



Prime Resources (Pty) Ltd
The Workshop 70-7th Avenue Parktown North 2193
PO Box 2316 Parklands 2121
T [011] 447 4888 F [011] 447 0355 E prime@resources.co.za
www.resources.co.za



MAIN STREET 800 (PTY) LTD

PROPOSED KANGWANE ANTHRACITE MINE, NKOMAZI DISTRICT, MPUMALANGA

REVISED INTEGRATED ENVIRONMENTAL IMPACT ASSESSMENT AND ENVIRONMENTAL MANAGEMENT PROGRAMME

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Prepared for:



**PO Box 62203
Marshalltown
Johannesburg
2107**

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REVISION TABLE

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EXECUTIVE SUMMARY

This executive summary provides an overview of the proposed project, including the location and a brief project description, followed by a summary of the public consultation conducted. An overview of the Environmental Impact Assessment (EIA) process is provided together with the key findings and impacts identified during the EIA. The mitigation, management and monitoring measures recommended to reduce the overall impact of the project included in the Environmental Management Programme are also presented.

INTRODUCTION

Main Street 800 (Pty) Ltd "the Applicant" has targeted an anthracite resource in the Mpumalanga Province near the town of Komatipoort for the development of an opencast and underground anthracite mining operation.

Main Street 800 is required to undertake an EIA and submit an EMP to the Department of Mineral Resources (DMR) in support of the existing MRA as per Section 39 of MPRDA. Certain activities at the proposed KaNgwane Anthracite Mine "KaNgwane" are listed in terms of the EIA Regulations of 2010 (GNR544, 545 and 546) and therefore require that Environmental Authorisation is granted by MDEDET before the commencement thereof.

LOCATION

The proposed KaNgwane Mine is located in the Mpumalanga Province on the farms the farms Walda 476JU, Joyce 477JU, Monson 478JU and Waanhoop 485JU. KaNgwane falls under the jurisdiction of the Nkomazi Local Municipality. KaNgwane is situated 40km south east of the Komatipoort town and 100km south west of the Mozambique border.

PRE-OPERATION ENVIRONMENT

Climate

The area is characteristically hot and humid, average daily maximum temperatures range from 36°C in December to 26 °C in July, the dominant wind direction is from the south and south southwest. The average rainfall over time in the area is 493 mm per annum and the average evaporation over time is 1544 mm per annum.

Topography

The general landscape of the study area is characterised by wide-spread flat terrain with slight sloping areas.

Geology

The geology in the area is generally comprised of the Lebombo group of the Karoo Sequence.

The associated anthracite seams have a tendency to thicken from south to north on a regional scale while a thinning is normally encountered from west to east in the area of the KaNgwane Coalfield and may consist of up to five benches of different appearance and quality. Seam 4 varies in thickness between 2.5

m and 6.5 m; the coal is predominantly dull. Seam 5 consists of predominantly bright coal and has an average thickness of about 1.8 m.

Terrestrial biodiversity

The study area occurs entirely within the Vegetation Type Zululand Lowveld (which is considered to be vulnerable).

Flora

Apart from the sugarcane fields to the west of the site, the study area plays host to various grassveld types, dense thickets (eg. *Acacia* species) and savannah-type vegetation. Five nationally protected floral species were found within the study area; however, according to the MTPA Biodiversity Conservation Plan, the entire study area falls within "No Natural Habitat Remaining" and "Least Concern" classification.

Fauna

As a result of extensive agriculture and constant human movement through the study area, there are very few mammals present. No protected mammal, bird, reptile or amphibian species were identified in the area.

Aquatic Ecology

The study area is drained by the several seasonal and ephemeral streams which ultimately drain into the Komati River. The Komati River is significantly modified by present land-use and abundance of weirs. An overall reduction in fish species has been noted as re-colonisation by species is prevented by the multiple weirs which have been constructed without fishways. There has also been an increase in alien and exotic species. The sub-catchment of the Komati is regarded as Irreplaceable for the maintenance of aquatic biodiversity, however, this evaluation is largely based on the importance of the Komati River for migrations of fish and other biota and is therefore more applicable to the larger area and not specific to the proposed development. The Mambane River is the only tributary within the study area considered to be significant, namely for maintaining aquatic biodiversity and amphibian species diversity because of the presence of permanent and semi-permanent pools that are important for breeding, nursery and also serve as refuges for fish and amphibians.

One species recorded in the area are listed in the IUCN Red Data Book for fish (*Chetia brevis*) and is classified as Endangered, while the rest are classified as Least Concern. One species, Tigerfish (*Hydrocynus vittatus*), is protected in terms of Section 56(1) of the National Biodiversity Act (Act No 10 of 2004).

Wetlands

The wetland types associated with the project area are a hillslope seepage wetland feeding a watercourse, valley bottom wetlands with a channel, and non-isolated channel wetlands.

In the wetlands and the Mambane habitat, 62 wetland floral species were identified. Vast areas of the wetland and riparian habitats have been encroached upon by alien and invasive species. 64 bird species were recorded in the wetland areas, indicating that these habitats are important to avifaunal diversity in the study area.

The wetlands associated with the sugarcane areas and the wetlands located in close proximity to the settlements have a Very Low PES (Present Ecological Status), while the wetlands situated around the Mambane River obtained a Moderate PES score, indicating lower integrity scores for the wetlands. Riparian Vegetation Response Assessment Index (VEGRAI) sites were assessed to determine what the impacts of surrounding activities are on the wetland riparian vegetation, scores indicated that the wetlands are largely modified with loss of natural habitat, biota and basic ecosystems functions.

Soils

The soils of the study area exhibit moderate agricultural potential; the soils pose certain challenges regarding salt and water management due to poor internal and external drainage. The soils are, however, suitable for irrigated sugarcane and vegetable production. The soils on-site exhibit few or no signs of wetness predominantly due to the climate and inherent soil characteristics.

Surface Water

The study area falls across the border between Quaternary Catchments X13J and X13K in the Inkomati River Catchment.

The Komati and Mambane Rivers are both considered to be endangered systems. This means that these ecosystems have lost significant amounts of their original natural habitat and their functioning is therefore compromised. The area associated with the proposed KaNgwane Anthracite Mine is drained by the Mambane River and three small non-perennial tributaries thereof.

Water samples taken from the Komati River in close proximity to the study area reflects water of good quality, while the water quality in the Mambane River is of a relatively poor quality in terms of the sodium, magnesium and chloride concentrations.

Groundwater

Three aquifers were identified within the study area and are associated with the following:

- Weathered material;
- Underlying shallow, slightly weathered, fractured rock material;
- Deeper, more competent and less weathered fractured rock;
- The mineable anthracite resources which also serve as fractured aquifer within the deeper fractured rock environment.

A hydrocensus was conducted to ascertain groundwater use and dependency associated with the project area. Existing water mains (municipal supply) and the Komati River are the main sources of water used by the community and local land users for household and irrigation purposes. The hydrocensus identified only three boreholes which are utilised for domestic use.

The groundwater quality of the area in general is relatively poor. The groundwater of the study area flows from high-lying to low-lying areas (culminating in streams). Acid Base Accounting indicated that rock material is unlikely to be acid forming, and has a high neutralising capacity which would buffer and neutralise any acid conditions should they occur.

Archaeology

Paleontological Study

Anthracite located at the KaNgwane Anthracite Mine will be mined out of the rocks of the Ecca Group, equivalent to the Vryheid Formation, which were deposited in a delta plain depositional environment. Within the Vryheid Formation there are occurrences of well-preserved elements *Glossopteris* flora comprising wood and/or leaves.

Cultural / Heritage

Three sites of cultural or heritage significance were identified in the study area:

- Site 1: This site contains the remains of old government farm buildings and a farm dam. The buildings are assumed to be younger than 60 years and are of low cultural significance and no heritage value.
- Site 2: Items such as hammers, whetstones and pottery dating from the Early Iron Age were found at this site. Not many Early Iron Age findings are known, therefore this site is considered to be of high cultural significance.
- Site 3: Middle Stone Age tools and Iron Age pottery were found at this site. These features are considered to be a feature rather than a site because it is believed that they have been washed down from site 2.

Air Quality

Air quality in the region is affected by various emission sources including agricultural emissions, biomass burning (veld and sugarcane fires), household fuel burning and vehicle emissions (both entrainment as well as vehicle tailpipe emissions). The sensitive receptors in terms of air quality in the vicinity of the proposed KaNgwane Anthracite Mine are the villages of Mzinti, Tonga, Tonga East, Kamaqhekeza, eMangweni, Steenbok, Brink, Ntuda, Kamhlushwa, Vlakhult, Phiva and Sikwahlane.

Traffic

The R571-1 route that will be used to transport coal from the Mine to the Lebombo Border post is approximately 37 km long. The R571-1 was divided up into four sections for ease of discussion.

Section 1

(R571-1 South of Kamaqhekeza-B) This section of surfaced national road is in a good condition and traffic volumes are low;

Section 2

(R571-1 passing through Kamaqhekeza-B) Surfaced but in a poor condition. Traffic volumes on this route were observed to be moderate.

Section 3

(R571-1 North of Kamaqhekeza-B) This section of surfaced national road is in a poor condition. The traffic volumes along Section 3 comprise a higher volume of trucks than Section 2, and consist mainly of heavy trucks with six or more axles.

Section 4

(N4 from R571-1 to Lebombo Border post) This section of surfaced national road is a four lane road and is generally in good condition. The traffic along this route was observed to be moderate to high volumes and with a higher percentage of trucks than observed along the R571-1.

Noise

Noise levels recorded at surrounding communities fall in line with the recommended SANS noise limit for rural areas (45 dBA).

Socio-Economic

The Nkomazi local Municipality

The Nkomazi local Municipality hosts a population 338 095 with 78300 households, with the majority of the residents between 5 and 19 years of age. The agriculture, manufacturing and tourism sectors are the main source of employment in the municipal district. The Municipality faces a shortage of skills and high rate of unemployment and illiteracy due to the rural nature of the municipality.

The Siboshwa Tribal Authority

The land within the mining right area is considered tribal land which is managed by the tribal authority. The employment potential of residents in the Nkomazi Municipality is highly influenced by skills shortage and illiteracy (only 21.4% of the population has achieved grade 12). The majority of people employed in the formal sector work in either the agriculture, mining or community services sector. A community survey in 2007 indicated that 59.3% of households have access to piped water either within their dwellings or within their yards, while 31.4% access water from the communal taps.

MOTIVATION FOR THE PROJECT

The employment opportunities to be afforded at the proposed KaNgwane Anthracite Mine will contribute towards maintaining and improving long-term employment in the Nkomazi Municipality. The manpower required for the contract mining operation is estimated at 350 persons. The man power for the CHPP is estimated at maximum 60 people. The provision of employment at KaNgwane will positively influence the region through the multiplier effect and contribute to Mpumalanga's Gross Geographic Product (GGP). The export of coal from the proposed mine will also boost the local economy in terms of tax revenue, mining royalties and foreign investment.

PROJECT DESCRIPTION

The proposed KaNgwane Anthracite Mine will comprise both opencast and underground mining. The construction phase of the mining activities consists of the excavation of the box-cuts for access to the opencast pits and the construction of the surface infrastructure on-site. Opencast mining will develop into two opencast pits. The underground mining will focus on extracting the No. 2 coal seam. The operation will start with the opencast operations before progressing to the underground mining sections. Opencast mining will involve stripping and stockpiling of topsoil followed by typical drill and blast production with truck-and-shovel rollover mining. Two or three strips will be exposed to allow room for mining purposes. Underground mining will utilise the bord-and-pillar technique using continuous mining equipment.

Coal will be processed on-site at a Coal Handling and Preparation Plant (CHPP) and then transported via haul roads from the site to the Lebombo border. Bulk water will be provided initially from a dewatering borehole well-field until the mine becomes water-positive, where after all excess water arising in the dirty water containment system will be utilised for processing purposes. All clean and dirty water will be kept separate, the dirty water system is adequately sized to contain a 1:50 year storm event; additionally, except for a small portion of the northern underground working, all surface infrastructure and mining areas are situated outside the 100 year floodline. All water captured in the above dirty water system will be recycled to the mine water circuit to reduce the requirement for make-up water. Electricity will be provided from Eskom. Discard arising at the plant will be dewatered via a filter press and stockpiled on-surface. Two portable sewage treatment plants will be installed which will cater for the CHPP and the mining operations respectively.

Following the project lifespan of 23 years, all surface infrastructure will be dismantled and the remaining denuded areas and surface stockpiles will be rehabilitated.

PUBLIC CONSULTATION

A public participation process, designed to engage all potential Interested and Affected Parties (IAPs) was undertaken to ascertain the concerns or issues regarding the proposed KaNgwane Anthracite Mine. The public consultation conducted during scoping included: the publication of media notices (in both English and SiSwati) in local newspapers; the distribution of a Background Information Document (BID) to authorities and IAPs; the erection of site notices (in both English and SiSwati) at public locations within the surrounding communities (three copies of the draft Scoping Report were also made available at these locations for public comment); a site-visit and authorities meeting; three public open days were held at separate locations within the closest surrounding communities to the proposed mine namely Tonga Steenbok and eMangweni where presentations in both in both English and SiSwati were made, while BIDs were distributed and any comments and issues were noted in the minute meetings and via the comment and response forms made available.

Assessment phase public consultation was conducted and consisted of the following: abridged versions of the draft EIA / EMP, as well as a full copy if the EIA / EMP, were made available within the surrounding communities for comment; copies of the draft EIA / EMP were sent to authorities for comment; three public open days, in Tonga, eMangweni and Steenbok, were held providing the IAPs with the opportunity to comment and raise queries; BIDs were distributed to all the IAPs attending the open days; and meetings were held with the affected sugarcane farmers in order to compile a plan to compensate each farmer for their capital, crop and return on future crops. Should any subsistence farmers, who will be affected by the proposed development, be identified, the same protocol, with regards to compensation, will be followed.

ENVIRONMENTAL IMPACT ASSESSMENT

The potential impacts of the proposed development on the receiving biophysical and socio-economic environment during construction, operation and decommissioning / closure were assessed during the EIA. The significance of potential impacts were rated using a standardised impact rating methodology.

Specialist studies were undertaken and conducted by the following individuals and companies:

- Groundwater and Hydrogeology – Future Flow Groundwater Project Managers;
- Socio-Economic – Core Earth Resources;
- Surface Water – African Environmental Development;
- Terrestrial, Wetlands and Aquatic – Koos De Wet Environmental Consultants;
- Soils, Land Use and Land Capability – Terra Soil Science;
- Archaeology - Archaetnos Culture & Cultural Resource Consultants;
- Air Quality – Airshed Planning Professionals;
- Traffic – UWP Consulting;
- Noise –JH Consulting; and
- Blasting and Vibrations – Blast Analysis Africa.

Key Findings of Environmental Impact Assessment

Impacts on the physical environment:

The surface water resources at the proposed KaNgwane Anthracite Mine are naturally not of a very high quality due to the underlying geology of the area - the salt load of the Mambane River is quite high, and the salt loads that the mining activities could potentially add to the River are minimal and thus will not be of high consequence. Anthracite coal mined at KaNgwane will contain very little sulphide material. Sulphides are required to produce acid mine drainage and without them, Acid Mine Drainage (AMD) production would not occur. The Komati River, which is of a better quality water than the Mambane River, is located further away from the mine than the Mambane River and will not be greatly influenced by the run-off from the mining site. The volumes of surface run-off in the small streams surrounding the mine will not make a difference on the salt load being discharged by the small streams into the Komati River. The design of the dirty water management system has further been validated to have sufficient capacity to manage the volume of water generated in a 50 year flood event of 24-hour duration. All surface infrastructure and opencast mining activities are situated outside the 100-year floodlines of the associated watercourses. The system has also been designed so that all potentially contaminated runoff arising at the Mine will be captured within the series of pollution control dams and re-used. The volume of water to be intercepted by the Mine is, however, negligible in comparison with the greater catchment Mean Annual Runoff.

The aquatic ecology in the surrounding streams and wetlands could potentially be affected by any contaminants arising at the Mine (e.g. hydrocarbons) being introduced into the aquatic ecosystems and wetlands should a failure of the dirty water management system occur. The fauna and flora located around and within the wetlands surrounding the site will likely be affected by the clearing of land. Erosion which leads to siltation and sedimentation can smother wetland habitats downstream which lead to aquatic species mortalities which in turn can contaminate the water resource. Alterations in the flow patterns due to the presence of the mine infrastructure and the clean-and-dirty stormwater management system can potentially affect the survival and functioning of the ecology of the wetland.

The groundwater quality of the study area is naturally also of relatively poor quality and associated with high salt loads. The potential impact of AMD at the proposed KaNgwane Anthracite Mine was calculated to be low in terms of Acid Base Accounting conducted, which illustrated that the geology is naturally low in sulphur which cannot lead to sustainable acid generation, and that any acid which may potentially arise in

the short-term is likely to be neutralised by the high neutralising potential. The dewatering of the mine workings will serve to decrease the volumes of water in the associated aquifers, but not enough to render the hydrocensus borehole identified dry at any point during the LOM. The cone of depression during the mining activities is not expected to extend any further than 2 000 m away from the mining area. Groundwater baseflow to the streams will thus be reduced. Seeing as the surrounding communities and local land users rely mostly on existing water mains from the municipal supply, and water from the Komati River as their main sources of water, the communities in the area should not be significantly affected by the drawdown of the groundwater due to the fact that they are not dependant on the groundwater for drinking purposes. The groundwater levels will recover once mining has ceased (over a period of approximately 20-35 years following closure of the Mine). Contamination from the discard dump is expected to migrate radially from the dump, due to the above-natural recharge rate. A groundwater mound is expected to form around the discard dump, with contamination moving towards the Mambane stream to the north and east of the site.

The loss of topsoil and thus a decrease in the agriculture potential associated with the stripping and stockpiling of topsoil in the area is considered significant during the construction and operational phases of the mine. Soil erosion, soil structure breakages, soil sterilisation and soil contamination are some of the impacts to potentially be exerted on the soil resources at the KaNgwane Anthracite Mine.

The clearance of land for the development of infrastructure and the related removal of fauna and flora can result in the degradation and potential destruction of the habitats within the mining area (and the further encroachment by invasive alien species). Invader floral species and weeds tend to become well established in areas which have been disturbed or cleared. Oil leaking or spilled from motorised equipment can introduce contaminants into the natural environment. The clearance of the proposed mine infrastructure footprint areas will result in habitat destruction; animals will flee to seek more suitable habitat elsewhere which will result in an overall reduction in faunal species diversity. Construction activities can also result in animal mortalities.

