, site notices.
Identification of stakeholders.	Stakeholder database which includes interested and affected parties from various sectors of society including directly affected landowners in and around the proposed project area.	<i>Annexure B</i> Stakeholder database.
Meetings with relevant stakeholders.	Meetings with local authorities, appropriate traditional authorities and potentially directly affected landowners in mid July 2011. Introduction of the proposed project and its processes.	<i>Annexure C</i> Stakeholder meeting minutes.
Distribution of postponement letter.	Postponement letters for DSR availability are sent to stakeholders. (20 December 2011).	<i>Annexure A</i> BID, letters, registration and comment sheet, adverts, site notices.
Obtained comments from stakeholders.	Comments, issues of concern and suggestions received from stakeholders are captured in the Comment and Response Report.	<i>Annexure E</i> Comment and Response Report.
Scoping Phase		
Announcement of DSR.	<p>DSR announcement letter sent to all I&APs on the database on.</p> <p>Adverts will be placed in the Excelsior Newspaper and Recorder newspapers early in January 2013 to announce the DSR availability together with a schedule and venues for stakeholder meetings.</p> <p>Site notices were put up at the following places and contained information about the DSR availability together with a schedule and venues for stakeholder meetings:</p> <ul style="list-style-type: none"> • Volksrust Public Library and Post Office • Wakkerstroom Library and Post Office • Piet Retief Library and Post Office • Driefontein Post Office • Daggakraal Clinic • Dirkiesdorp Clinic 	<i>Annexure D</i> DSR PP material
Making DSR available to I&APs.	<p>DSR and accompanying documents were placed at the following public places within the proposed project area:</p> <ul style="list-style-type: none"> • Volksrust Public Library and Post Office • Wakkerstroom Library • Piet Retief Library and Post Office • Driefontein Post Office 	<i>Annexure D</i> DSR Public Participation material.

Activity	Details	Reference in DSR
	<ul style="list-style-type: none"> Daggakraal Clinic Dirkiesdorp Clinic (DSR public review period: Monday 7 January to Friday 8 March 2013)	
Stakeholder meetings.	A public meeting, open house and focus group meetings will be held with various stakeholders during the DSR public review period.	<i>Annexure D</i> DSR Public Participation material.
Obtained comments from stakeholders.	Comments, issues of concern and suggestions received from stakeholders are captured in the Comment and Response Report.	<i>Annexure E</i> Comment and Response Report.

A summary of comments raised by stakeholders are included in *Table 5.2* below. A full list of comments and associated responses are included in the Comment and Response report (*Annexure E*).

Table 5.2 *Summary of Stakeholder Comments*

Category	Comments Raised
Proposed Project Specific	<ul style="list-style-type: none"> Question on the distance from the existing mine to the proposed mine. In addition whether mining activities would continue at the existing mine. Request for more information on mining aspects including the type of coal to be mined, depth and thickness of layers to be mined.
Environmental Impact	<ul style="list-style-type: none"> The area is a very sensitive environment with key wetland areas and significant birdlife (also from a national perspective). Large portions of the proposed project fall within catchment areas classified as "irreplaceable" and "highly significant" in terms of the Mpumalanga Biodiversity Conservation Plan (MBCP). These catchments form the headwaters of the Usutu river system and the intended operations would impact on the Hlelo and Assagai rivers (both of which are tributaries to the Usutu River). There are substantial wetlands located on the properties in question.
Groundwater and Water Quality	<ul style="list-style-type: none"> Concerns were raised over the impact the proposed project would have on water in the area in the long run in particular once coal had been removed. It was noted that the holes drilled during prospecting by Kangra Coal and their contractors were not filled immediately. Request to have access to the detailed hydrology report (where the impact on each spring needs to be assessed) and water specialist reports. Common concerns that would need to be considered included the impact on water resources.