Impacts on the social environment:

The greatest potential for impacts on surrounding communities during blasting activities is the possible damages that may be incurred on non-mine property and possible injuries and / or loss of life that may result from fly-rock, although further potential impacts are associated with ground vibrations and air blasts (impacts of which are very difficult to predict). Considering that there are houses located within 500 m, and in some places, 200 m of the planned open-cast mining operations, stringent management measures are proposed that need to be implemented in order to minimise the significance of these impacts.

The intervals at which blasting operations will take place will not have any significant impact on humans or livestock (provided blasts are designed and carried out with due regard to good blasting practices). The two continuously noisy activities associated with opencast workings are drilling and the shovel and truck loading processes, additionally the management of coal stockpiles and loading of trucks using front end loaders all have the potential to increase the local ambient noise levels. Apart from the aforementioned, the noise generated by heavy vehicles moving to and from site (during all phases of the project) may have a marginal influence on the local soundscape.

Drilling, blasting, material and stockpile handling and truck loading process will take at the proposed KaNgwane Anthracite Mine resulting in the generation of fugitive dust. During all phases of the operation, transport trucks will travel to and from site; all road surfaces on-site are unpaved, thus vehicle-entrained dust emissions represents a significant source of fugitive dust which may impose nuisance conditions to local residents (the clearance of vegetation will exacerbate this negative impact). This in conjunction with particulate matter emanating from vehicle tailpipes will result in a local deterioration in air quality. Activities taking place at the processing plant (such as screening and crushing) as well as material handling processes (such as the unloading of overburden at the waste rock dump) result in increased particulate matter, fugitive dust, inhalable particles and fine particles on site which could exacerbate the overall deterioration in air quality. Furthermore, ventilation from underground mining operations may result in increased particulate matter (primarily coal dust) including inhalable particulates and fine particulates suspended in the air which lead to a further deterioration in the surrounding air quality. These potential impacts are considered to be significant and the recommended management and mitigation measures should be implemented in order to reduce the severity of the significance hereof.

A marginal increase in vehicle traffic on surrounding roads will be evident throughout the construction and decommissioning phases (the impact of which will be minimal). During the operational phase, the main impacts related to traffic will arise from the transport of coal product. Coal product will be transported in 32 ton interlink trucks from the East Access of the Mine to the Lebombo Borderpost. In order to effectively assess the potential impacts the transport route was divided into four sections. At two of the four sections it was found that additional traffic would likely impose a negative impact on already pressurised intersections, while the potential impact at the other two intersections was considered to be of low significance. The significance of all potential impacts in terms of traffic can be mitigated through the implementation of the management measures proposed in the EIA / EMP.

Three sites of cultural or heritage significance were identified in the study area, two of which were considered to be of no significance and are thus not worth retaining, however, Early Iron Age findings were discovered at one site and which is considered to be of high cultural significance and should be avoided.

Further to the above, there will potentially be both negative and positive socio-economic impacts imposed on the surrounding communities as a result of the proposed development. Negative impacts include: loss access to grazing and agricultural land, influx of job seekers and strain of bulk service infrastructure, however, positive impacts include: job creation, local procurement opportunities and the associated multiplier effect within the labour sending communities.

MAIN STREET 800

REVISED INTEGRATED EIA / EMP FOR THE KANGWANE ANTHRACITE PROJECT

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LIST OF ACRONYMS

ABA	Acid Base Accounting
AMD	Acid Mine Drainage
ARC	Agricultural Research Council
BID	Background information document
CEO	Community Engagement Officer
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
COB	Carbonaceous Overburden Dump
CR	Critically Endangered
CSIR	Council for Scientific and Industrial Research
DEA	Department of Environmental Affairs
DMR	Department of Mineral Resources
DWA	Department of Water Affairs
DWAF	Department of Water Affairs and Forestry
ECO	Environmental Control Officer
EIA	Environmental Impact Assessment
EIS	Ecological Importance and Sensitivity
EMP	Environmental Management Programme
EN	Endangered
FEPA	Freshwater Ecology Priority Areas
GAI	Geomorphologic Assessment Index
GGP	Gross Geographic Product
GTIS	Gross Tonnes In Situ
HRD	Human Resources Development
IAPs	Interested and Affected Parties
IEM	Integrated Environmental Management
ICMA	Inkomati Catchment Management Agency
IWULA	Integrated Water Use License Application
JWC	Joint Water Commission
KOBWA	Komati Basin Water Authority
LoM	Life of Mine
MAR	Mean Annual Rainfall
MBCP	Mpumalanga Biodiversity Conservation Plan
MBGL	Meters below Ground Level
MDALA	Mpumalanga Department of Agriculture and Land Administration
MDEDET	Mpumalanga Department of Economic Development, Environment and Tourism
MEC	Member of Executive Council
MPRDA	Mineral and Petroleum Resources Development Act No. 28 of 2002
MRA	Mining Right Application
MTIS	Million Tonnes In Situ
MTPA	Mpumalanga Tourism and Parks Agency

NAG	Net Acid Generating
NEMA	National Environmental Management Act No. 102 of 1998
NEMAQA	National Environmental Management Air Quality No. 39 of 2004
NEMBA	National Environmental Management Biodiversity Act No. 10 of 2004
NEMWA	National Environmental Management Waste Act No. 59 of 2008
NPR	Neutralising Potential Ratio
NSBA	National Spatial Biodiversity Assessment
NWA	National Water Act
OC1	Opencast Pit 1
OC2	Opencast Pit 2
PAI	Physico-Chemical Assessment Index
PCD	Pollution Control Dam
PES	Present Ecological State
PPP	Public Participation Process
RIHI	Riparian Index of Habitat Integrity
SABS	South African Bureau of Standards
SAHRA	South African Heritage Resources Agency
SANBI	South African National Biodiversity Institute
SANS	South African National Standards
SASS5	South African Scoring System Index
SLP	Social and Labour Plan
SPI	Specific Pollution Sensitivity
UG1	Underground Mining Area 1
UG2	Underground Mining Area 1
VEGRAI	Riparian Vegetation Response Assessment Index
VU	Vulnerable
WULA	Water Use License Application

APPLICANT'S UNDERTAKING

I, _____, in my capacity as _____ duly and properly authorised by Main Street 800 (Pty) Ltd, hereby declare that the information provided in this Integrated Environmental Impact Assessment and Environmental Management Programme, prepared for Mining Right Application (Ref: MP 30/5/1/2/3/2/1 (482) EM), in accordance with the National Environmental Management Act (NEMA) (Act 107 of 1998) and the Minerals and Petroleum Resources Development Act (MPRDA) (Act 28 of 2002), is true, complete, and correct. I understand that this undertaking is legally binding and that failure to give effect hereto will render the applicant liable for prosecution in terms of Section 98 (b) and 99 (1)(g) of the MPRDA.

Signed on this _____ day of _____ 20____ at _____(Place)

1. INTRODUCTION AND BACKGROUND

1.1. Applicant

Name of Applicant:	Main Street 800 (Pty) Ltd	
Contact person:	Mr. Mzwandile Nombewu	Mr. Adam Wilkinson
Physical Address:	12th Floor Nedbank Building 81 Main Street Marshalltown	15th Floor World Trade Centre Johannesburg Cnr. West Road South & Lower Road Morningside Sandton
Postal Address:	PO Box 62203, Marshalltown, 2107	Postnet Suite 393 Private Bag X9 Benmore 2010
Telephone Number:	011 832 2543	010 591 0630
Fax Number:	086 510 8065	086 726 9196
Cellular Number:	082 895 0311	084 562 3456
Commodity:	Anthracite / Coal	

1.2. Details of the Environmental Assessment Practitioner

Name of Environmental Assessment Practitioners	Prime Resources (Pty) Ltd
Physical Address:	70 - 7 th Avenue, Parktown North, Johannesburg
Postal Address:	PO Box 2316, Parklands, 2121
Telephone Number:	011 447 4888
Fax Number:	011 447 0355
Email:	prime@resources.co.za
Professional Affiliations:	PrEng; PrSciNat, SAIMM

As required in terms of Section 17 of GNR543, the EIA Regulations of 2010, the applicant has appointed Prime Resources (Pty) Ltd to conduct the scope associated with this draft Environmental Impact Assessment and Environmental Management Programme (EIA / EMP). Prime Resources is an environmental consulting specialist firm providing environmental and related services and which was established in 2003. Prime Resources was founded by Peter J. Theron, the Managing Director of the firm, who has over 26 years' experience in the field of environmental science and engineering. Jonathan van de Wouw, the Project Manager and Senior Scientist for the KaNgwane

Project, has five years' experience in the field of environmental science. Below are short *Curricula Vitae* of the project team leaders.

Peter Theron *BSc Civil Engineering, GDE (Hons.) Environmental Engineering*

Peter Theron is a Principal Environmental Consultant with 26 years' experience and Director of Prime Resources (Pty) Ltd. Peter began his professional career as a specialist geotechnical engineer, discard dump designer and later became involved in the technical aspects of mining and the environment. Implementation of environmental assessments, sustainable development, environmental project management, environmental due diligence and compliance auditing, geotechnical design, discard and waste management, mine closure and environmental costing are Peter's main areas of specialisation.

Jonathan van de Wouw *BSc (Hons)*

Jonathan is a senior environmental scientist with considerable experience managing projects in the mining sector, including the undertaking of Environmental Impact Assessments (EIAs) and the preparation of Environmental Management Programmes (EMPs), financial liability assessments associated with mine closure and rehabilitation, mine waste and water management planning, including the development of Integrated Water Use License Applications (IWULAs), environmental auditing, environmental due diligence. He also has a detailed knowledge of environmental law and precedents, both locally and internationally. Jonathan also has experience in integrated waste management planning solutions and mining right applications.

1.3. Background

Main Street 800 (Pty) Ltd "the Applicant" has targeted an anthracite resource in the Mpumalanga Province near the town of Komatipoort for the development of an opencast and future underground anthracite mining operation.

A prospecting right was granted to Siyanda Resources (Pty) Ltd "Siyanda" by the Department of Mineral Resources "DMR" in November of 2006 and a Mining Right Application (MRA) was submitted together with preliminary mine design work and preliminary environmental studies in January 2009, although no approval has yet been granted. Siyanda Resources have indicated that, by way of a transfer of prospecting rights in terms of Section 11 of the MPRDA, the KaNgwane Prospect is now an asset of Main Street 800.

Main Street 800 is required to undertake an EIA and submit an EMP to the Department of Mineral Resources (DMR) in support of the existing MRA as per Section 39 of MPRDA. Certain activities at the proposed KaNgwane Anthracite Mine are listed in terms of the EIA Regulations of 2010 (GNR544, 545 and 546) and therefore require that Environmental Authorisation is granted by MDEDET before they can commence.

1.4. Project Overview and Location

The proposed KaNgwane Anthracite Mine "KaNgwane" is located within the Magisterial District of Barberton, Mpumalanga Province. KaNgwane is situated 40km south east of the Komatipoort town

and 100km south west of the Mozambique border (Figure 1). KaNgwane falls under the jurisdiction of the Nkomazi Local Municipality (previously known as the KaMhlushwa Municipality). Nkomazi forms the eastern section of the Mpumalanga Province and is located approximately 350km east of Gauteng. Prominent towns within the municipality include Malelane, Komatipoort, Hectorspruit, Marloth Park, KaMhlushwa and KaMqhukheza. The residential areas and settlements surrounding KaNgwane include Sibayeni, Ka-Sibhejani, Emangweni and KwaZibukwane.

KaNgwane is located over the farms 476 – 478 and 485 JU, i.e. Walda, Joyce, Monson and Waanhoop (Figure 2).

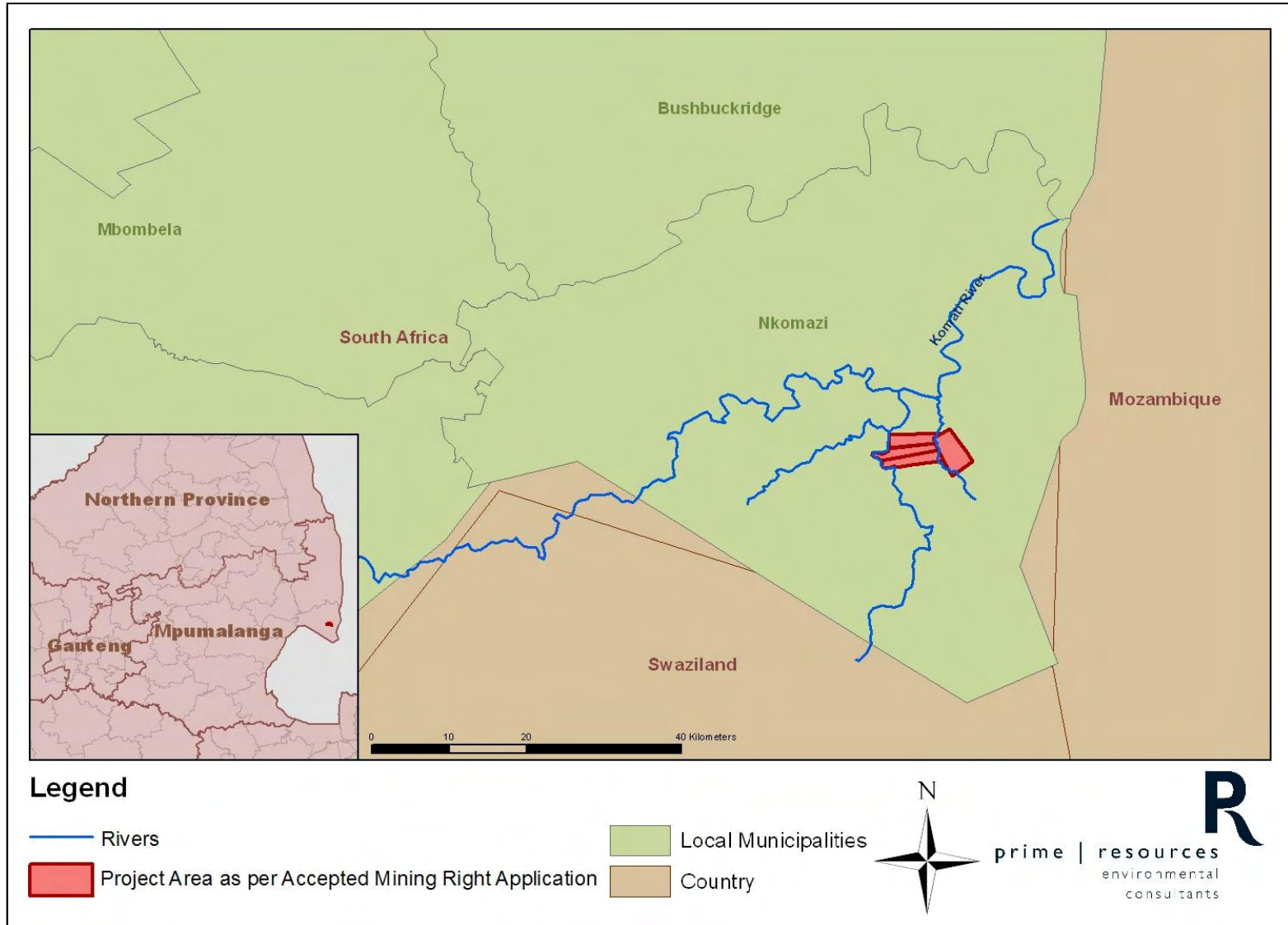


Figure 1: The locality of the KaNgwane Project Area within the Nkomazi Local Municipality, Mpumalanga, South Africa.

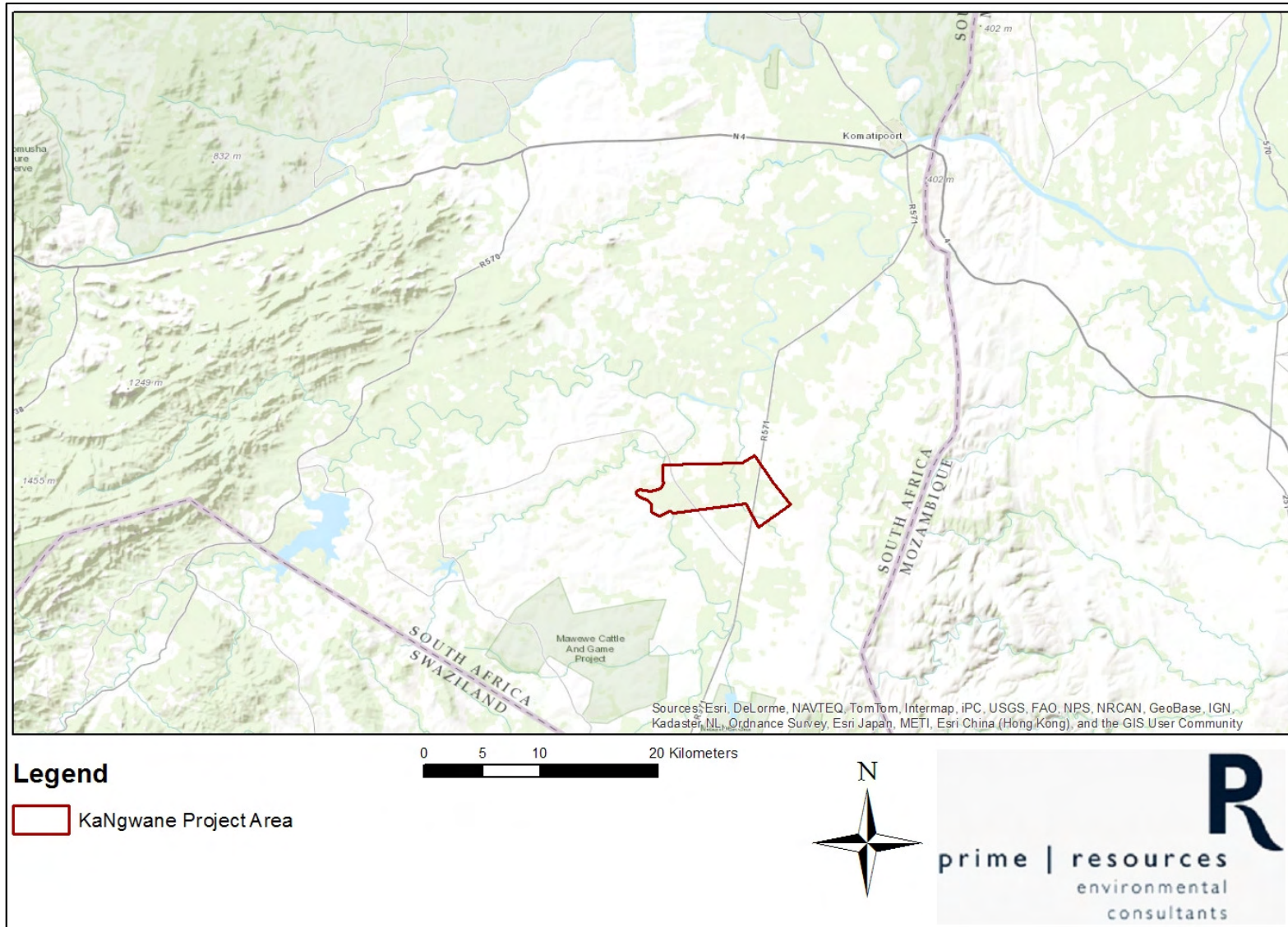


Figure 2: Locality plan of the Proposed KaNgwane Project Area.