Category	Comments Raised
Socio-economic and Community	<ul style="list-style-type: none"> • Question as to how this proposed project will benefit their community, not only from an employment perspective but also in terms of sustainable development and investment in the area. • Question on the number of people that would have to move as a result of the proposed project. • Request for meaningful jobs to be created as a result of the proposed project. • Raised the importance of ensuring sustainable benefits to the community for the long term (including unborn generations).
Air Quality	<ul style="list-style-type: none"> • Common concerns identified that would need to be considered included NO_x and SO_x emissions. • Raised concern over the release of harmful fumes as well as odours that may emanate from proposed project activities.
Building and Infrastructure	<ul style="list-style-type: none"> • Raised the concern that the underground mine will cause cracks in their aboveground structures. This was raised in the context of suggestions that these stakeholders would not need to relocate where underground mining was taking place.

5.4

PUBLIC PARTICIPATION DURING THE IMPACT ASSESSMENT PHASE

Public participation during the impact assessment phase of the EIA will revolve around a review of the findings of the EIA, presented in the Draft EIA Report, and the volume of Specialist Studies. These reports will be made available for public comment during the first quarter of 2013.

I&APs will be advised timeously of the availability of these reports, of how to obtain them, and of the date and venue of the meetings where the content of the reports will be presented for comment. They will be encouraged to comment either in writing (mail or email), by attending the stakeholder meetings or by telephone. Ample notification of due dates will be provided.

The objective of engagement during the Impact Assessment includes:

- To provide further information on the proposed project, where new information is available;
- To provide information about key findings of the specialist studies conducted;
- To involve key stakeholders and I&APs in the identification of potential impacts of the proposed project and in the assessment of these impacts, including positive and negative impacts; and
- To involve I&APs in identifying and assessing mitigation measures proposed to reduce these impacts (or to maximize positive impacts).

As with the Scoping phase, similar activities will be undertaken to ensure that stakeholders are given the opportunity to comment on the Draft EIA Report. It is anticipated that this phase of activity will commence in the first quarter of 2013.

5.5 *COMPETENT AUTHORITIES DECISION*

Once the DEDET has taken a decision about the proposed Project, the public participation office will immediately notify I&APs of this decision and of the opportunity to appeal. This notification will be provided as follows:

- A letter will be sent out, personally addressed to all registered I&APs, summarising the authority's decision and explaining how to lodge an appeal should they wish to; and
- An advertisement to announce the Lead Authority's decision will be published in the Excelsior and the Recorder newspapers.

5.6 *NEXT STEPS IN THE EIA PROCESS*

The next steps in the process include:

- Update the DSR and making the Final Scoping Report (FSR) available to stakeholders for comment (March 2013);
- Submit the Final Scoping Report to the relevant authorities for approval (March 2013); and
- The initiation of the Impact Assessment phase (April 2013).

6.1

SCOPING SUMMARY

As mentioned in *Chapter 4*, it is a requirement of NEMA, NEM:WA and MPRDA that a detailed Scoping and EIA study be carried out for the proposed Project. The aim of the Scoping and EIA study is to provide the relevant competent authorities with enough information to make an informed decision as to whether the proposed Project can be authorised, or whether additional environmental and social studies need to be undertaken. The objectives of the overall EIA are therefore to:

- Describe and evaluate identified feasible alternatives (this may include site, process and layout alternatives);
- Identify potential biophysical, biological and socio-economic impacts (both positive and negative), and evaluate their significance in terms of the proposed Project;
- Identify mitigation measures to reduce, minimise or avoid negative impacts from occurring; and
- Promote and enhance positive impacts that will benefit the local environment and community.

Environmental scoping is the first phase of the overall EIA process. The purpose of scoping is to identify the possible and likely environmental consequences of the proposed Project and to consider input from identified stakeholders. The EIA aims to provide the competent authorities with enough information to make a decision regarding the proposed Project, or the need for further biophysical, biological or socio-economic studies.

The main objectives of this scoping study are therefore to:

- Present the EIA process and the relevant national legislation;
- Present a description of the proposed Project;
- Present the biophysical, biological and socio-economic conditions of the proposed Project area;
- Present the alternatives assessed and the rationale behind the preferred combination of alternatives;
- Present the issues raised during the initial public consultation undertaken during this scoping phase;
- Identify the environmental and social issues related with the proposed Project, on which the EIA phase would need to focus; and
- Present an outline of the Terms of Reference for the various specialist studies to be undertaken in the EIA phase that will address the identified biophysical, biological and social issues.