1.5. Legal Requirements

South Africa's Constitution guarantees all its citizens the right to an environment that is not harmful to their health and / or wellbeing; and to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that prevent pollution and ecological degradation. The Constitutional obligations of the State to protect the environment with respect to new development can only be met through the implementation, enforcement and monitoring of effective legislation.

In order to protect the environment and ensure that the proposed development is undertaken in an environmentally responsible manner, the following pertinent laws apply and guide this assessment. They are as follows:

1.5.1. The Mineral and Petroleum Resources Development Act (No. 28 of 2002)

The MPRDA is the key legislation governing mining activities within South Africa. It details the requirements and processes which need to be followed and adhered to by mining companies. The DMR is the competent authority that deals with all mining related applications.

The MPRDA by definition:-

- Recognises that minerals and petroleum are non-renewable natural resources;
- Acknowledges that South Africa's mineral and petroleum resources belong to the nation and that the State is the custodian thereof.
- Affirms the State's obligation to protect the environment for the benefit of present and future generations, to ensure ecologically sustainable development of mineral and petroleum resources and to promote economic and social development.
- Recognises the need to promote local and rural development and the social upliftment of communities affected by mining.
- Reaffirms the State's commitment to reform to bring about equitable access to South Africa's mineral and petroleum resources.

This EIA and EMP have thus been prepared to meet the requirements of Regulation 50 and 51 of the MPRDA Regulations of GN527, April 2004:

MPRDA REGULATION 50 & 51	CONTENT	CHAPTER
EIA		
(a)	An assessment of the environment likely to be affected by the proposed mining operation, including cumulative environmental impacts	7
(b)	An assessment of the environment likely to be affected by the identified alternative land use or developments, including cumulative environmental impacts	7
(c)	An assessment of the nature, extent, duration, probability and significance	7

MPRDA REGULATION 50 & 51	CONTENT		CHAPTER
	of the identified potential environmental, social and cultural impacts of the proposed mining operation, including cumulative environmental impacts		
(d)	A comparative assessment of the identified land use and development alternatives and their potential environmental, social and cultural impacts		4
(e)	Determine the appropriate mitigatory measures for each significant impact of the proposed mining operation		7
(f)	Details of the engagement process of IAP followed during the course of the assessment and an indication of how the issues raised by IAPs have been assessed		6
(g)	Identify knowledge gaps and report on the adequacy of predictive methods, underlying assumptions and uncertainties encountered in compiling the required information		8
(h)	Description of the arrangements for monitoring and management of environmental impacts		11
(i)	Inclusion of technical and supporting information as appendices		Appendices
EMP			
(a)	Description of the environmental objectives and specific goals for -	(i) mine closure	12.4
		(ii) the management of identified environmental impacts emanating from the proposed mining operation	12.1
		(iii) the socio-economic conditions as identified in the social and labour plan	12.2
		(iv) historical and cultural impacts (if applicable)	12.3
(b)	An outline of the implementation programme must include -	(i) a description of the appropriate technical and management options chosen for each environmental impact, socio-economic condition and historical and cultural aspect for each phase of the mining operation	7
		(ii) action plans to achieve the objectives and specific goals contemplated in paragraph (a) which must include a time schedule of actions to be undertaken to implement mitigatory measures for the prevention, management and remediation of each environmental impact , socio-economic condition and historical and cultural aspect for each phase of the mining operation	7
		(iii) procedures for environmental related emergencies and remediation	1
		(iv) planned monitoring and environmental management programme performance assessment	11

MPRDA REGULATION 50 & 51	CONTENT		CHAPTER
		(v) financial provision in relation to the execution of the environmental management programme which must include (aa) the determination of the quantum of the financial provision contemplated in regulation 54 (bb) details of the method providing for financial provision contemplated in regulation 53	15
		(vi) an environmental awareness plan contemplated in section 39(3)(c) of the Act	14
		(vii) all supporting information and specialist reports that must be attached as appendices to the environmental management programme	Appendices
		(viii) an undertaking by the applicant to comply with the provisions of the Act and regulations thereto	Page 1

1.5.2. The National Environmental Management Act (No. 107 of 1998) and the Environmental Impact Assessment Regulations (GNR 543 of 2010)

This Act is enabling legislation intended to provide a framework for integrating environmental management into all developmental activities to promote co-operative environmental governance with regard to decision making by state organs on matters affecting the environment.

The principles of NEMA are laid out in Section 2:

- To avoid and minimize disturbance to ecosystems or loss of biological diversity and to rectify damage where possible;
- To avoid, minimize and remediate pollution and degradation;
- Avoid and minimize the creation of waste and to promote recycling and re-use where possible;
- Negative environmental impacts must be anticipated and prevented where possible, and where that is not possible, impacts must be minimised and remedied;
- The social and economic impacts must also be considered together with environmental impacts of activities when making decisions.

These principles lend themselves the ideal of Integrated Environmental Management (IEM). A vital component of the IEM principle is accountability to the various parties that may be interested in or affected by a proposed development. Public participation in the formulation of development proposals is a requirement of the IEM procedure, in terms of the identification of truly significant environmental impacts by IAPs.

The IEM procedure is designed to ensure that the environmental consequences of development proposals are understood and adequately considered during the conceptual design process,

allowing negative aspects to be resolved or mitigated and positive aspects to be enhanced. It is thus a code of practice for ensuring that environmental considerations are fully integrated into all stages of development, by providing a procedural and regulatory mechanism for EIA's. These regulatory mechanisms are supplied in the form of the EIA Regulations and the subsequent listings which provide a toolkit for the assessment of impacts based on the scope of the project.

Section 28 of NEMA further stipulates that every person who causes-, has caused or may cause significant pollution or degradation of the environment must take reasonable measures to prevent such pollution or degradation from occurring, continuing or recurring, or, in so far as such harm to the environment is authorised by law or cannot reasonably be avoided or stopped, to minimise and rectify such pollution or degradation of the environment. This section has been amended by the National Environmental Laws Amendment Act, No. 14 of 2009, which stipulates (in item 12), that the aforementioned duty of care to remediate applies to any significant pollution of degradation which:

- Occurred before the commencement of the Act,
- Arises or is likely to arise at a different time from the actual activity that caused the contamination; or
- Arises through an act or activity of a person that results in a change to pre-existing contamination.

The EIA Regulations of GN543, June 2010 (and updated in December 2010), serve to regulate the procedure and criteria for submitting, processing and considering decisions for applications for environmental authorisation in order to avoid the commencement of activities which may have a detrimental impact on the environment. These Regulations provide details on the process to be followed for the consultation of stakeholders and IAPs, the identification of the Competent Authority and the various timeframes and application requirements for environmental authorisation. A further three Regulations, GNR544, 545, 546, provide lists of activities for which environmental authorisation, either in the form of a Basic Assessment or Scoping and EIA / EMP, is required before the activity can commence.

The following activities listed in terms of the above are relevant to the proposed KaNgwane project:

Table 1: Listed activities at the proposed KaNgwane Anthracite Mine in terms of the EIA Regulations of 2010.

LISTING NOTICE	ACTIVITY NUMBER	LISTED ACTIVITY	DESCRIPTION
GNR544	22	The construction of a road, outside urban areas, (i) with a reserve wider than 13,5 meters or, (ii) where no reserve exists where the road is wider than 8 metres	The construction of access and haul roads.
GNR544	18	The infilling or depositing of any material of more than 5m ³ into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock from (i) a watercourse ...	For the construction of haul roads and stream-crossings
GNR545	5	The construction of facilities or infrastructure for any	Activities requiring a

LISTING NOTICE	ACTIVITY NUMBER	LISTED ACTIVITY	DESCRIPTION
		process or activity which requires a permit or license in terms of national or provincial legislation governing the generation or release of emissions, pollution or effluent and which is not identified in Notice No. 544 of 2010 or included in the list of waste management activities published in terms of section 19 of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) in which case that Act will apply.	Water Use License (Dewatering, Pollution Control Dams, Discard Dump etc.)
GNR545	15	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; except where such physical alteration takes place for: <ul style="list-style-type: none"> i. linear development activities; or ii. agriculture or afforestation where activity 16 in this Schedule will apply. 	The alteration of the current landscape for the development of the opencast pits and terraces for surface infrastructure

Although the activities listed above in terms of GNR544 require that a Basic Assessment (BA) process be followed in terms of Part 2 of GNR543, Section 20(2)(c) of GNR543 stipulates that a Scoping, EIA and EMP process in terms of Part 3 of GNR543 must be followed if the application pertains to two or more activities as part of the same development and any of the activities is listed in terms of GNR545, as is the case (refer to Table 1).

An application for Environmental Authorisation for the aforementioned activities has been accepted by the Mpumalanga Department of Economic Development, Environment and Tourism (MDEDET) on 6 June 2012 and has been allocated the reference number 17/2/3/E-154.

This EIA and EMP have been prepared to meet the requirements of GNR543, Section 31 and 33, as indicated below:

GNR543 SECTION 31 & 33	CONTENTS	CHAPTER
EIA		
2	An environmental impact assessment report must contain all information that is necessary for the competent authority to consider the application and to reach a decision contemplated in regulation 35 and must include -	
2(a)	Details of (i) the EAP who compiled the report and (ii) the expertise of the EAP to carry out an environmental impact assessment;	1.2
2(b)	A detailed description of the proposed activity;	3
2(c)	A description of the property on which the activity is to be undertaken and the location of the activity on the property, or if it is (i) a linear activity, a description of the route of the activity; or (ii) an ocean-based activity, the coordinates where the activity is to be undertaken	1.4

GNR543 SECTION 31 & 33	CONTENTS	CHAPTER
2(d)	A description of the environment that may be affected by the activity and the manner in which the physical, biological, social, economic and cultural aspects of the environment may be affected by the proposed activity;	7
2(e)	Details of the public participation process conducted in terms of subregulation (1). Including (i) steps undertaken in accordance with the plan of study; (ii) a list of persons, organisations and organs of state that were registered as interested and affected parties; (iii) a summary of comments received from. and a summary of issues raised by registered interested and affected parties, the date of receipt of these comments and the response of the EAP to those comments; and (iv) copies of any representations and comments received from registered interested and affected parties;	6
2(f)	A description of the need and desirability of the proposed activity;	5
2(g)	A description of identified potential alternatives to the proposed activity, including advantages and disadvantages that the proposed activity or alternatives may have on the environment and the community that may be affected by the activity;	4
2(h)	An indication of the methodology used in determining the significance of potential environmental impacts;	7.2
2(i)	A description and comparative assessment of all alternatives identified during the environmental impact assessment process;	4.3
2(j)	A summary of the findings and recommendations of any specialist report or report on a specialised process;	7
2(k)	A description of all environmental issues that were identified during the environmental impact assessment process, an assessment of the significance of each issue and an indication of the extent to which the issue could be addressed by the adoption of mitigation measures;	7
2(l)	An assessment of each identified potentially significant impact. Including (i) cumulative impacts; (ii) the nature of the impact; (iii) the extent and duration of the impact; (iv) the probability of the impact occurring; (v) the degree to which the impact can be reversed; (vi) the degree to which the impact may cause irreplaceable loss of resources; and (vii) the degree to which the impact can be mitigated;	7
2(m)	A description of any assumptions, uncertainties and gaps in knowledge	8
2(n)	A reasoned opinion as to whether the activity should or should not be authorised, and if the opinion is that it should be authorised, any conditions that should be made in respect of that authorisation;	To be included for NEMA
2(o)	An environmental impact statement which contains (i) a summary of the key findings of the environmental impact assessment; and (ii) a comparative assessment of the positive and negative implications of the proposed activity and identified alternatives;	To be included for NEMA
2(p)	A draft environmental management programme containing the aspects	9-15

GNR543 SECTION 31 & 33	CONTENTS	CHAPTER
	contemplated in regulation 33;	
2(q)	Copies of any specialist reports and reports on specialised processes complying with regulation 32;	Appendices
2(r)	Any specific information that may be required by the competent authority; and	None
2(s)	Any other matters required in terms of sections 24(4)(a) and (b) of the Act.	None
EMP		
A draft environmental management programme must comply with section 24N of the Act and include -		
(a)	Details of (i) the person who prepared the environmental management programme; and (ii) the expertise of that person to prepare an environmental management programme;	1.2
(b)	Information on any proposed management or mitigation measures that will be taken to address the environmental impacts that have been identified in a report contemplated by these Regulations, including environmental impacts or objectives in respect of (i) planning and design; (ii) pre~construction and construction activities; (iii) operation or undertaking of the activity; (iv) rehabilitation of the environment; and (v) closure, where relevant.	7
(c)	A detailed description of the aspects of the activity that are covered by the draft environmental management programme;	7
(d)	An identification of the persons who will be responsible for the implementation of the measures contemplated in paragraph (b);	11
(e)	Proposed mechanisms for monitoring compliance with and performance assessment against the environmental management programme and reporting thereon;	11
(f)	As far as is reasonably practicable, measures to rehabilitate the environment affected by the undertaking of any listed activity or specified activity to its natural or predetermined state or to a land use which conforms to the generally accepted principle of sustainable development, including, where appropriate, concurrent or progressive rehabilitation measures;	7
(g)	A description of the manner in which it intends to (i) modify, remedy, control or stop any action, activity or process which causes pollution or environmental degradation; (ii) remedy the cause of pollution or degradation and migration of pollutants; (iii) comply with any prescribed environmental management standards or practices; (iv) comply with any applicable provisions of the Act regarding closure, where applicable; (v) comply with any provisions of the Act regarding financial provisions for rehabilitation, where applicable;	7
(h)	Time periods within which the measures contemplated in the environmental management programme must be implemented;	11
(i)	The process for managing any environmental damage, pollution, pumping and treatment of extraneous water or ecological degradation as a result of undertaking a listed activity;	7
(j)	An environmental awareness plan describing the manner in which (i) the	14

GNR543 SECTION 31 & 33	CONTENTS	CHAPTER
	applicant intends to inform his or her employees of any environmental risk which may result from their work; and (ii) risks must be dealt with in order to avoid pollution or the degradation of the environment;	
(k)	Where appropriate, closure plans, including closure objectives	12.4 and 15

1.5.3. National Environmental Management: Air Quality Act (No. 39 of 2004)

The National Environmental Management Air Quality Act (NEMAQA) has placed the responsibility for air quality management on local authorities that will be tasked with baseline characterisation, management and operation of ambient monitoring networks, licensing of listed activities, and emissions reduction strategies. The main objective of the act is to ensure the protection of the environment and human health through reasonable measures of air pollution control within the sustainable (economic, social and ecological) development framework.

NEMAQA commenced on the 11th of September 2005 with the exclusion of the sections pertaining to the listing of activities and the issuing of atmospheric emissions licences. Listed Activities and associated Minimum Emission Standards were published in the Government Gazette on the 31st of March 2010 (No. 33064) as Section 21 of the AQA. The Atmospheric Pollution Prevention Act (APPA) of 1965 was repealed on the 1st of April 2010 bringing NEMAQA into full force.

According to the Air Quality Act, Provincial Government is primarily responsible for ambient monitoring and ensuring municipalities fulfil their legal obligations, with National Government primarily as policy maker and co-ordinator. Each sphere of government must appoint an Air Quality Officer responsible for co-ordinating matters pertaining to air quality management. Emission limits are generally provided for point sources and specify the amount of the pollutant acceptable in an emission stream and are often based on proven efficiencies of air pollution control equipment. Minimum Emission Standards associated with Listed Activities do not apply to the proposed KaNgwane Anthracite Mine.

The South African Bureau of Standards (SABS) was engaged to assist the Department of Environmental Affairs (DEA) in the development of ambient air quality standards. Standards were determined based on international best practice for PM₁₀ (particulates with an aerodynamic diameter of 10 micron), dust-fall, sulphur dioxide (SO₂), nitrogen dioxide (NO₂), ozone (O₃), carbon monoxide (CO), lead (Pb), benzene and recently PM_{2.5}. The new Standards were published in the Government Gazette (no. 32816) on 24 December 2009, while the PM_{2.5} standards were published on 29 June 2012.

As discussed in Section 7, particulate matter is the pollutant of concern in terms of the KaNgwane Anthracite Mine and the following standards will apply;

Table 2: National air quality standard for inhalable particulates (PM₁₀).

AVERAGING PERIOD	CONCENTRATION (µG/M ³)	FREQUENCY OF EXCEEDANCE	COMPLIANCE DATE
24 hour	120	4	Immediate
	75	4	1 Jan 2015
1 year	50	0	Immediate
	40	0	1 Jan 2015

Table 3: National air quality standard for fine particulates (PM_{2.5}).

AVERAGING PERIOD	CONCENTRATION (µG/M ³)	FREQUENCY OF EXCEEDANCE	COMPLIANCE DATE
24 hour	65	4	Immediate – 31 Dec 2015
	40	4	1 Jan 2016 – 31 Dec 2029
	25	4	1 Jan 2030
1 year	25	0	Immediate – 31 Dec 2015
	20	0	1 Jan 2016 – 31 Dec 2029
	15	0	1 Jan 2030

1.5.4. The National Heritage Resources Act (No. 25 of 1999)

The National Heritage Resources Act serves to protect and manage the South African heritage and cultural resources. These resources includes places, buildings, structures and equipment of cultural significance, historical settlements and townscapes, archaeological and paleontological sites, graves and burial grounds. The Act protects any heritage resources from damage by developments by stipulating in Section 38 that any person intending on undertaking any form of development which involves the activities listed below must, at the earliest stage of initiation, notify the South African Heritage Resources Association (SAHRA):

- A. the construction of a road, wall, powerline, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length;
- B. the construction of a bridge or similar structure exceeding 50m in length;
- C. any development or other activity which will change the character of a site—
 - i. exceeding 5 000 m² in extent; or
 - ii. involving three or more existing erven or subdivisions thereof; or
 - iii. involving three or more erven or divisions thereof which have been consolidated within the past five years; or
 - iv. the costs of which will exceed a sum set in terms of regulations by SAHRA or a provincial heritage resources authority;
- D. the re-zoning of a site exceeding 10 000m² in extent; or
- E. any other category of development provided for in regulations by SAHRA or a provincial heritage resources authority.