The Scoping Report does not present the assessment of the environmental impacts or provide final answers; these shall be presented in the EIA Report.

This report fulfils the requirement of NEMA for the documentation of the scoping phase. The structure of this report has been based on Section 28 of GN. R543, of the EIA Regulations (2006) as amended, which clearly specifies the required content of a scoping report.

6.2

ENVIRONMENTAL APPLICATIONS

A Waste Management License (WML) application form (in terms of activities identified in GN.R718) and a Application for Environmental Authorisation form (in terms of activities identified in GN.R544, 545 and 546) were lodged with the National Department of Environmental Affairs (DEA) and the Mpumalanga Department of Economic Development, Environment and Tourism (DEDET) respectively, and serve to initiate the administrative process including the allocation of a unique EIA (17/2/3 GS-52) and WML (12/9/11/L719/6) reference number.

In addition to the above mentioned, a Mining Rights Application (MRA) was lodged with the Mpumalanga Department of Minerals and Resources (MDMR) and a unique MRA number has been allocated (MP30/5/1/2/2/10046MR).

Water Use Licenses for a variety of water uses will also be lodged with the National Department of Water Affairs. Once these have been lodged the respective reference numbers will be communicated to RI&APs.

In accordance with the EIA regulations, this Chapter contains a description of the alternatives that have been identified for the Project. The identification of alternatives provides the rationale for the proposed (preferred) option(s) to the decision making authority, and is a requirement of the EIA Regulations. Project alternatives considered thus far include alternative Adit locations, configurations across three sites, alternative product transportation routes and conveyor corridor routes.

In 2009, Hatch was appointed to carry out a Concept Study (FEL 1)¹ with a goal of evaluating business opportunities associated with expanding or extending Kangra Coal's current mining operations into the adjacent Kusipongo Resource.

Following FEL 1, the Hatch technical team began the Pre-feasibility Study (FEL 2) during which time the Project team also identified potential points to access the coal. This study was based on variables such as coal quality, environmental sensitivities, health and safety requirements, site accessibility, etc. Shortly thereafter ERM carried out an ecological and social site screening assessment for the area proposed for the development of the Main Mine Adit and associated Ventilation Adits. The assessment identified environmental and social red flags associated with the proposed development locations and a preferred location for the Main Mine Adit was recommended. Furthermore, the assessment highlighted the existence of the Kransbank National Natural Heritage Site as an area to be avoided.

Information collected during the aforementioned site screening assessment was used to inform a Pre-feasibility Study (FEL 2) carried out by Hatch. The FEL 2 aimed at selecting the correct Project options for exploiting the coal extracted from the Kusipongo Resource, by taking into account engineering, environmental, social and economic considerations. Based on this exercise, Hatch identified the Main Mine Adit at Site A as the preferred option.

This *Chapter* discusses the findings of these preliminary studies.

7.1

HATCH CONCEPT STUDY – FEL 1

During 2009 Kangra Coal commissioned a concept study (FEL 1) to determine whether there was a business case for implementing an underground expansion of their existing operations at Maquasa West into the adjacent Kusipongo Resource.

(1) "FEL" is a Hatch acronym for 'Front End Loading', and refers to the level of detailed engineering completed in each phase of a project.

In FEL 1, consideration was given to various alternatives for transporting the coal product from the mine works to the existing siding at Panbult and another potential site for siding relocation at Ishwepe. These considerations included building a conveyor to the existing siding; extending rail spurs from either the existing siding or from the nearby Ishwepe rail siding; and various configurations of haul roads. An evaluation was also conducted to determine whether the coal washing facilities should be re-located from the existing Maquasa East location to the proposed new Kusipongo development area. These concepts were rejected as not being technically feasible. In addition, it was determined that the mine would not be able to expand production above current levels because of constraints on the Richard's Bay coal rail line. A proposed coal fired, Independent Power Provider (IPP) scheme was not supported by the Department of Energy's integrated resource plan (IRP) and as such, this initiative could not be further considered.

The key business objectives of the study were to:

- Determine if the following corporate objectives could be met with the proposed expansion:
 - Meet corporate financial growth goals;
 - Expand ROM production to 5.5 million tonnes of product per annum (from the current 3.0 million tonnes per annum - Mtpa);
 - Build a coal fired power plant and operate as an Independent Power Producer (IPP);
 - Provide safe and environmentally friendly transport alternatives for its product coal.
- Assess what the potential environmental and social impacts would be of the expansion.
- Determine if a viable market existed for saleable coal product that could be produced from the *in-situ* coal.

As part of the study, technical assessments were carried out. The purpose of these technical assessments was to determine the following:

- The viability of alternative infrastructure systems for transporting coal product from the mine to the distribution point (Siding), including:
 - Conveyor belt systems.
 - Rail extension from the existing or new siding to the mine's current location.
 - Constructions of new, dedicated coal product haul roads.
- The viability of upgrading the existing Panbult Siding or alternative construction of a new siding at Ishwepe.
- A preferred mine size (capacity – tonnes per annum of product to be produced) of either 3 or 5.5 MTPA of product.
- The viability of the following product blending capabilities:

- Export only one type of coal product in a given 5 year period.
- Export two different types of coal product simultaneously.

The above options and alternatives were not only considered as isolated cases. Various combinations and permutations of the above were considered as different options, resulting in a matrix of numerous alternatives that were compared with each other from a practical, environmental and economic viability basis.

The sections to follow will discuss the following outcomes of the FEL 1 study:

- The marketing potential of the Kusipongo Resource.
- The ecological and social implications associated with carrying out mining activities in the area of interest.
- Technical requirements associated with the mining expansion.

7.1.1 *Marketing Potential*

Based on the geological resources considered in the Kusipongo Concept Study, it was determined that a medium volatile product can continue to be produced and exported for a number of years. However, the coal's deteriorating quality is of such a nature that a lower volatile market will need to be identified and targeted for the later portion of the proposed mine's life.

The prospect of becoming an IPP is a viable option; however, this view has subsequently changed prior to, and confirmed by, the publishing of the Department of Energy's Draft Integrated Electricity Resource Plan for South Africa 2010 to 2030 – IRP 2010. As such, this option was not considered further.

Producing multiple export products is not technically feasible due to capacity and allocation constraints on the Coal Link railway line to Richard's Bay and at Richard's Bay Coal Terminal (RBCT). As such, the expansion of the mine's production capacity to 5.5 MTPA of product is not practical due to the Coal Link and RBCT constraints describe above.

7.1.2 *Ecological and Social implications*

It was identified that due to the sensitive nature of the Project area, initiating early specific specialist studies would ensure that sensitive areas can be identified and that the overall Project footprint could, as far as is possible, avoid these areas, resulting in the least amount of disturbance to the receiving biophysical, ecological and social environment.

It was noted that this process would also need to include a comprehensive stakeholder consultation process. If information was not presented thoroughly and transparently, this could potentially cause substantial delays in the environmental authorisation process.

Potential land use changes resulting from the proposed expansion Project could result in a number of social impacts, regardless of the alternatives selected. To mitigate the potential negative impacts and enhance the potential positive impacts associated with the aforementioned land use changes, it was recommended that:

- A Socio-economic Impact Assessment (SIA), Heritage Impact Assessment, Visual Impact Assessment and a Traffic Impact assessment, as a minimum be included as part of the Environmental Impact Assessment.
- A robust PPP be followed since it was identified that the potential impacts on the Kransbank Nature Reserve and areas with high environmental sensitivity will be of great concern to a number of I&APs.
- A local skills analysis be initiated and a procurement strategy be developed, at an early stage of the project, to ensure that the optimal number of local people are employed and trained for construction and operation of the proposed mine.

7.1.3 *Coal Handling and Transport Options*

Conveyor Systems through to the Rail Siding

Although it was technically feasible to construct a belt conveying system from the Maquasa West Adit to the rail siding, the infrastructure required to handle the transfer of coal product to the Coal Link rail trucks was not feasible. Space constraints at the siding would require that adjacent land (that is currently under commercial forestry) be acquired for the temporary storage and handling of coal product. The option was not considered feasible for the following reasons:

- The technical complexity associated with such a coal handling system would be large.
- The costs associated with this option are not feasible for Kangra Coal.
- The acquisition of land where commercial forestry is currently taking place is deemed to be a major hurdle.
- The economic viability of this option was not attractive.