Of the developments listed above, items A and C(i) are invoked for the proposed KaNgwane Project. Section 38(8) of the Act states that if heritage considerations are taken into account as part of an application process undertaken in terms of NEMA and the EIA process, there is no need

to undertake a separate application in terms of the National Heritage Resources Act. As such, two studies were undertaken, a baseline assessment establish a broad framework of the potential heritage of the proposed area for development, followed-up by a Phase 1 Heritage Impact Assessment to identify sites, assess their significance, make comments on the impact of the development and make recommendations for mitigation or conservation. The Phase 1 baseline and assessment reports (see Appendix 5 for full reports) were submitted to SAHRA for review, as well as the first revision of the Integrated EIA / EMP. SAHRA has accepted the Phase 1 heritage report and has endorsed the goals outlined in Section 7.3.12., however they requested that a palaeontological study be completed to assess whether or not the development will impact upon significant palaeontological resources. This study was thus commissioned, the outcomes of which can be found in Section 2.11.4 and 10.11.1 below.

1.5.5. The National Water Act (No. 36 of 1998)

The National Water Act (NWA) regulates all matters relating to inland water resources. It thus operates as a management instrument with the lead authority being the Department of Water Affairs (DWA). This Act provides mechanisms for the prevention of the pollution of water resources to support the management of water as a renewable resource. Section 21 of the Act lists water uses for which authorisation is required from the DWA, while Section 39 identifies several water uses where the need for a license is dispensed with. The use of water for which a license is not required is also described.

Regulation 704 of 1999 provides regulations for the use of water for mining and related activities and is aimed to further protect water resources. These regulations describe how mining activities should be managed to protect water resources. The Act thus plays a crucial role in the mining process as many mining-related activities use water as listed in Section 21, thereby requiring approval from DWA.

A Water Use License Application (WULA) for KaNgwane is being prepared for KaNgwane for the following water uses identified in terms of Section 21:

Table 4: Water Uses Identified at KaNgwane Potentially Requiring a Water Use License.

APPLICABLE SECTION OF NWA	DESCRIPTION OF WATER USE	APPLIES TO
Section 21(a)	Taking of water from a water resource	Recycling water from dewatering of the aquifer associated with the opencast pits in the mine water circuit
Section 21(c)	Impeding the flow of water in a watercourse	There will be one low level stream crossing (25°42'58.50"S 31°50'5.42"E) All infrastructure within 500m of a wetland: Discard Dump (25°42'73.3"S 31°50'48.8"E) Storage Water Dam (25°42'95.8"S 31°49'87.6"E) Pollution Control Dam 1 (25°42'83.8"S 31°50'28.6"E) Pollution Control Dam 2 (25°42'50.2"S 31°48'81.0"E) Pollution Control Dam 3 (25°42'30.7"S 31°49'72.1"E)

APPLICABLE SECTION OF NWA	DESCRIPTION OF WATER USE	APPLIES TO
Section 21(i)	Altering the characteristics of a watercourse	Opencast Pit 1 (25°42'63.4"S 31°48'97.3"E) Opencast Pit 2 (25°42'15.4"S 31°48'75.7"E) Carbonaceous Dump (25°42'58.6"S 31°49'61.4"E) Non-carbonaceous Dump 1 (25°42'65.7"S 31°48'68.1"E) Non-carbonaceous Dump 2 (25°41'26.4"S 31°49'85.3"E) Topsoil Dump 1 (25°42'33.3"S 31°48'48.8"E) Topsoil Dump 1 (25°41'73.3"S 31°48'48.8"E)
Section 21(g)	The disposal / handling of waste or water containing waste that may potentially impact on a water resource	Pollution Control Dams 1, 2 and 3 Storage Water Dam Discard Dump Sewage Treatment Plant 1 and 2 Dust suppression on roads using PCD water Carbonaceous Dump
Section 21(j)	Dewatering of mine workings for the safety of men, materials and to ensure the efficiency of mining	Dewatering of the opencast pits and underground workings.

1.5.6. The National Environmental Management: Waste Act (No. 59 of 2008)

The NEMWA serves to reform the laws regulating waste management in order to protect public and environmental health by providing measures for the prevention of pollution and ecological degradation and to provide defining requirements for the licensing and control of waste management activities. The National Department of Environmental Affairs (DEA) and the local Competent Authorities (MDEDET in this case) regulate all matters pertaining to the NEMWA.

This Act replaces Section 20 of the Environmental Conservation Act, No. 73 of 1989 and provides measures for waste management covering the various aspects of activities which generate waste. The Minister of Environmental Affairs published a list of waste management activities that have, or are likely to have a detrimental effect on the environment, in terms of Section 19(1) of the NEMWA in GN718 of 2009. The undertaking of any of the activities described in this list, or the construction of facilities required for the activity, requires authorization in the form of a waste management license and the associated NEMA environmental process (either a Basic Assessment for Category A activities, or a full Scoping, EIA and EMP process for Schedule B activities).

The applicable activities proposed pertain to the temporary handling and transfer facilities for general and hazardous waste storage at the mine. The proposed KaNgwane Anthracite Mine will have a general waste area comprising seven 6 m³ containers, cumulatively 42m³ capacity. The plant area will have no more than two of these 6 m³ containers. The total capacity for general waste storage at KaNgwane is thus 54m³, which falls below the 100m³ threshold for licensing in terms of the NEMWA.

Further to the above, two temporary and portable sewage treatment facilities are to be installed at the proposed KaNgwane Anthracite Mine. While the licensing hereof in terms of Section 21 G of the National Water Act (described further above), the requirement for further licensing of these activities by the DEA in the form of a Waste Management License as per the following activities is currently being ascertained:

LISTING NOTICE	ACTIVITY NUMBER	LISTED ACTIVITY	DESCRIPTION
GN718	Category A, Item 11	The treatment of effluent, wastewater or sewage with an annual throughput capacity of more than 2 000 cubic meters but less than 15 000 cubic meters.	A sewage treatment plant will be built to the west of the pit next to the stockpile PCD, with a maximum annual throughput of 7300 cubic meter per year.
	Category A, Item 18	The construction of facilities for activities listed in Category A of this Schedule.	
GN718	Category A, Item 11	The treatment of effluent, wastewater or sewage with an annual throughput capacity of more than 2 000 cubic meters but less than 15 000 cubic meters.	A sewage treatment plant will be built at the processing plant PCD, with a maximum annual throughput of 2190 cubic meters per year.
	Category A, Item 18	The construction of facilities for activities listed in Category A of this Schedule.	

1.5.7. The National Environmental Management: Biodiversity Act (No. 10 of 2004)

The National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004) (NEMBA) has introduced a suite of new legal tools for biodiversity conservation outside protected areas, including listed threatened or protected ecosystems, listed threatened or protected species, bioregional plans, biodiversity management plans for ecosystems or species, and biodiversity management agreements.

NEMBA allows the Minister or a Member of the Executive Council (MEC) to list these threatened or protected ecosystems. The current list consists of national threatened ecosystems identified based on national criteria. NEMBA further provides for listing of threatened or protected ecosystems in one of the following categories:

- critically endangered (CR) ecosystems, being ecosystems that have undergone severe degradation of ecological structure, function or composition as a result of human intervention and are subject to an extremely high risk of irreversible transformation;
- endangered (EN) ecosystems, being ecosystems that have undergone degradation of ecological structure, function or composition as a result of human intervention, although they are not critically endangered ecosystems;
- vulnerable (VU) ecosystems, being ecosystems that have a high risk of undergoing significant degradation of ecological structure, function or composition as a result of human intervention, although they are not critically endangered ecosystems or endangered ecosystems; and

- protected ecosystems, being ecosystems that are of high conservation value or of high national or provincial importance, although they are not listed as critically endangered, endangered or vulnerable.

The purpose of listing threatened ecosystems is primarily to reduce the rate of ecosystem and species extinction. This includes preventing further degradation and loss of structure, function and composition of threatened ecosystems. The criteria and thresholds for nationally threatened ecosystems are summarised in Table 5.

Table 5: Criteria used to characterise nationally threatened ecosystems.

CRITERION	CR	EN	VU
A1: Irreversible loss of natural habitat	Remaining natural habitat = biodiversity target	Remaining natural habitat= (biodiversity target + 15 %)	Remaining natural habitat= 60 % of original area of ecosystem
A2: Ecosystem degradation and loss of integrity	60 % of ecosystem significantly degraded	40 % of ecosystem significantly degraded	20 % of ecosystem significantly degraded
B: Rate of loss of natural habitat			
C: Limited extent and imminent threat		Ecosystem extent= 3 000 ha and imminent threat	Ecosystem extent= 3 000 ha and imminent threat
D1: Threatened plant species associations	80 threatened Red Data List Plant Species	60 threatened Red Data List Plant Species	40 threatened Red Data List Plant Species
D2: Threatened animal species associations			
E: Fragmentation			
F: Priority areas for meeting explicit biodiversity targets as defined in systematic biodiversity plan	Very high irreplaceability and high threat	Very high irreplaceability and medium threat	Very high irreplaceability and low threat

Threatened Species

Chapter 4, Part 2 of NEMBA provides for listing of species as threatened or protected species. If a species is listed as threatened, it must be further classified as CR, EN or VU. The Act defines these classes as follows:

- Critically endangered: any indigenous species facing an extremely high risk of extinction in the wild in the immediate future.
- Endangered: any indigenous species facing a high risk of extinction in the wild in the near future, although it is not a critically endangered species.
- Vulnerable: any indigenous species facing an extremely high risk of extinction in the wild in the medium-term future; although it is not a critically endangered species or an endangered species.
- Protected: any species which is of such high conservation value or national importance that it requires national protection. Species listed in this category will include, among others, species listed in terms of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES).

Certain activities are regulated on these listed species, via permits obtained under NEMBA Regulations. Restricted activities include the keeping, moving, damaging/harming, having in possession, importing and exporting, and selling of species.

The KaNgwane Mining Area lies within an ecosystem classified as 'least concern' which is not endangered, protected or vulnerable and the presence of any such species identified in terms of the Act are further discussed in Section 2.5 below.

2. DESCRIPTION OF THE PRE-OPERATION ENVIRONMENT

2.1. Introduction

This section serves to briefly summarise the baseline conditions of the receiving environment for KaNgwane, attained both from desktop research and specialist studies conducted. This section will also highlight any sensitive environments identified.

2.2. Climate

The area associated with the proposed KaNgwane Anthracite Mine has a hot and humid climate, receiving moisture from the nearby Indian Ocean off the Mozambique coast. In summer months, humidity can reach up to a maximum of 94%.

2.2.1. Local Wind Field

According to the wind roses for the area for the period 2009 to 2011 the dominant wind direction is from the south and south southwest. The north-north-easterly wind flow increases during daytime conditions with easterly wind flow increasing during the night (Figure 3).

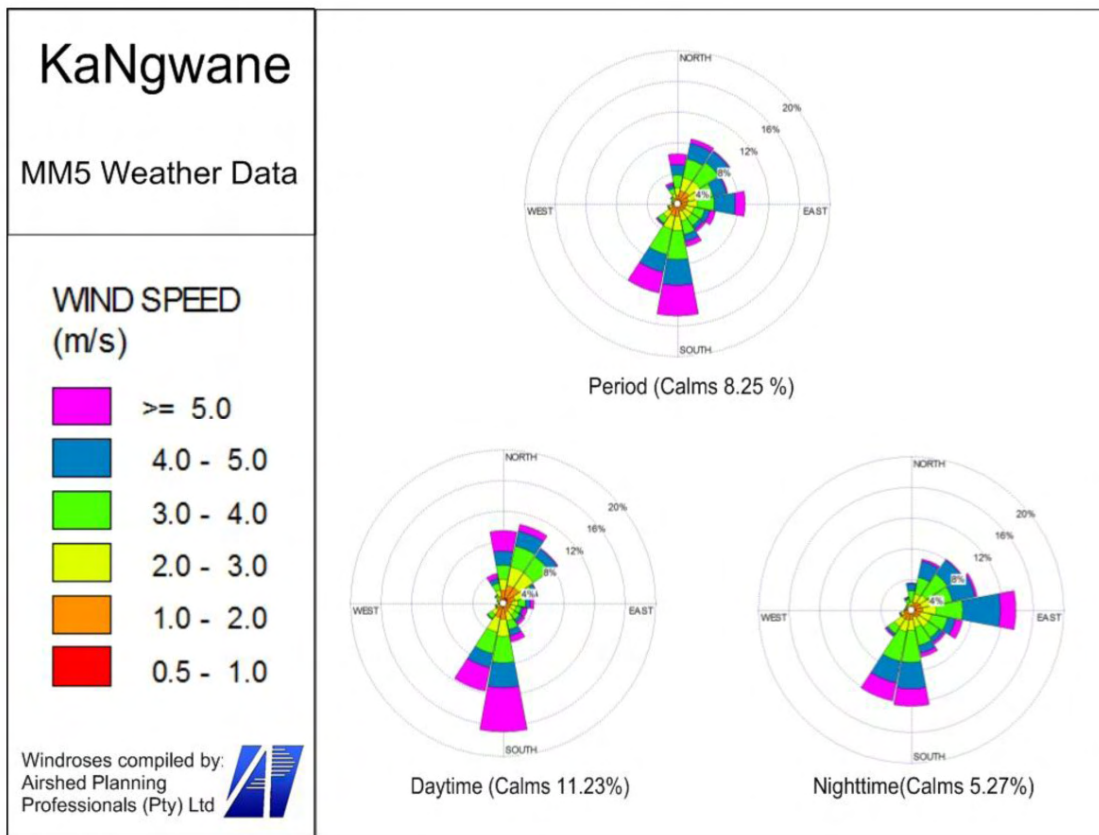


Figure 3: Wind roses for the proposed project area for the period 2009 to 2011.

2.2.2. Temperature

As indicated in the Air Quality Impact Assessment Report by Airshed Planning Professionals, the annual mean temperature for the site for the period 2009 to 2011 (Figure 4) is given as 21.3°C. Average daily maximum temperatures range from 35.8°C in December to 25.5°C in July, with average daily minimum temperatures ranging from 8.9°C in June to 19.6°C in December.

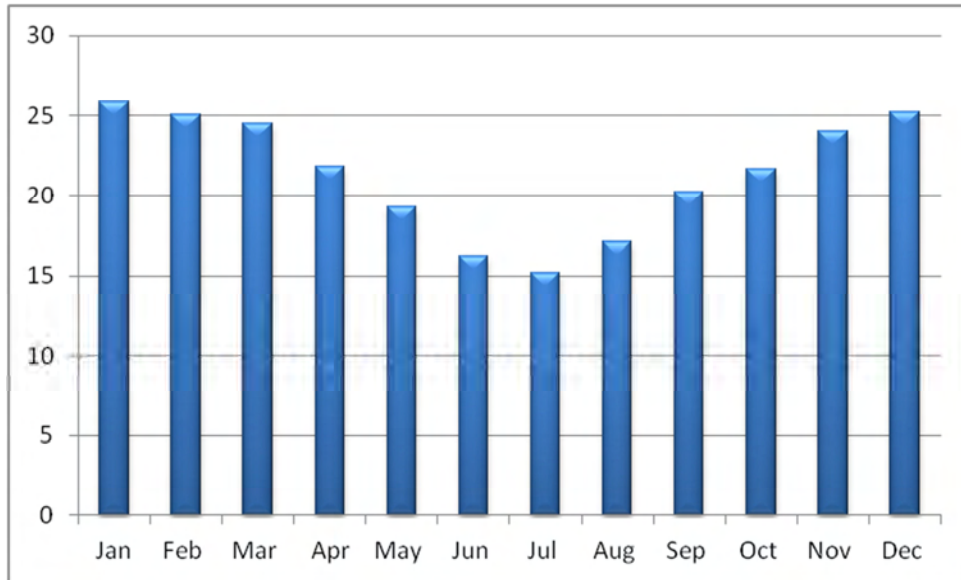


Figure 4: Mean monthly temperatures in the proposed project area.

2.2.3. Rainfall

According to the Surface Water Report by AED, the rainfall (Figure 5) and evaporation (Figure 6) in the proposed project area vary significantly from year to year and also over significant periods of time (several years). In general, when the rainfall increases, the evaporation decreases and vice versa and over the period 1960 – 2009 the rainfall has gradually increased and the evaporation decreased. The average rainfall over time in the area is 493 mm per annum and the average S-Pan evaporation over time is 1544 mm per annum.

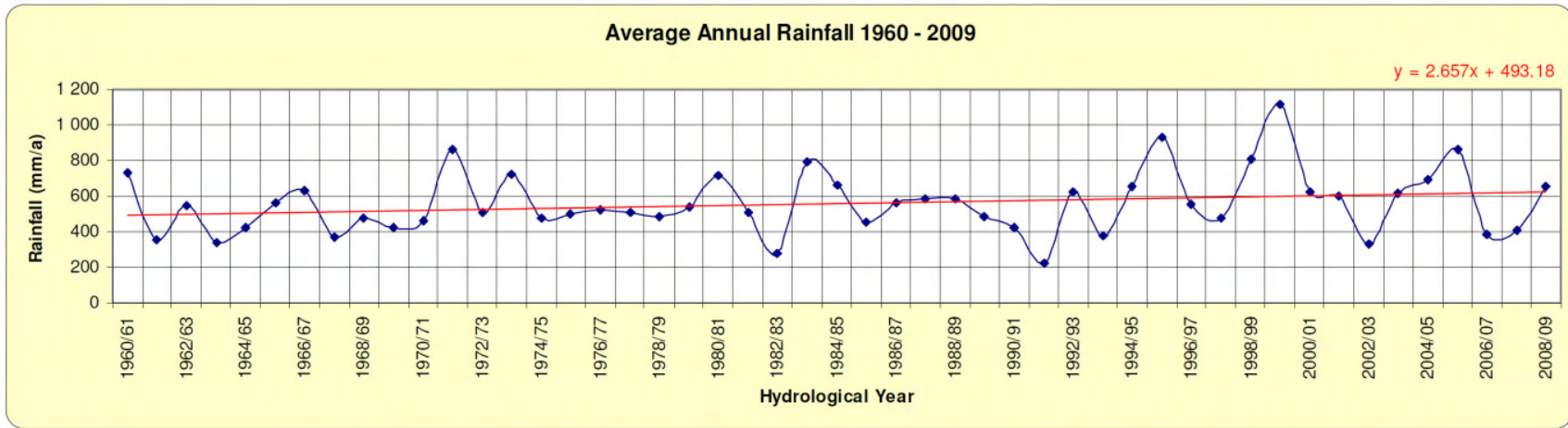


Figure 5: Average annual rainfall for the proposed project area.