Extension of Existing Rail Sidings to the Mine's Current Location (from Panbult or Ishwepe sidings)

The proposed rail lines would follow new servitudes through land currently used for commercial forestry, private farmland and along existing minor roads or forestry tracks. It was assumed that land acquisition would be required for the full rail servitude. A number of streams, wetlands or smaller rivers would have to be crossed en-route. Drainage structures would have to be accommodated and the route would cross a number of minor roads, where level crossings would have to be provided. A road-over-rail crossing would be the most feasible scenario for traversing the N2 highway just north of the Panbult Station. The vertical alignment of the proposed route was selected to

not exceed a grade of 1:100; in order to achieve this alignment, a number of cuttings and areas of high fills would need to be encountered along the route. A gravel service road would also be required along the length of the rail lines. Additional coal product loading facilities would have to be established at the mine site to load the awaiting trains.

Land acquisitions, the perceived impact on the social and biological environment (associated with road, river and wetland crossings) and the existing forestry industry were deemed to be major hurdles for the Project. As such, the economic viability of this option was not attractive.

Construction of a New Dedicated Coal Product Haul Road

Route alignments were considered to Panbult Siding and to the Ishwepe siding of 23 and 25kms respectively using existing district and forestry paths as far as possible. The cost associated with constructing dedicated coal product haul roads may be a feasible option; however, they are not considered to be a financially reasonable option for Kangra Coal.

Upgrading Existing Panbult Siding

Concept designs were done to extend the capacity of the existing Panbult siding from a 100-wagon capacity to a 200-wagon capacity. This included extensions to the rails and considerations for automated loading systems. A more detailed study of this option was recommended.

7.1.4 *Concept Study Conclusions*

Outcomes from the study identified that although it would be preferred to increase the quantity of product generated from 3.0 Mtpa to 5.5 Mtpa this would not be possible due to capacity constraints associated with the Coal Link Railway Line and at RBCT. As such once the expansion into the Kusipongo Resource becomes operational the quantity of product will remain at approximately 3.0 Mtpa.

The study also identified that there are a number of socio-environmental sensitivities associated with the Project area. These sensitivities will need to be assessed in detail as part of the EIA process. The PPP associated with the EIA will also need to be robust and information relating to socio-environmental sensitivities needs to be relayed to I&APs.

A number of coal handling and transport options were assessed; however, due to the anticipated quantity of coal product not increasing once the proposed expansion Project becomes operational, and the complexity and unattractive economic viability of alternative handling and transport options, it was concluded that existing coal handling and transport facilities will continue to be used.

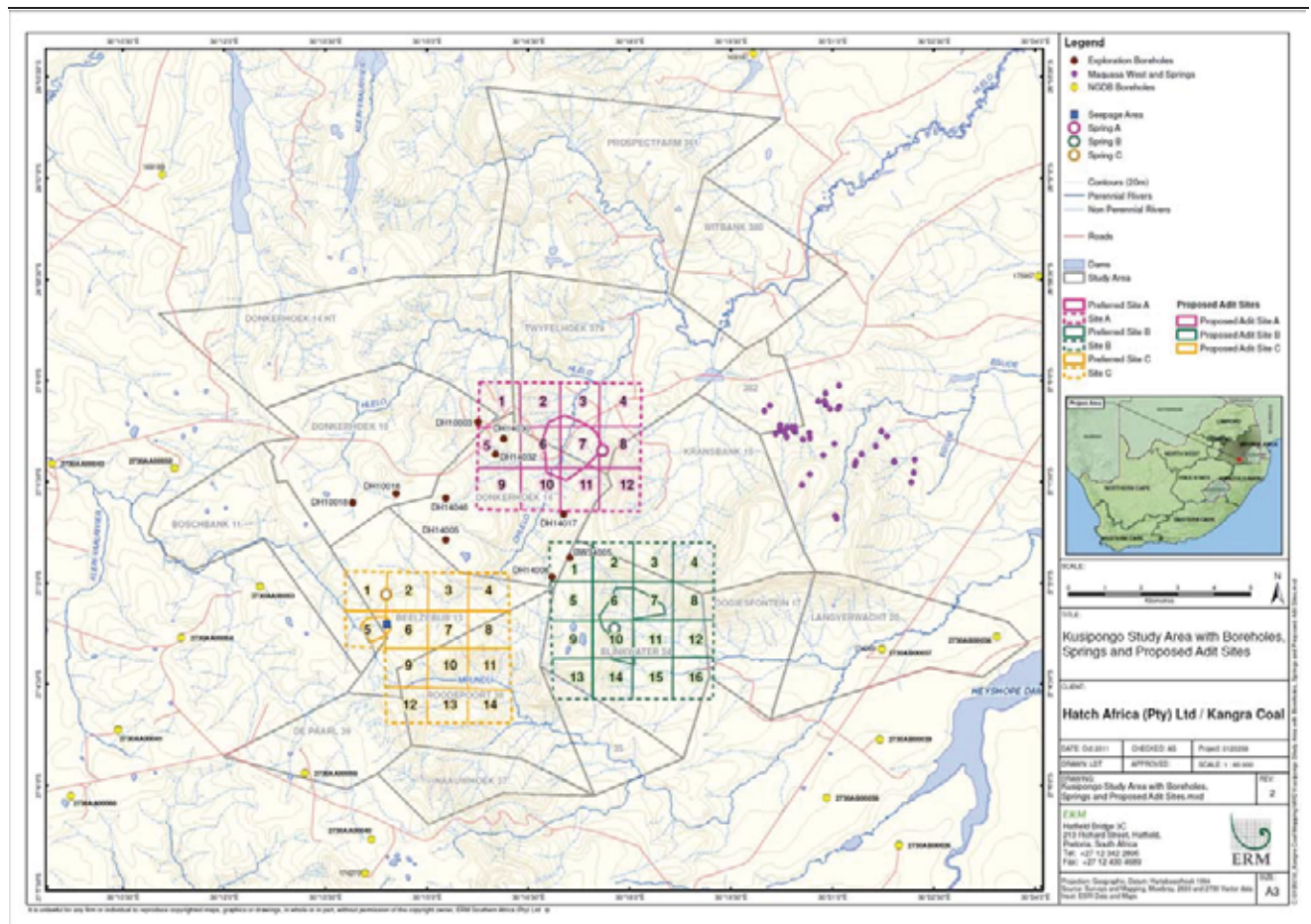
As is mentioned at the outset of this *Chapter*, ERM conducted a site screening assessment based on environmental and social aspects, of the three possible development sites (*Figure 7.1*) associated with a potential Main Mine Adit and associated Ventilation Adits. The objectives of the site screening assessment were to:

- Detail the environmental sensitivities of each site;
- Recommend a preferred site option for the Main Mine Adit based on two positions (site A and B) identified in the Hatch Concept Study; and
- Identify any environmental and social red flags associated with the proposed locations for the Main Mine Adit and associated ventilation Adits.

For the purpose of the screening exercise, the most significant aspects that could affect the position of the Main Mine Adit and associated ventilation Adits were selected and used as primary criteria for early screening purposes. The criteria selected were (not in order of importance):

- Cultural resources;
- Ecological aspects;
- Hydrogeological aspects; and
- Social aspects.

Figure 7.1 Site Screening Study Area



7.2.1

Site Screening Results

Cultural Resources

- The preliminary cultural resources investigation indicated the preferred site for the main mine Adit as Site A.
- Site C was considered an ideal location for a ventilation Adit; however, changes to the site configuration at Site C were suggested to avoid a site of cultural heritage importance (an old grave and ruins of an old *kraal*).