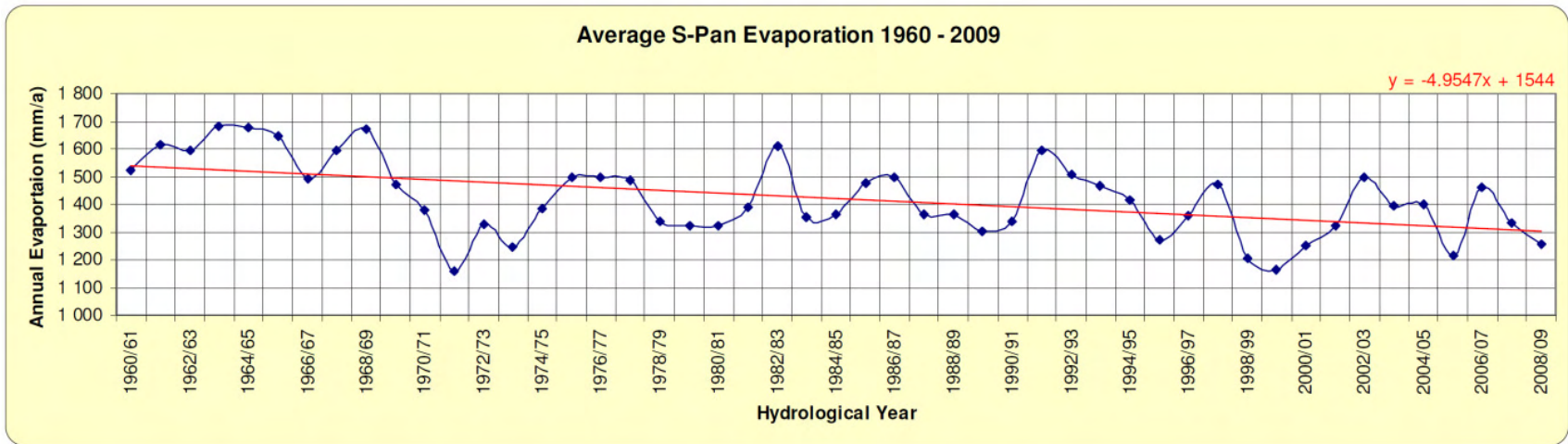


Figure 6: Average annual S-Pan evaporation for the proposed project area.

2.3. Topography

The general landscape of the study area is characterised by wide-spread flat terrain with slight sloping areas (Figure 7).

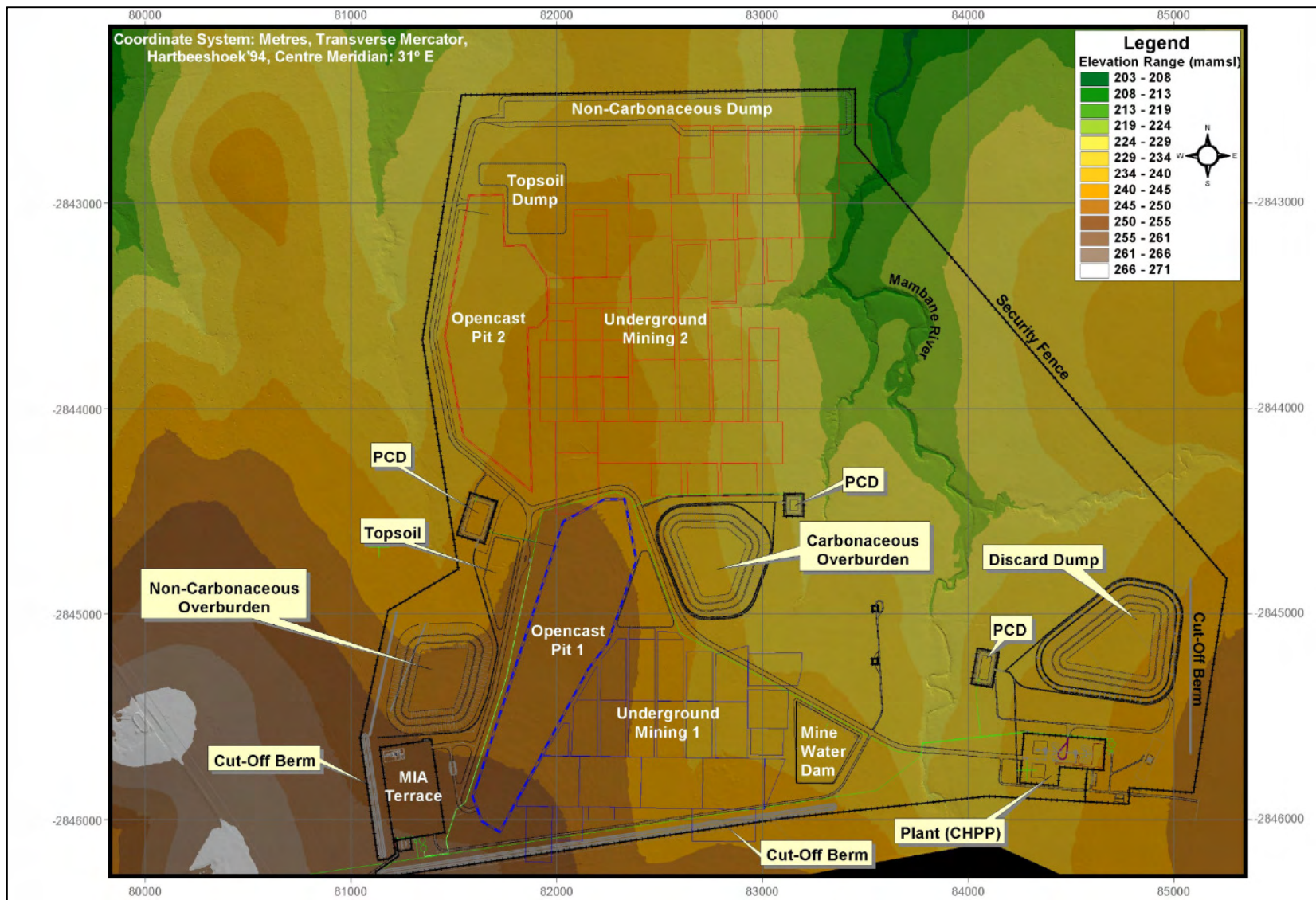


Figure 7: Topographical elevation model illustrating the topography of the proposed project area.

2.4. Geology

According to Groundwater Impact Assessment Study conducted by Future Flow in 2012, the geology in the area is generally comprised of green, fine-grained mafic lava of the Letaba Formation of the Lebombo group of the Karoo Sequence. It also includes the Tshipise member cream-coloured, fine grained, massive sandstones of the Clarens Formation of the Lebombo Group of the Karoo Sequence. There are undifferentiated Karoo Sequence sandstones below the above mentioned Letaba sandstones which make up a large portion of the project area.

According to PC Meyer (PC Meyer Consulting, 2011) the sedimentary units in the study area intersected in the boreholes indicated that deposition in the western area, where the anthracite seams are found, was on a stable platform resulting in a relatively thin sequence of sandstones and subordinate shales. On the western margin deposition and contemporaneous erosion occurred. The sediments in which the anthracite seams are found dip gently at angles of 5 to 8 degrees to the east. A steepening of the dip to >20 degrees will be found further to the east as the Lebombo monocline is approached.

Faulting occurs generally in a north to south direction with displacements up to and exceeding 50 m. In addition dykes intruded in the fault panes and sills displaced and burnt the anthracite seams. The Middle Ecca Formation thins from the south to the north on strike as shown by the sandstone partings between the different anthracite seams. In the southern area, the Upper and Middle Seams are separated by 50 m of sediments, while the Middle and Lower are separated by 20 m of sediments. In the northern area this decreases to 8.5 and 0.7 m respectively. From west to east, however, the succession thickens.

The anthracite seams have a tendency to thicken from south to north on a regional scale while a thinning is normally encountered from west to east in the area of the KaNgwane Coalfield and may consist of up to five benches of different appearance and quality. Seam 4 varies in thickness between 2.5 m and 6.5 m; the coal is predominantly dull. Seam 5 consists of predominantly bright coal and has an average thickness of about 1.8 m.

2.5. Terrestrial Biodiversity

Koos de Wet conducted a terrestrial biodiversity baseline study of the proposed KaNgwane project area in December 2011 while a follow-up assessment was conducted in October 2012 (see Appendix 1). The aim of this survey was to establish the degree of ecological sensitivity and identify factors that cause instability in the various floral and faunal types.

The study area occurs entirely within the Vegetation Type Zululand Lowveld (which is considered to be Vulnerable) (Figure 8)

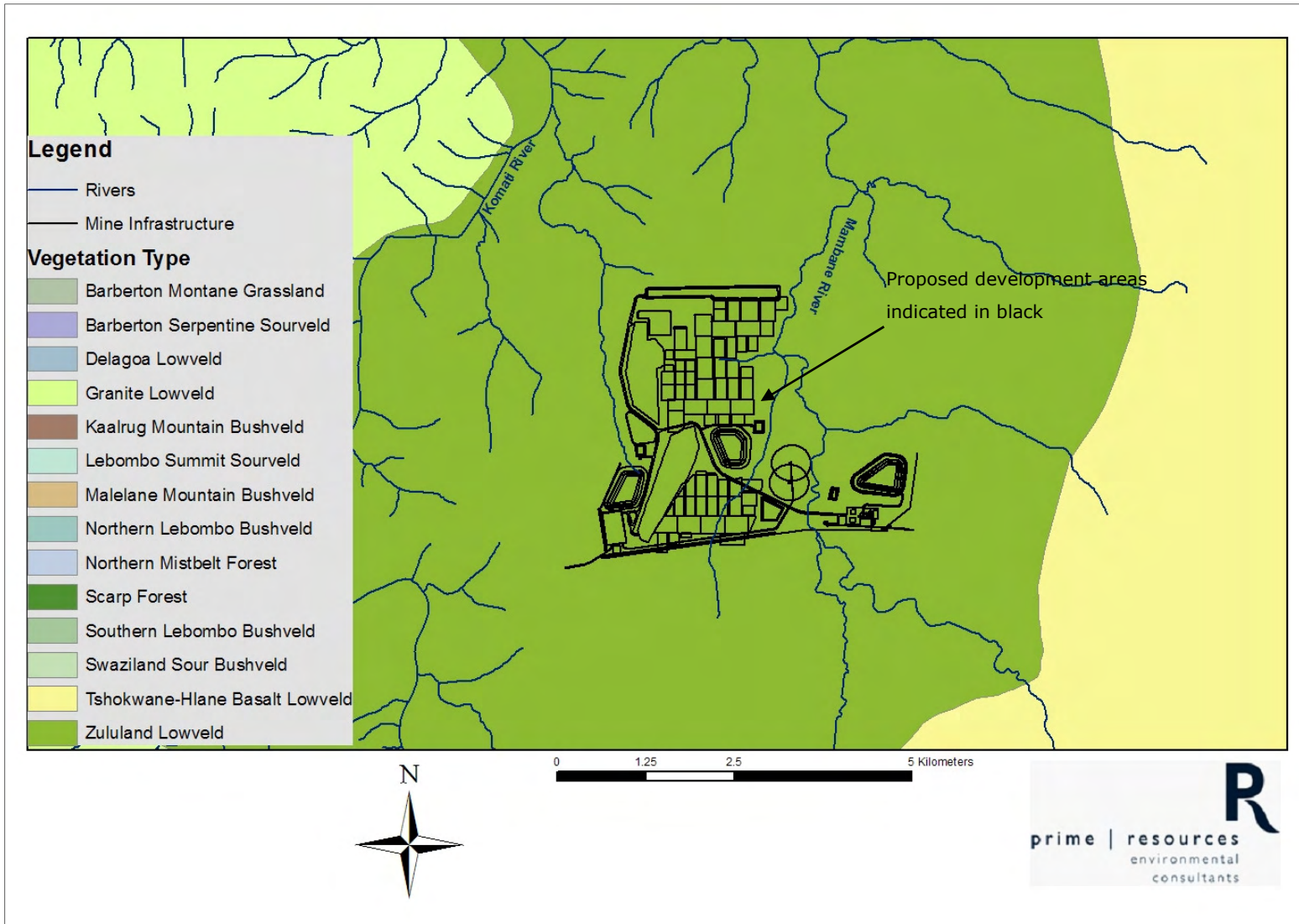


Figure 8: Vegetation types associated with the KaNgwane project area.

2.5.1. Flora

Apart from the sugarcane fields to the west of the site, the study area plays host to various grassveld types, dense thickets (eg. *Acacia* species), savannah-type trees and shrubs. While over 200 plants were recorded at several sites to obtain a general overview of present species, two Terrestrial Biodiversity Assessment Plots were surveyed within the study area, one in disturbed natural veld in the vicinity of the proposed explosives storage area (Site 1), and one in less disturbed natural veld East of the R571 (Site 2). Within these plot sites, 55 plant species were recorded and are listed in order of relative abundance in Table 6 below. No species of conservation concern were identified.

Table 6: Plant species recorded in the vegetation diversity sites, ranked in order of relative abundance.

SPECIES	SITE 1	SITE 2	TOTAL
<i>Dichrostachys cinerea</i>	32	16	48
<i>Acacia nigrescens</i>	18	29	47
<i>Themeda triandra</i>	0	41	41
<i>Gymnosporia senegalensis</i>	40	0	40
<i>Albizia harveyi</i>	14	22	36
<i>Panicum maximum</i>	32	0	32
<i>Flueggea virosa</i>	18	13	31
<i>Combretum apiculatum</i>	0	28	28
<i>Bothriochloa insculpta</i>	0	21	21
<i>Dalbergia armata</i>	0	19	19
<i>Jasminum fluminense</i>	18	0	18
<i>Cenchrus ciliaris</i>	0	18	18
<i>Sclerocarya caffra</i>	6	10	16
<i>Acacia gerrardii</i>	0	16	16
<i>Schotia brachypetala</i>	15	0	15
<i>Acacia grandicornuta</i>	15	0	15
<i>Ehretia amoena</i>	6	8	14
<i>Spirostachys africana</i>	12	0	12
<i>Grewia flava</i>	0	12	12
<i>Ziziphus mucronata</i>	0	12	12
<i>Combretum hereroense</i>	11	0	11
<i>Acacia karroo</i>	11	0	11
<i>Euclea natalensis</i>	10	0	10
<i>Asparagus virgatus</i>	10	0	10
<i>Urochloa mossambicense</i>	10	0	10
<i>Cocculus hirsutus</i>	9	0	9
<i>Rhynchosia totta</i>	8	0	8
<i>Asparagus sp.</i>	0	8	8
<i>Cissus cornifolia</i>	0	8	8
<i>Ehretia rigida</i>	0	8	8
<i>Euclea divinorum</i>	8	0	8
<i>Gymnosporia heterophylla</i>	0	8	8

SPECIES	SITE 1	SITE 2	TOTAL
<i>Lonchocarpus capassa</i>	6	2	8
<i>Stylochiton natalensis</i>	8	0	8
<i>Boophane disticha</i>	0	6	6
<i>Cyphostemma simulans</i>	4	2	6
<i>Ozoroa paniculata</i>	2	4	6
<i>Searsia gueinzii</i>	6	0	6
<i>Tragia dioica</i>	6	0	6
<i>Berchemia zeyheri</i>	5	0	5
<i>Bridelia cathartica</i>	4	0	4
<i>Commiphora africana</i>	2	2	4
<i>Ipomoea crassipes</i>	4	0	4
<i>Terminalia prunoides</i>	0	4	4
<i>Diospyros mespiliformis</i>	2	0	2
<i>Pavonia patens</i>	2	0	2
<i>Bolusanthus speciosa</i>	0	2	2
<i>Combretum imberbe</i>	2	0	2
<i>Cordia ovalis</i>	0	2	2
<i>Dioscorea cotinifolia</i>	2	0	2
<i>Gardenia volkensii</i>	0	2	2
<i>Justicia flava</i>	0	2	2
<i>Lannea discolor</i>	0	2	2
<i>Ormocarpum trichocarpum</i>	2	0	2
<i>Vigna vexillata</i>	2	0	2

47 of the plant species recorded in the study area have a traditional use for either "People Medicinal", "Animal Medicinal", "Magical", or "Harmful if Administered Incorrectly".

Very few species protected by Provincial or National legislation could be identified in the study area (see Table 7). No species protected in terms of the Threatened and Protected Species Regulations could be found.

Table 7: Protected plant species found in the study area.

FAMILY	SPECIES	MTPA	FA
Amaryllidaceae	<i>Boophane disticha</i>	P	
Iridaceae	<i>Watsonia sp</i>	P	
Anacardiaceae	<i>Sclerocarya birrea ssp caffra</i>		P
Combretaceae	<i>Combretum imberbe</i>		P
Euphorbiaceae	<i>Spirostachys africana</i>	P	

The entire study area falls within "No Natural Habitat Remaining" and "Least Concern" classification, according to the Terrestrial Assessment of the MTPA Biodiversity Conservation Plan (Figure 9). This implies that the area is of no significant importance for the conservation of biodiversity in the Mpumalanga province. Very few elements of the original vegetation types are found in the study area.

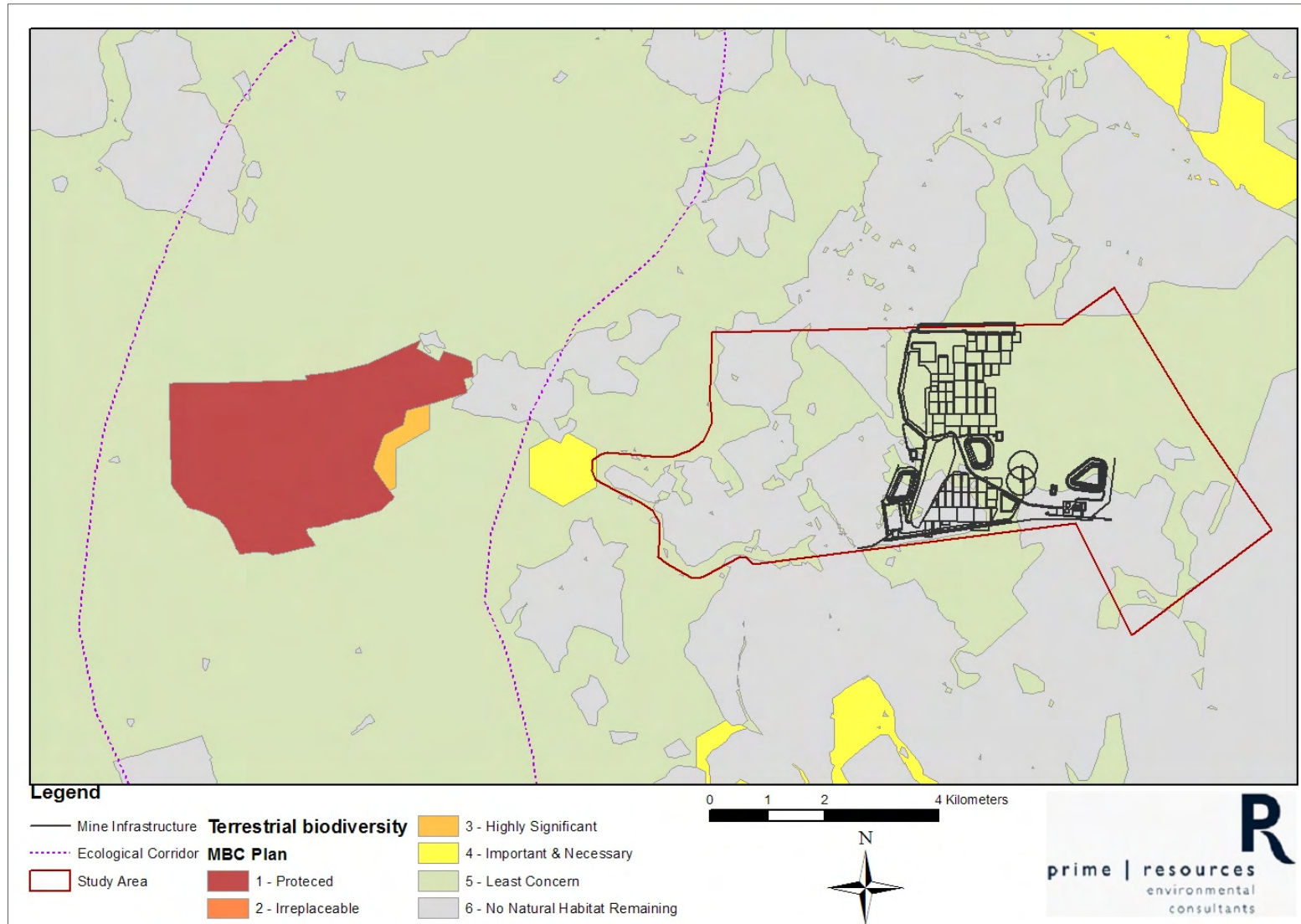


Figure 9: Mpumalanga Biodiversity Conservation Plan (MBCP) assessment for the KaNgwane Project Area.

2.5.2. Fauna

Mammals

Due to the current and past extensive agricultural activity, grazing by cattle and goats and the disturbance of the natural vegetation, together with constant human movement throughout the study area, few mammals are expected to occur. The small mammal trapping exercise did, however, reveal the presence of the Bushveld Gerbil (*Tatera leucogaster*) and Tete Veld Rat (*Aethomys ineptus*). Signs of animal activity were recorded within the wetland areas at KaNgwane (see Section 3.10 below). No protected species were identified. In terms of larger mammals, the spoor and pathways of Hippopotamus (*Hippopotamus amphibius*) were sighted in the study area. Mammals that are likely to occur in the wetlands and aquatic systems include: Cape Clawless Otter (*Aonyx capensis*), Water Mongoose (*Atilax paludinosus*), Large-spotted Genet (*Genetta tigrina*) and the Serval (*Leptailurus serval*). The Serval's conservation status is considered to be Near Threatened.

Birds

According to the Roberts Multimedia Birds of Southern Africa a total of 409 species can occur in and / or adjacent to the study area (a complete list of these species is contained in Appendix 1 of this document). A total of 64 species were recorded during the field survey and are indicated in Table 8 below. In spite of the activities which have exerted negative impacts on the natural environment there is still a variety of suitable habitats left in the study area. The study area is considered to be of reasonable importance for the protection of avifauna.

Table 8: Bird Species Identified within Study Area.

ROB	ENGLISH NAME	SCIENTIFIC	MAP STATUS
264	Common Sandpiper	<i>Actitis hypoleucos</i>	NBM-C
431	Malachite Kingfisher	<i>Alcedo cristata</i>	R-U
102	Egyptian Goose	<i>Alopochen aegyptiacus</i>	R-VC
855	Cutthroat Finch	<i>Amadina fasciata</i>	R-C
105	African Black Duck	<i>Anas sparsa</i>	R-C
104	Yellowbilled Duck	<i>Anas undulata</i>	R-U
572	Sombre Bulbul	<i>Andropadus importunus</i>	R-VC
60	Darter	<i>Anhinga rufa</i>	R-C
62	Grey Heron	<i>Ardea cinerea</i>	R-C
63	Blackheaded Heron	<i>Ardea melanocephala</i>	R-U
65	Purple Heron	<i>Ardea purpurea</i>	R-C
395	Marsh Owl	<i>Asio capensis</i>	R-U
700	Cape Batis	<i>Batis capensis</i>	R-VC
701	Chinspot Batis	<i>Batis molitor</i>	R-VC
94	Hadeda Ibis	<i>Bostrychia hagedash</i>	R-VC
638	African Sedge Warbler	<i>Bradypterus baboecala</i>	R-C
401	Spotted Eagle Owl	<i>Bubo africanus</i>	R-C

ROB	ENGLISH NAME	SCIENTIFIC	MAP STATUS
71	Cattle Egret	<i>Bubulcus ibis</i>	R-VC/A
297	Spotted Dikkop	<i>Burhinus capensis</i>	R-C
149	Steppe Buzzard	<i>Buteo vulpinus</i>	NBM-C
391	Burchell's Coucal	<i>Centropus burchellii</i>	R-VC
428	Pied Kingfisher	<i>Ceryle rudis</i>	R-VC
249	Threebanded Plover	<i>Charadrius tricollaris</i>	R-VC
386	Diederik Cuckoo	<i>Chrysococcyx caprius</i>	BM-C
165	African Marsh Harrier	<i>Circus ranivorus</i>	R-U
382	Jacobin Cuckoo	<i>Clamator jacobinus</i>	BM-C
424	Speckled Mousebird	<i>Colius striatus</i>	R-VC
348	Feral Pigeon	<i>Columba livia</i>	R-U/C
548	Pied Crow	<i>Corvus albus</i>	R-C/A
373	Grey Lourie	<i>Corythaixoides concolor</i>	R-VC
378	Black Cuckoo	<i>Cuculus clamosus</i>	BM-U
421	Palm Swift	<i>Cypsiurus parvus</i>	R-C
541	Forktailed Drongo	<i>Dicrurus adsimilis</i>	R-A
740	Puffback	<i>Dryoscopus cubla</i>	R-A
127	Blackshouldered Kite	<i>Elanus caeruleus</i>	R-C/VC
884	Goldenbreasted Bunting	<i>Emberiza flaviventris</i>	R-VC
846	Common Waxbill	<i>Estrilda astrild</i>	R-VC
828	Redshouldered Widow	<i>Euplectes axillaris</i>	R-VC
824	Red Bishop	<i>Euplectes orix</i>	R-VC
148	African Fish Eagle	<i>Haliaeetus vocifer</i>	R-C
764	Glossy Starling	<i>Lamprotornis nitens</i>	E-VC
736	Southern Boubou	<i>Laniarius ferrugineus</i>	E-VC
732	Fiscal Shrike	<i>Lanius collaris</i>	R-A
438	Eurasian Bee-eater	<i>Merops apiaster</i>	NBM-VC
126.1	Yellowbilled Kite	<i>Milvus aegyptius</i>	BM-U/C
713	Cape Wagtail	<i>Motacilla capensis</i>	R-U
741	Brubru	<i>Nilaus afer</i>	R-VC
203	Helmeted Guinea fowl	<i>Numida meleagris</i>	R-VC
356	Namaqua Dove	<i>Oena capensis</i>	R-C
58	Reed Cormorant	<i>Phalacrocorax africanus</i>	R-VC
55	Whitebreasted Cormorant	<i>Phalacrocorax lucidus</i>	R-VC
116	Spurwinged Goose	<i>Plectropterus gambensis</i>	R-C
811	Spottedbacked Weaver	<i>Ploceus cucullatus</i>	R-VC
683	Tawnyflanked Prinia	<i>Prinia subflava</i>	R-VC
568	Blackeyed Bulbul	<i>Pycnonotus tricolor</i>	R-A
81	Hamerkop	<i>Scopus umbretta</i>	R-VC
354	Cape Turtle Dove	<i>Streptopelia capicola</i>	R-A
352	Redeyed Dove	<i>Streptopelia semitorquata</i>	R-VC
743	Threestreaked Tchagra	<i>Tchagra australis</i>	R-VC
265	Green Sandpiper	<i>Tringa ochropus</i>	NBM-U

Table 10: Amphibians Potentially Occuring in Grid Square 2531DD.

FAMILY	GENUS	SPECIES
Arthroleptidae	<i>Leptopelis</i>	<i>mossambicus</i>
Brevicipitidae	<i>Breviceps</i>	<i>adpersus</i>
Brevicipitidae	<i>Breviceps</i>	<i>sopranus</i>
Bufo	<i>Amietophrynus</i>	<i>garmani</i>
Bufo	<i>Amietophrynus</i>	<i>gutturalis</i>
Bufo	<i>Amietophrynus</i>	<i>maculatus</i>
Bufo	<i>Amietophrynus</i>	<i>rangeri</i>
Bufo	<i>Poyntonophrynus</i>	<i>fenoulheti</i>
Bufo	<i>Schismaderma</i>	<i>carens</i>
Hemisotidae	<i>Hemisis</i>	<i>marmoratus</i>
Hyperoliidae	<i>Afrivalus</i>	<i>aureus</i>
Hyperoliidae	<i>Hyperolius</i>	<i>marmoratus</i>
Hyperoliidae	<i>Hyperolius</i>	<i>pusillus</i>
Hyperoliidae	<i>Hyperolius</i>	<i>tuberilinguis</i>
Hyperoliidae	<i>Kassina</i>	<i>maculata</i>
Hyperoliidae	<i>Kassina</i>	<i>senegalensis</i>
Microhylidae	<i>Phrynomantis</i>	<i>bifasciatus</i>
Phrynobatrachidae	<i>Phrynobatrachus</i>	<i>mababiensis</i>
Phrynobatrachidae	<i>Phrynobatrachus</i>	<i>natalensis</i>
Pipidae	<i>Xenopus</i>	<i>muelleri</i>
Ptychadenidae	<i>Hildebrandtia</i>	<i>ornata</i>
Ptychadenidae	<i>Ptychadena</i>	<i>anchietae</i>
Ptychadenidae	<i>Ptychadena</i>	<i>mossambica</i>
Ptychadenidae	<i>Ptychadena</i>	<i>oxyrhynchus</i>
Pyxicephalidae	<i>Amietia</i>	<i>angolensis</i>
Pyxicephalidae	<i>Cacosternum</i>	<i>boettgeri</i>
Pyxicephalidae	<i>Pyxicephalus</i>	<i>edulis</i>
Pyxicephalidae	<i>Tomopterna</i>	<i>cryptotis</i>
Pyxicephalidae	<i>Tomopterna</i>	<i>marmorata</i>
Pyxicephalidae	<i>Tomopterna</i>	<i>natalensis</i>
Rhacophoridae	<i>Chiromantis</i>	<i>xerampelina</i>

During the study of October 2012 a rain storm caused the flooding of the Mambane stream which created conditions where three species of Amphibians could be found, namely: Eastern Olive Toad (*Amietophrynus garmani*), Red Toad (*Schismaderma carens*) and Snoring Puddle Frog (*Phrynobatrachus natalensis*). The conservation status of all three species is of "Least Concern".

2.6. Aquatic Ecology

Two aquatic biodiversity surveys were conducted by Dr. Johan Engelbrecht and Koos de Wet in December 2011 and October 2012 (Appendix 1). The Resource Directed Measures for Protection of Water Resources (DWA, 1999), was used as a guideline to the general approach of the study. The study area is located adjacent to the Komati River and upstream of the Tonga Weir. The Walda- and the Tonga Weirs thus serve as representative up- and downstream sampling sites of

the project area (Figure 10). Emphasis was placed on riffles and wadeable sections, which are considered to be essential habitat for aquatic organisms and are therefore a clear indicator of the immediate area's biological integrity.

The study area is drained by the Komati River and some small seasonal and ephemeral streams. The flow, water quality and geomorphology of the river are significantly modified by present land-use and abundance of weirs. The MTPA MBPC regards this sub catchment as Irreplaceable for the maintenance of aquatic biodiversity (Figure 10). This evaluation is largely based on the importance of the Komati River for migrations of fish and other biota and is therefore more applicable to the larger area and not specific to the development footprint. A large number of weirs downstream have compromised the migration of fish in the Komati River. The classification of each sub-catchment was determined from the Present Ecological State (PES) and the extent of terrestrial transformation. The PES for the project area is classed as "Very Low to Moderate", while the extent of terrestrial transformation is vast, with largely no natural habitat remaining. The classification bears reference to the probability of the individual sub-catchments being required to meet aquatic biodiversity targets and point out possibilities for meeting these targets. According to the Mpumalanga parks Board Biobase Report (Emery et al, 2002) the general state of the biodiversity groups within the study area, varies between low and medium.

Since construction of the Maguga Dam in 1997, there has been both a negative trend in the quality of water of the Komati River associated with the project area (in terms of salt and nutrient enrichment), as well as a reduction in flow downstream of the Tonga weir. Furthermore, new weirs have been constructed, inundating remaining riffle areas in Komati / Lomati. All the above have resulted in an overall reduction in aquatic species which depend on migration or riffle spawning for breeding (e.g. yellowfish / tigerfish) and an increase in hardy, flow-independent species (e.g. Cichlid / Clariid). An overall reduction in fish species has been noted as re-colonisation by species is prevented by the multiple weirs which have been constructed without fishways. There has also been an increase in alien and exotic species (such as Largemouth bass, Freshwater Crayfish and Nembwe). The remaining riffle and braided sections of the Komati River below the Walda and Tonga weirs are important for the conservation of remaining sensitive species.

The general prosperity and abundance of invertebrate taxa has been negatively affected by inconsistent flow direction and water quality deterioration, however, aquatic invertebrate diversity reduces in the dry season but recovers in the wet-season (this re-establishment is more rapid than for fish species). Aerated sections of the Komati River (below the Walda weir) still support some sensitive species. The tributaries leading into the Komati have been found to serve as a breeding ground and nursery area for various barb and fresh water mussels. The Mambane tributary, the most important in the area, was found to be dry during December 2011 but was in full flood during October 2012.

A large percentage of diatoms identified show an affinity for polluted and highly-saline conditions. The survey also revealed an abundance of various diatom species which indicates:

- High oxygen saturation

- High levels of organically bound nitrogen
- Moderate pollution
- Calcium – based salinity

Despite the high levels of organic pollution and salinity, the SPI (Specific Pollution Sensitivity) score represents good water quality.

The Mambane is the only tributary of the Komati River in the study area of significance and is considered of local importance in maintaining aquatic biodiversity and amphibian species diversity. The Mambane is a seasonal stream that maintains permanent and semi-permanent pools that are important for breeding, nursery and also serve as refuges for fish and amphibians.

These pools create habitat with very few predators after floods and periods of decimation, especially predaceous aquatic invertebrates and amphibians (*Xenopus*) that can rapidly decimate fry. The pools are therefore considered as ideal for recruitment of fish and amphibians in the area and they also provide habitat for a few fish species uncommon to Mpumalanga such as *Barbus toppini*. During flood events the pools are reconnected with the mainstream allowing recruitment of fish back into the system. The small seasonal streams appear to function similarly to floodplains. The Ecological status of these systems is highly dependent on the flooding regime alternating between desiccation and flooding. Several seasonal water bodies that accumulate water after heavy rains and maintain water for short periods were observed in the study area that may also serve as important amphibian breeding sites. The system has however been notably modified by existing land use and its importance to fish recruitment may have been significantly reduced.

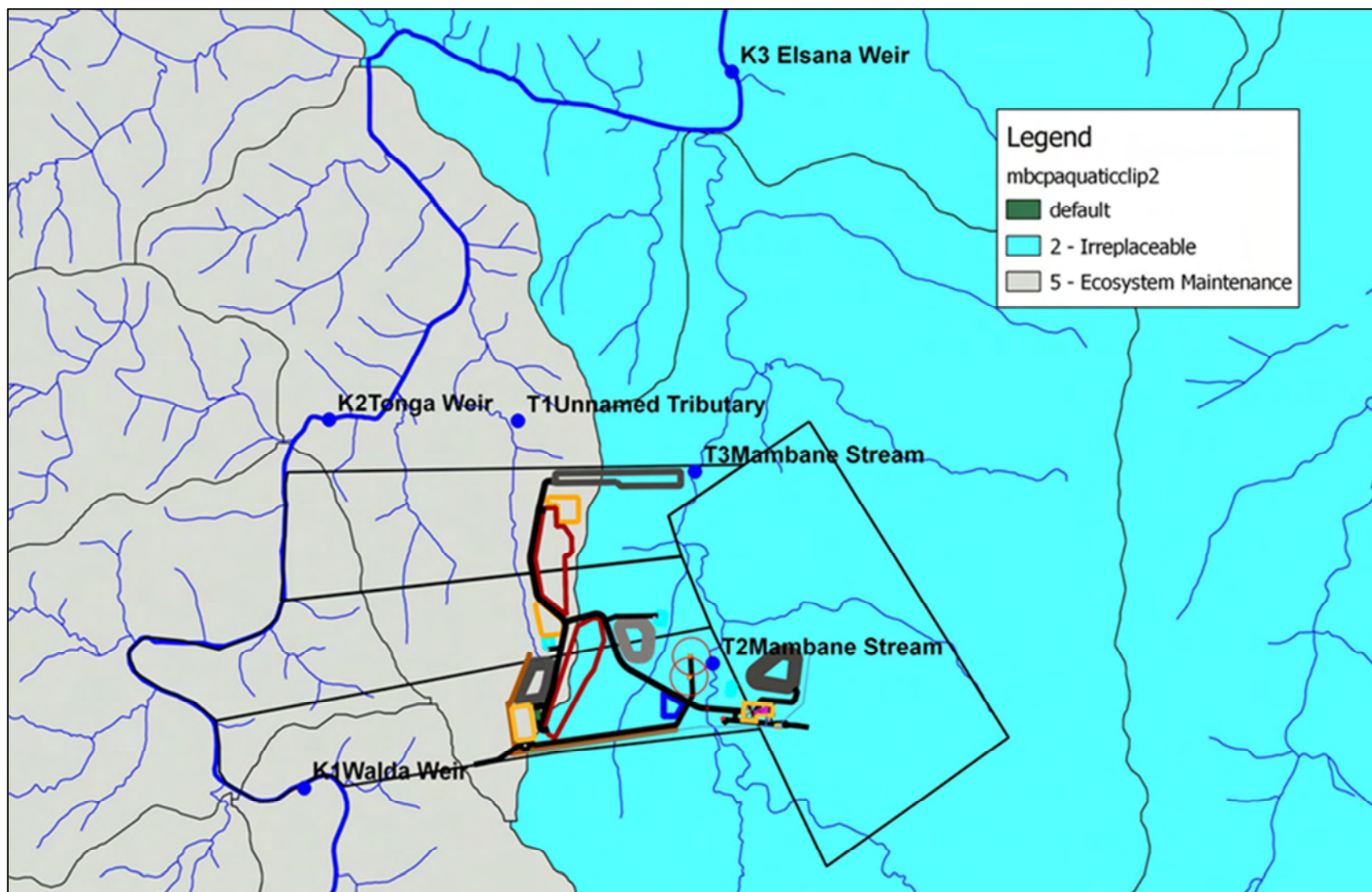


Figure 10: MBCP Sub-catchment: Aquatic Biodiversity Assessment of the KaNgwane Project Area.