Ecological Aspects

- Site A was found to have the greatest extent of low sensitive areas amongst the three sites screened. Site A was therefore selected as the preferred site from an ecological perspective for the development of a main mine Adit.
- An Ecologically Preferred Location (EPL) within site A was suggested for the adit (*Figure 7.2*), taking into account:
 - The Ohlelo River (and a 100m buffer) which flows through this site (the Ohlelo River is classified as having a “Very High” ecological importance, particularly in terms of fish and aquatic invertebrate diversity); and
 - The vegetation of the site; the EPL has been suggested within an ecologically degraded area.
- The majority of Site B was considered to have a moderate ecological sensitivity. Attention must be given however to reducing the possible impacts in the design of the given Adit provided its ecological sensitivity; in this respect an EPL was also provided (*Figure 7.3*).
- Site C is located on high altitude grasslands, with a small sponge-like wetland located on the site. As two large gum tree groves (*Eucalyptus camaldulensis*) were located downhill of the site, and as these areas are already disturbed, this area was considered as the EPL for a ventilation Adit (refer to *Figure 7.4*).

Figure 7.2 Ecological Sensitivity Map - Site A

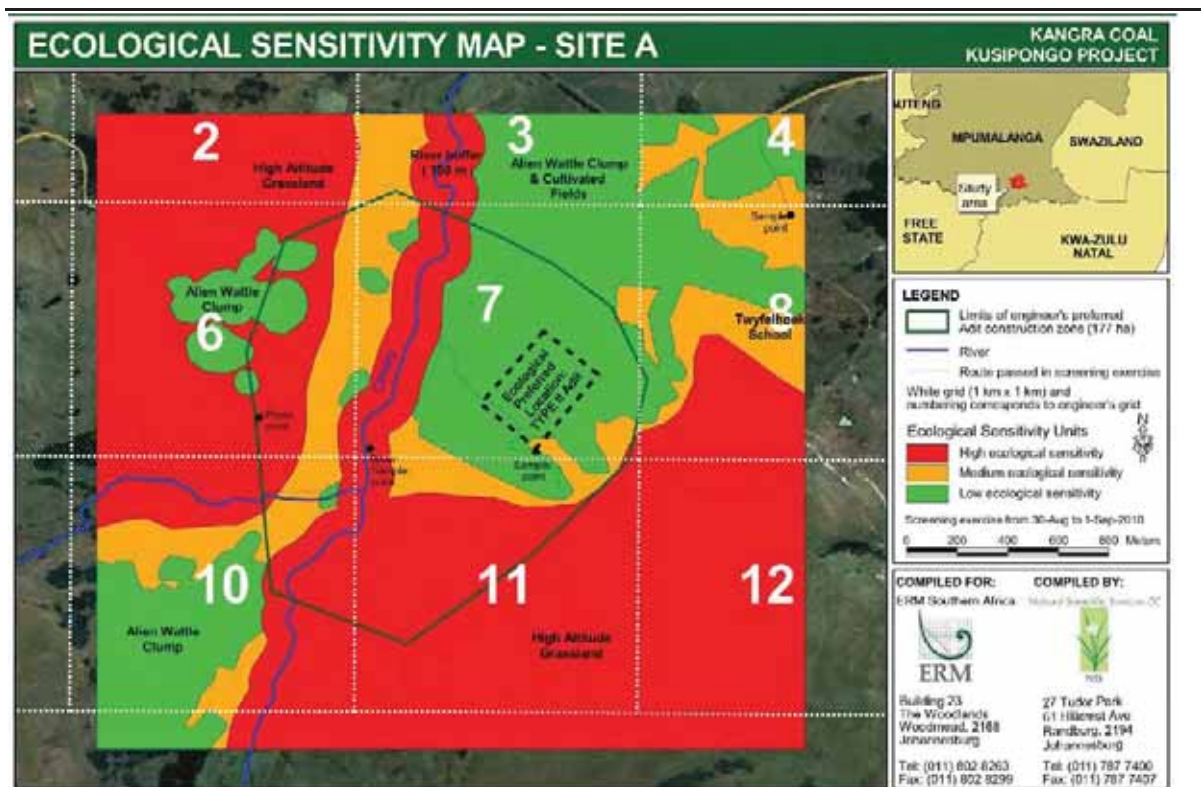


Figure 1 Sensitivity map for Site A with an Ecologically Preferred Location for construction of a Type II mine adit

Natural Scientific Services CC

Figure 7.3 Ecological Sensitivity Map - Site B