2.6.1. Fish Species of significance

The proposed mining area is located within a biodiversity hot-spot for fish. About 32 indigenous species of fish are expected to have occurred in quaternary catchment (X13K) under natural conditions, (Table 11). Four species found in the Komati River area need permanent flow during all life phases, namely *Barbus eutaenia*, *Opsaridium peringueyi*, *Chiloglanis pretoriae* and *C. swierstrae*. Several other species such as *Labeobarbus marequensis* (yellowfish), *Labeo molybdinus*, *L. cylindricus* and some of the small barb species (*Barbus sp.*) previously collected in this area have a flow requirement for at least a part of their life cycle (eurytopic). One species recorded in the area are listed in the IUCN Red Data Book for fish (*Chetia brevis*) and is classified as Endangered, while the rest are classified as Least Concern. One species, Tigerfish (*Hydrocynus vittatus*), is protected in terms of Section 56(1) of the National Biodiversity Act (Act No 10 of 2004). *Barbus toppini* collected from the Mambane Spruit has not previously been collected in this part of river and is therefore considered uncommon in this part of the Komati River. However, with appropriate management of water quality and sediments, it is unlikely that this development would pose a direct major threat to survival of any of these species.

Table 11: Fish species collected in Quaternary Catchment X31K

FAMILY	SPECIES	COMMON NAME	STATUS
Anguillidae	<i>Anguilla mossambica</i>	Longfin eel	
	<i>Anguilla bengalensis</i>	African mottled eel	
	<i>Anguilla marmorata</i>	Madagascar mottled eel	
Mormyridae	<i>Marcusenius macrolepidotus</i>	Bulldog	
	<i>Petrocephalus wesselsi</i>	Churchill	
Characidae	<i>Brycinus imberi</i>	Imberi	
	<i>Hydrocynus vittatus</i>	Tigerfish	Protected: NEMA: Biodiversity Act (10 of 2004): section 56(1)
	<i>Micralestes acutidens</i>	Silver Robber	
Cyprinidae	<i>Barbus annectens</i>	Broadstripe barb	
	<i>Barbus eutaenia</i>	Orangefin barb	
	<i>Barbus paludinosus</i>	Straightfin barb	
	<i>Barbus radiatus</i>	Beira barb	
	<i>Barbus toppini</i>	East Coast barb	Recently collected in Mambane Spruit
	<i>Barbus trimaculatus</i>	Threespot barb	
	<i>Barbus unitaeniatus</i>	Longbeard barb	
	<i>Barbus viviparus</i>	Bowstripe barb	
	<i>Labeo cylindricus</i>	Redeye labeo	
	<i>Labeo molybdinus</i>	Leaden labeo	
	<i>Labeo rosae</i>	Rednose labeo	
	<i>Labeobarbus marequensis</i>	Large-scale yellowfish	

FAMILY	SPECIES	COMMON NAME	STATUS
	<i>Mesobola brevianalis</i>	River sardine	
	<i>Opsaridium peringueyi</i>	Barred minnow	
Clariidae	<i>Clarias gariepinus</i>	Sharptooth catfish	
Mochokidae	<i>Chiloglanis paratus</i>	Sawfin rock catlet	
	<i>Chiloglanis pretoriae</i>	Shortspine rock catlet	
	<i>Chiloglanis swierstrai</i>	Lowveld rock catlet	
Gobiidae	<i>Glossogobius giurus</i>	Tank goby	
Schilbeidae	<i>Schilbe intermedius</i>	Silver Catfish	
Cichlidae	<i>Chetia brevis</i>	Orange-fringed large-mouth	Endangered B1ab(iii,v)+2ab(iii,v) Engelbrecht and Bills 2007
	<i>Oreochromis mossambicus</i>	Mozambique tilapia	
	<i>Pseudocrenilabrus philander</i>	Southern mouthbrooder	
	<i>Tilapia rendalli</i>	Redbreast tilapia	

2.7. Wetlands

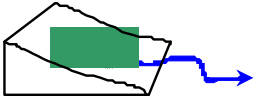


A wetland survey was conducted by Anton Linström on behalf of Koos de Wet Environmental Consultants in December 2011 (Refer to Appendix 1 for the full report).

2.7.1. Wetland Types

The wetland types in the study area were identified based on their hydro-geomorphic setting. The palustrine wetland types found are a hillslope seepage wetland feeding a watercourse, valley bottom wetlands with a channel, and non-isolated channel wetlands. Each type identified within the proposed project area is set out in Table 12, and their locations within the study area are depicted in Figure 11.

Table 13 indicates the relative size of the wetlands in comparison to the study area.

Table 12: Wetland hydro-geomorphic types found within the study area

HYDRO-GEOMORPHIC TYPES	DESCRIPTION
<p>Hillslope Seepage feeding a watercourse</p> 	<p>Slopes on hillsides that are characterized by the colluvial (transported by gravity) movement of materials. Water inputs are mainly from sub-surface flow and outflow is usually via a well defined stream channel connecting the area directly to a watercourse, as in this case the Komati River.</p>
<p>Valleybottom with a channel</p> 	<p>Valley bottom areas with a stream channel but lacking characteristic floodplain features. Is gently sloped and characterized by the net accumulation of alluvial deposits or may have steeper slopes and be characterized by the net loss of sediment. Water inputs from main channel (when channel banks overspill) and from adjacent slopes.</p>
<p>Non-Isolated Channel Wetland</p> 	<p>A lower-gradient mixed-bed alluvial channel with sand and gravel dominating the bed and sometimes locally bedrock-controlled. Reach types typically include pool-riffle or pool-rapid with sand bars common in pools. Pools are of significantly greater extent than rapids or riffles (adapted from Ewart-Smith <i>et al.</i>, 2006).</p>

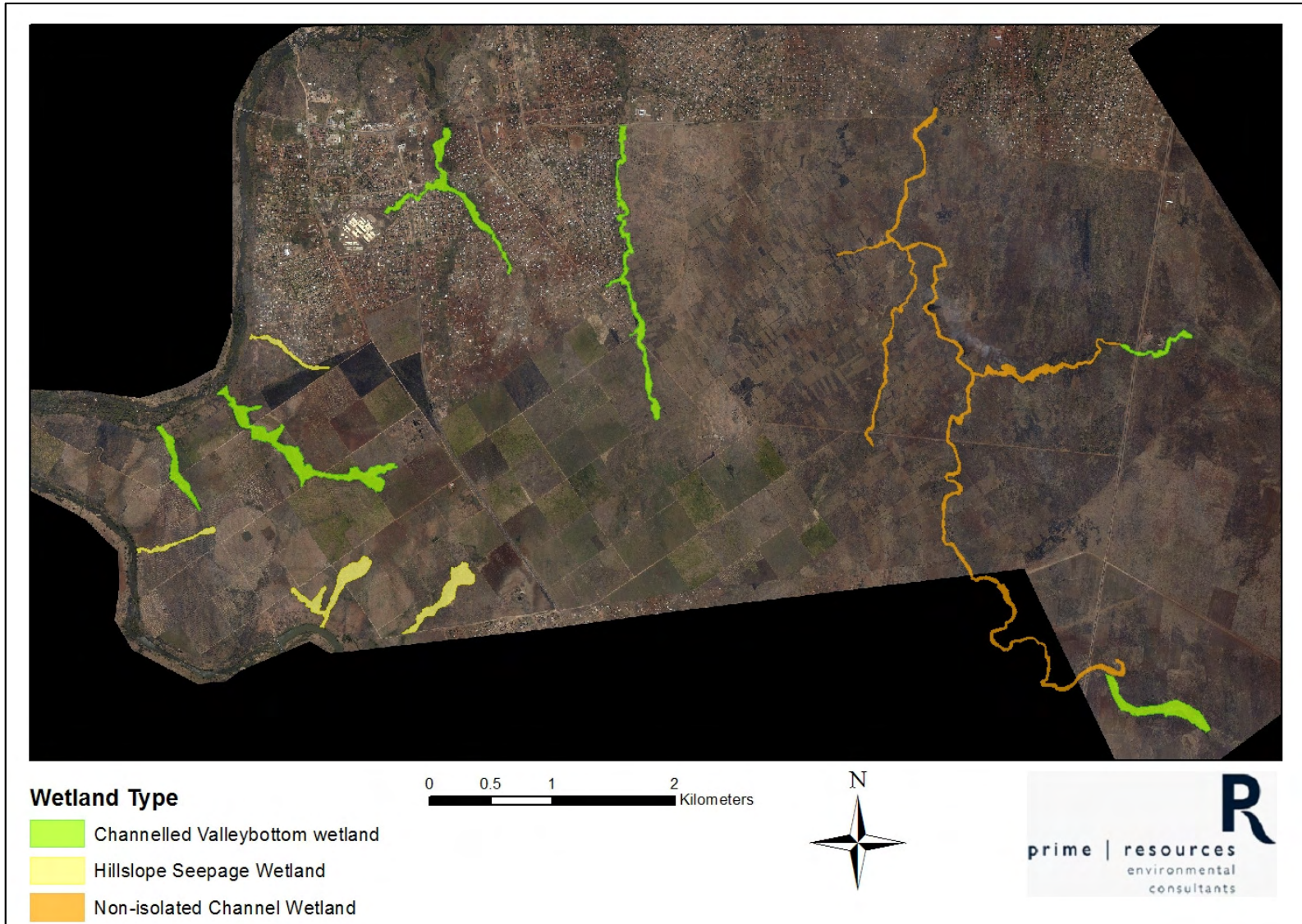


Figure 11: Location of the Wetlands Delineated within the KaNgwane Project Area.

Table 13: Location of the Wetlands Delineated within the KaNgwane Project Area.

WETLAND AND AQUATIC HABITAT	SIZE (HA)
Wetlands	62.08
Mambane Ephemeral Drainage Line (Non Isolated Channel Wetland)	26.4
Komati River Riparian Zone	72.4
Total Wetland & Aquatic Systems area	160.9
Study Area	3903

2.7.2. Wetland Soils

Soils in the wetlands and the riparian zones have hydro-morphic characteristics with, in some places, permanent, seasonal and temporary wet variations. The soils in the ephemeral drainage lines consist mostly of alluvial material, this due to its temperate environment. The channel substrate consists of alluvial material which is sandy and contains pebbles.

2.7.3. Wetland Biodiversity

The dominant indigenous woody riparian species on banks are the trees *Syzygium* sp., *Ficus sycomorus*, *Philenoptera violacea*, *Trichilia emetica*, and *Diospyros mespiliformis*. The shrubs *Ficus capreifolia*, *Sesbania sesban* and *Kraussia floribunda* occur on the sandy terraces; and grasses such as *Miscanthus junceus* and sedges such as *Cyperus dives* and *Cyperus sexangularis* occur on the water's edge along channels. The reed *Phragmites mauritianus* dominate the area along the edge of channels. In the wetlands and the Mambane habitat a total of 62 wetland species were identified. The most dominant species recorded in the Settlement Wetlands are: *Typha capensis*, *Cyperus sexangularis*, and *Litogyne gariepinus*. In the Sugarcane Wetlands the dominant species are *Panicum deustum*, *Typha capensis*, and *Cyperus sexangularis*. The Mambane Site consisted mainly of species such as *Eriochloa meyeriana*, *Persicaria senegalensis*, *Achyranthes aspera*, *Jasminum fluminense* and *Parthenium hysterophorus*. The grass *Eriochloa meyeriana* occurred mostly in the dry channel beds and plays an important ecological role in protecting the alluvial material from being washed away.

The Marginal zones in the riparian assessment of the Mambane ephemeral systems were grass and sedges dominate within the dry channel floors where many bare patches occur. Several shrubs and some trees occur sporadically; however, signs of terrestrial species invasion are taking place. The Non-marginal zones are dominated by trees and shrubs. Impacts consist mainly of road traversing the zone, terrestrialisation, and cultivation activities extending into this zone, overgrazing and footpaths e.g. cattle, goats). Bank substrate consists mainly of soil. These zones are reasonably steep. Little vegetation cover and abundance occur.

The area has been encroached by alien and invasive plant species that include Invading *Ageratum* (*Ageratum conyzoides*), Castor-oil Plant (*Ricinus communis* var. *communis*), Guava (*Psidium guajava*), White Mulberry (*Morus alba* var. *alba*), Syringa (*Melia azedarach*), Bugweed (*Solanum*

mauritianum), *Parthenium hysterophorus*, Common Lantana (*Lantana camara*), Sisal (*Agave sisalana*), etc. Vast areas of the study area are infested with Sisal.

According to the Roberts Multimedia Birds of Southern Africa a total of 409 species can occur in and/or outside the study area. During the field survey, a total of 64 species were recorded. The following species were recorded in the wetland areas: Cattle Egret, Reed Cormorant, Grey Heron, Yellow-billed Duck, Common Sand piper, Malachite Kingfisher, Darter, Pied Kingfisher, African Fish Eagle, Marsh Owl, etc. Due to the current and past extensive agricultural activity, grazing by cattle and goats and the disturbance of the natural vegetation by commercial sugar cane and subsistence farming, together with constant human movement throughout the study area, few mammals are expected to still occur. However, some signs of animal activity recorded within the wetland areas. Hippopotamus (*Hippopotamus amphibious*) spoor was sighted in the region and the Foam Nest Frog (*Chiromantis xerampelina*) was spotted adjacent to a wetland area.

2.7.4. Community Dependence on Wetland Services

The wetlands contribute towards maintaining water quality in the form of phosphate and sediment trapping and nitrate and toxicant removal. Local people rarely rely on the wetlands and almost never benefit from them. The wetlands attained low scores for natural services and are modified with some loss of natural habitats. Catchment areas are impacted upon by cultivation, dams, settlement development, roads, etc. and which some encroach into wetland habitat. Impacts on the wetlands consist mainly of erosion, overgrazing & trampling. There is little cover and abundance. This is further elaborated upon in the Wetland Integrity Assessment Below.

2.7.5. Wetland Integrity Assessment

To facilitate Wetland Integrity Assessments, the wetlands were divided into three separate similar wetland type areas (Figure 12), namely: Sugarcane Wetlands, Settlement Wetlands and Mambane Non-isolated Channel Wetland (Mambane Wetlands).

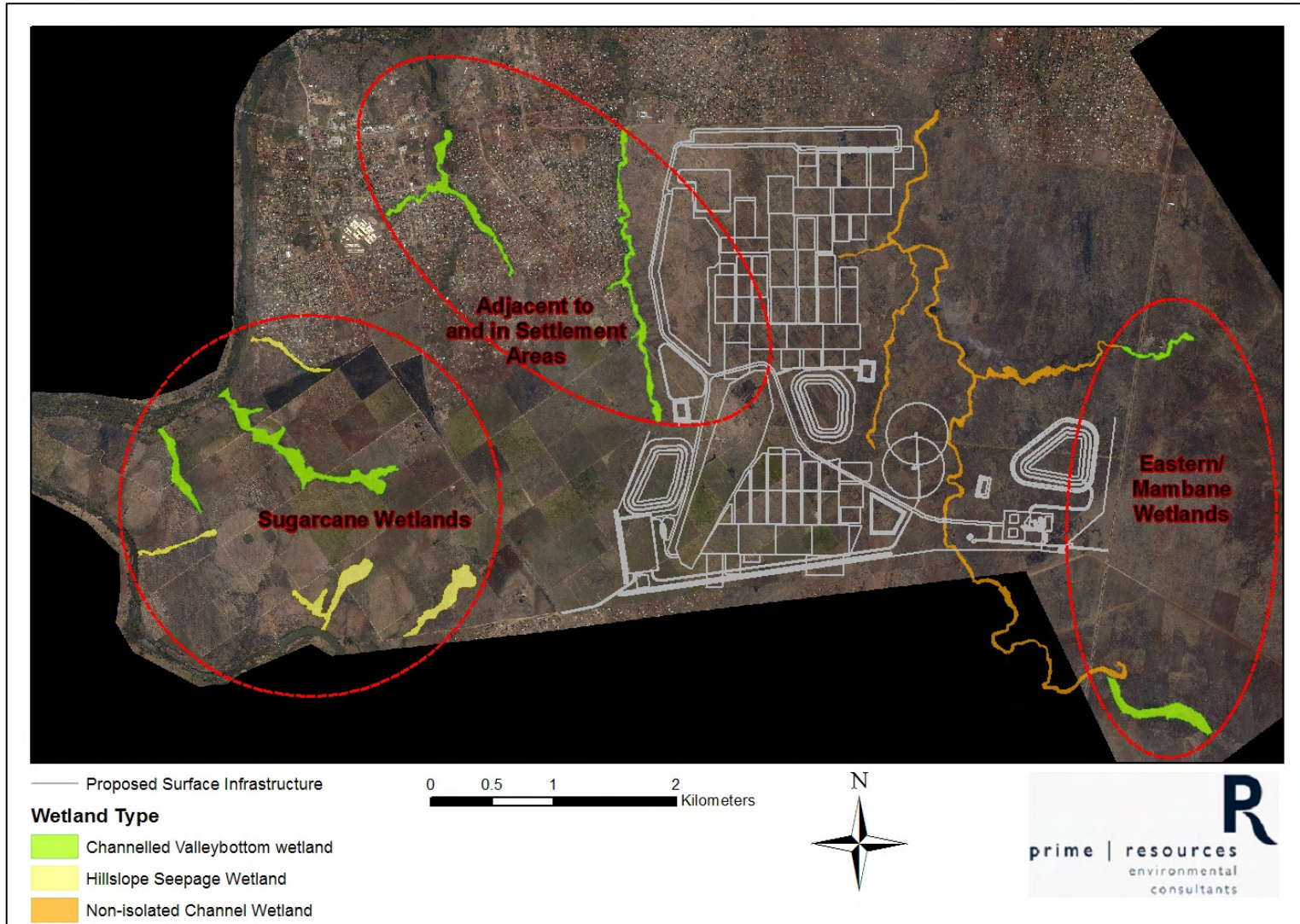


Figure 12: Wetland groupings according to which the integrity studies were done.

The Present Ecological State (PES) method (DWAF, 2005) was used to establish the integrity of the wetlands. The PES and the Ecological Importance and Sensitivity (EIS) parameters and general attributes for each wetland are summarised below:

Sugarcane Wetlands

Due to the reasonable vegetation cover, the wetlands have the ability to trap sediments and phosphates, as well as remove nitrates. The wetlands scored a *very low* PES rating of 1.6 (confidence is 3.5), yet show *moderate* (C) EIS and Hydro-functional Importance. The surrounding communities do not benefit from these wetlands and thus the Direct Human Benefits is *low* (D).

Wetlands Located in Close Proximity to Settlements

This wetland has suffered the loss of a considerable amount of natural habitat and ecosystem functionality. It also obtained a *very low* PES score of 1.2 and a *moderate* (C) EIS score due to the activities borne of the communities such as refuse dumping, overgrazing and trampling, road crossings etc. The wetlands do have a realistically important role in hosting local fauna. The Hydro-functional Importance is *very low* (D) and human benefit indicator is also *low* (D), despite the minimal grazing the wetland offers to the community.

Mambane Wetlands

This wetland obtained a *moderate* PES score of 2.6 and only some loss of natural habitat. The EIS is considered to be *moderate* (C). This wetland can be considered important for avian-species due to the open woodland habitat. The Mambane wetlands contribute on a small scale to the moderation of quantity and quality of water in the Komati River and the Hydro-functional Importance of the wetlands in this area is considered to be a *moderate* (C). The surrounding community benefit minimally from grazing and water used for agriculture from the wetland. Direct Human Benefits obtained from the wetlands is thus a *low* (D).

2.7.6. Riparian Vegetation Response Assessment Index (VEGRAI)

A total of three VEGRAI sites were assessed to determine what the impacts of surrounding activities are on the wetland riparian vegetation. The sites are depicted in Figure 13. Disturbances by grazing animals, roads, cultivation (sugarcane) and human occupation are common along the riparian zones.

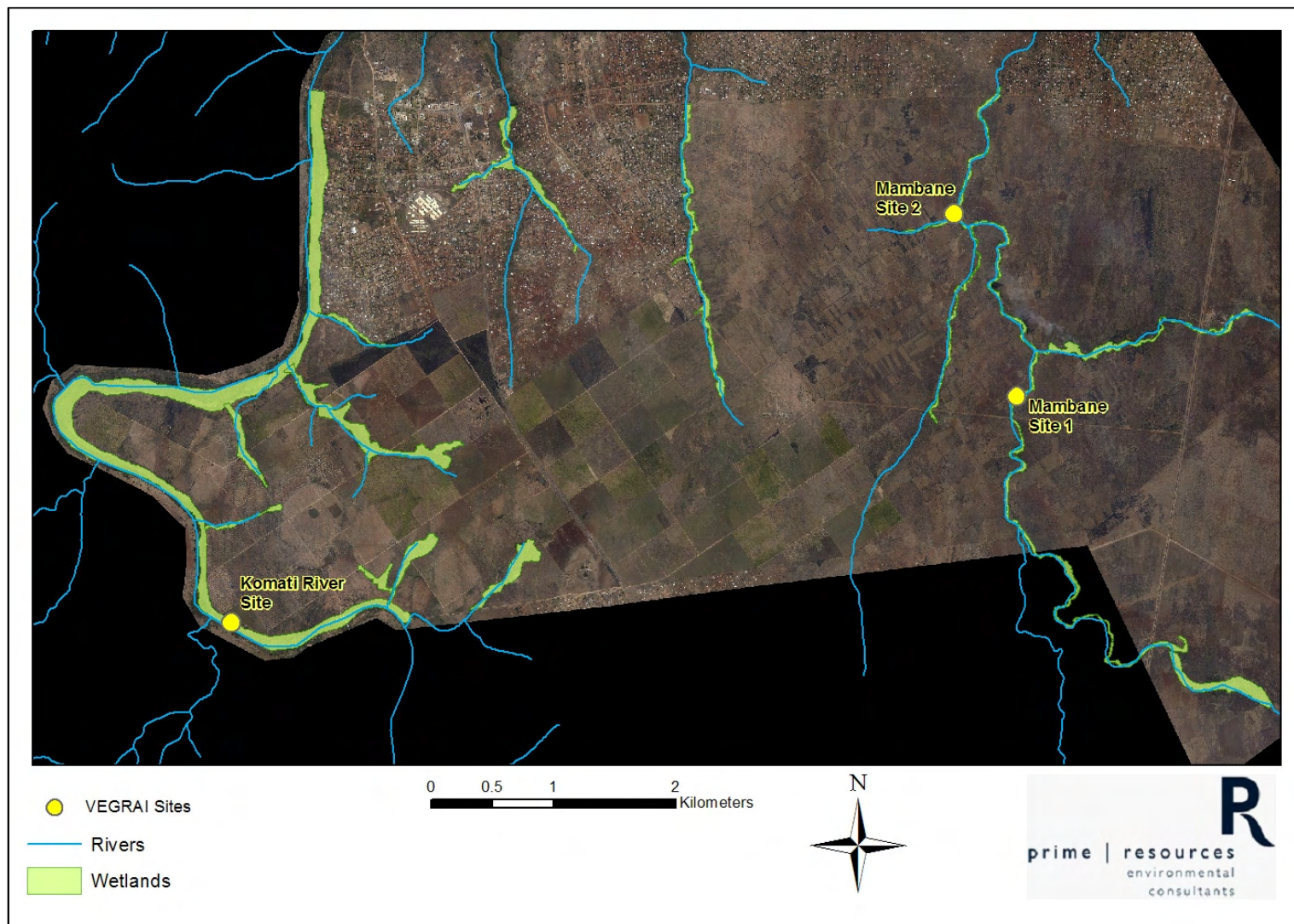


Figure 13: Location of the VEGRAI study areas in relation to the study site.

The purpose of the VEGRAI is to determine the function of the riparian vegetation in determining the in-stream habitat and conditions. The vegetation zone is considered in terms of its importance in maintaining the condition of the riparian vegetation. The vegetation zone that is considered to be most important in influencing the EC of the riparian vegetation if it changed, is awarded a weight of 100%, the next most important component is awarded a rating proportionally less than 100% based on specialist judgement. Table 14 is a layout of the score that a riparian zone may receive according to the VEGRAI.

Table 14: Riparian vegetation scores according to the VEGRAI (Kleinhans et al., 2007).

ECOLOGICAL CATEGORY	DESCRIPTION	SCORE (% OF TOTAL)
A	Unmodified, natural.	90-100
B	Largely natural with few modifications. A small change in natural habitats and biota may have taken place but the ecosystem functions are essentially unchanged.	80-89
C	Moderately modified. Loss and change of natural habitat and biota have occurred, but the basic ecosystem functions are still predominantly unchanged.	60-79
D	Largely modified. A large loss of natural habitat, biota and basic ecosystem functions has occurred.	40-59
E	Seriously modified. The loss of natural habitat, biota and basic ecosystem functions is extensive.	20-39
F	Critically modified. Modifications have reached a critical level and the lotic system has been modified completely with an almost complete loss of natural habitat and biota. In the worst instances the basic ecosystem functions have been destroyed and the changes are irreversible	0-19

Komati River Site

This site is located downstream of a weir and occurs at GPS coordinates 25°43'38.34" S and 31°46'27.83" E. The Riparian Index of Habitat Integrity (RIHI) is E (35.6%), with the main impacts being the sugarcane cultivation (extending into riparian zone), wood chopping and further water quality problems due to sugarcane non-point pollution and the weir just upstream of the site.

Mambane River Site 1

This site is located in the upper part of the drainage system, east of the R571 tar road. The site occurs at GPS co-ordinates 25°42'34.35" S and 31°50'06.72" E. The RIHI is a D (56.7%), with the main impacts being a road traversing the riparian zone, trampling and overgrazing, terrestrialisation and further water quality problems due to a dam and cultivation activities within and upstream of the site.

Mambane River Site 2

This site is located in the downstream area of the system at 25°41'48.24" S and 31°50'00.98" E. The RIHI is a D (57.3%), with the main impacts being the trampling, overgrazing, cattle and goat

tracks, cultivation activities, road traversing the riparian zone and further water quality problems due to siltation from cultivation activities upstream.

2.8. Soils

Terra Soil Science (TSS) was appointed to conduct a soil, land use, land capability and agriculture potential survey for the proposed KaNgwane Anthracite Mine. The EIA level soil, land capability, land use and agricultural potential surveys were conducted in three phases;

2.8.1. Phase 1: Land Type Data

Land type data for the site was obtained from the Institute for Soil Climate and Water (ISCW) of the Agricultural Research Council (ARC). The land types identified on the proposed mining site are Dc34 and to a lesser extent Ea78 to the east (Figure 14).

Dc34

Dc land types denote areas that are dominated by duplex soils but with the inclusion of soils with vertic, melanic and red structured horizons. The soils in this land type are predominantly moderately deep to shallow and structured with a distinct transition from A to B horizons in terms of texture and structure. In drainage depressions the dominant soils are characterised by vertic, melanic or red 7 structured horizons. Drainage channels are characterised by recently deposited soil material as well as soils with signs of incipient soil formation. Land capability and land use is mainly extensive grazing and wilderness land except for areas with irrigation infrastructure where sugarcane is produced. Dryland cropping potential is low due to the structured soils as well as high temperatures and moderate and erratic rainfall.

Ea78

Ea land types denote areas that are dominated by soils with vertic, melanic and red structured horizons. The soils in this land type are predominantly red structured in higher lying positions and vertic and melanic in lower lying landscape positions. Land capability and land use is mainly extensive grazing and wilderness land except for areas with irrigation infrastructure where sugarcane is produced. Dryland cropping potential is low due to the structured soils as well as high temperatures and moderate and erratic rainfall.

2.8.2. Phase 2: Aerial Photograph Interpretation and Land Use Mapping

Recent aerial photographs of the site were obtained from Google Earth. These images were used to interpret aspects such as land use and land cover as well as historic land uses such as cultivation.

Two main cultivation classes were identified namely "grazing" and "arable" (Figure 15). The grazing area is considered to be of moderate to high grazing potential due to the high base status and occurrence of grasses and shrubs, even though the rainfall is relatively erratic. The pre-mining land use includes irrigated sugarcane production as well as extensive grazing and small-

scale or subsistence farming, while the historical agricultural production on the site appears to have been commercial sugarcane production for TSB. The areas outside of the sugarcane production area were used for extensive grazing. Evidence of misuse on the site is limited to eroded stream channels and drainage depressions. On the agricultural areas, very little evidence of misuse is apparent. There are no existing structures on the site other than the established urban/residential areas, roads and ruins of historic structures.

KANGWANE ANTHRACITE Land Types Map

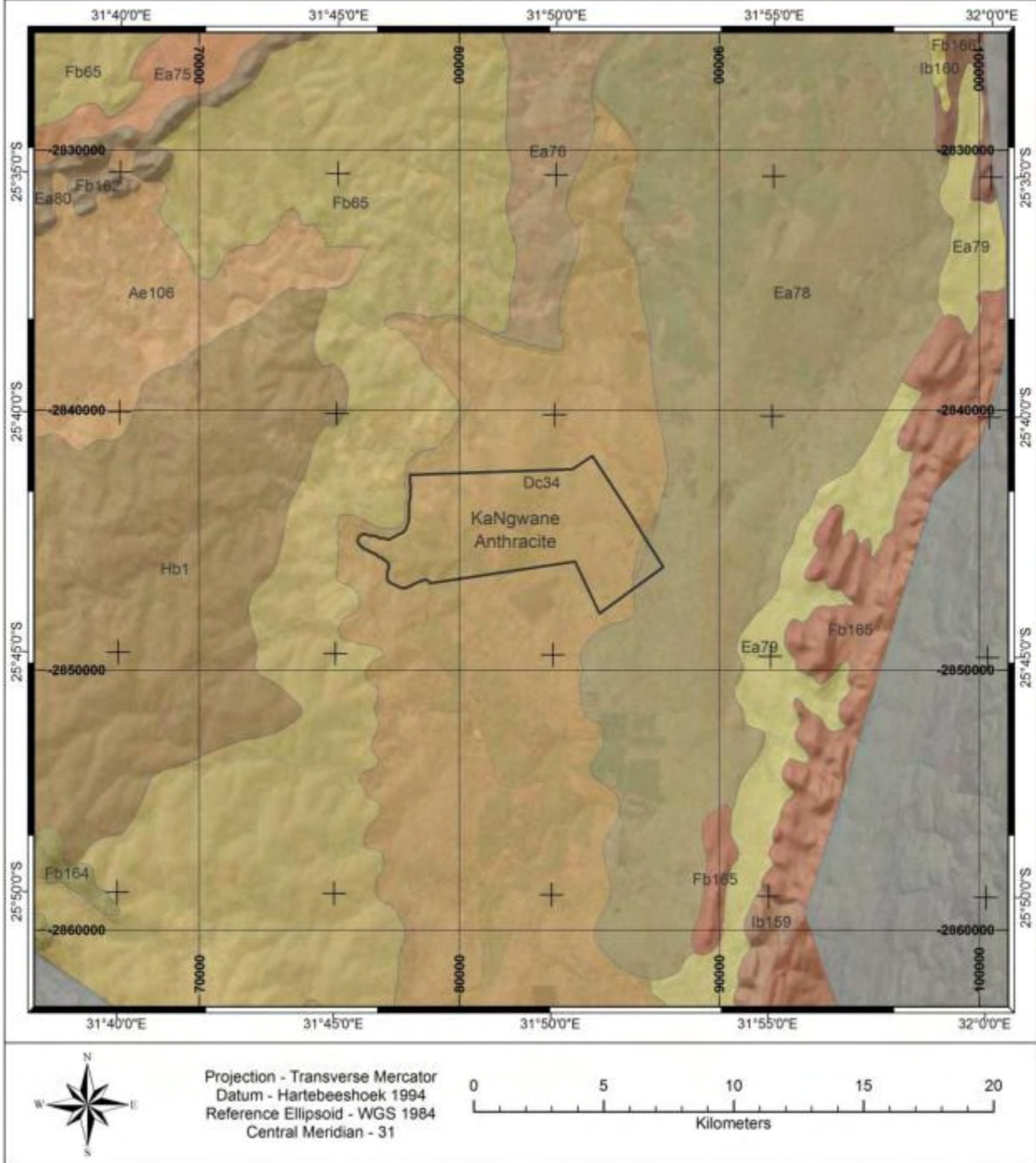


Figure 14: Land type map of KaNgwane Anthracite Mine.

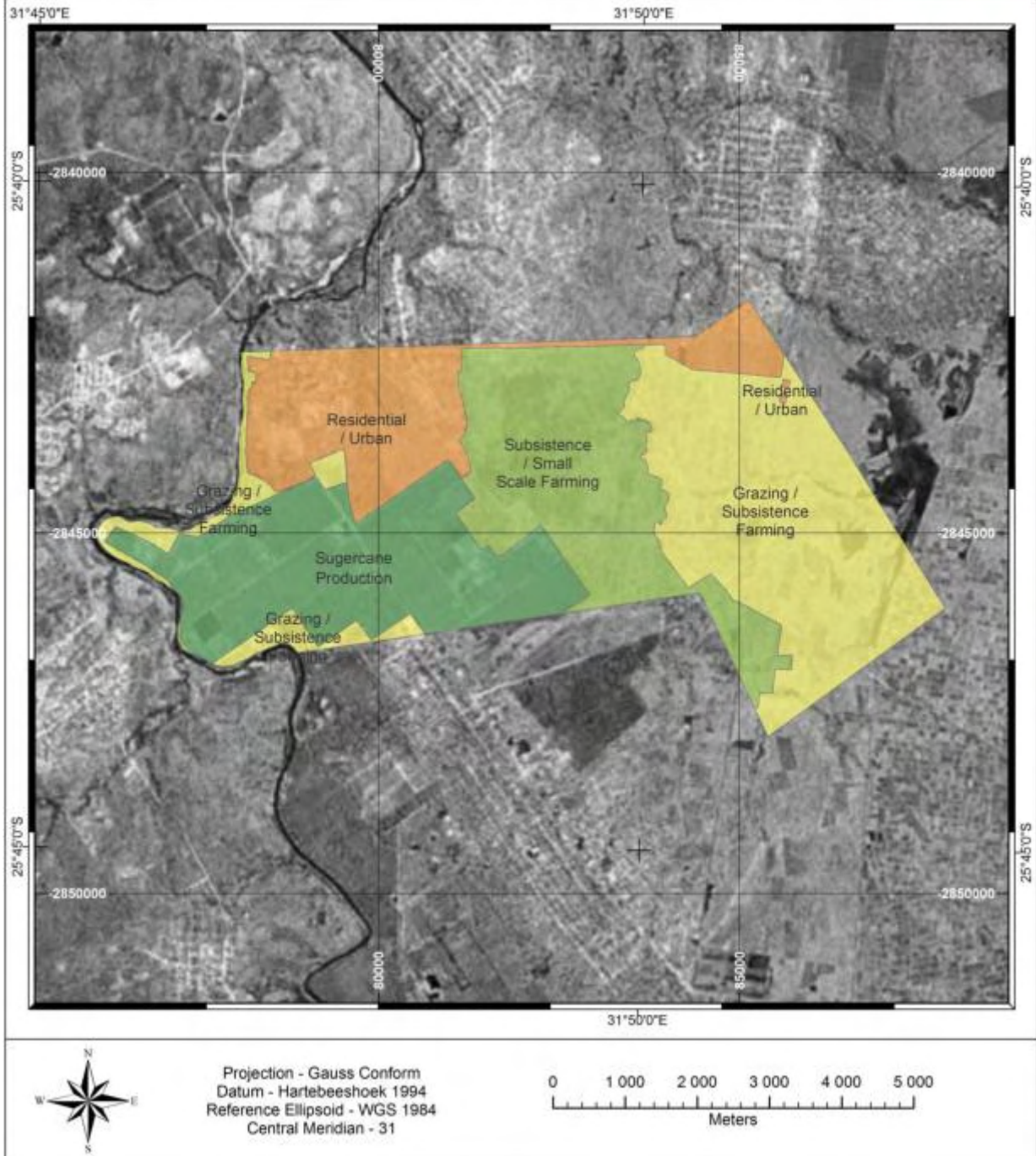


Figure 15: Land use map of KaNgwane Anthracite Mine.

2.8.3. Phase 3: Site Visit and Soil Survey

The land type data, interpreted land use and land cover as well as soil associations were confirmed during a site visit and soils survey. The soils associated with the proposed KaNgwane Anthracite Mine (Figure 16) are homogenous in terms of depth and type of weathering transition to the underlying geology. The main variability is found in the expression of texture and degree of structure formation as well as topsoil colour. The variability is such that several soil forms, all of them structured and grading into the underlying geology via a distinct weathered zone, occur within a short range of each other. Due to the degree of short-range variability as well as the relative uniformity in terms of structure and texture, four distinct soil zones were identified (Figure 16);

Structured soils on level terrain (Va/Sw)

The soils in this zone are predominantly of the Valsrivier (Orthic A-horizon / Pedocutanic B-horizon / Unconsolidated material without signs of wetness) and Swartland (Orthic A-horizon / Pedocutanic B-horizon / Saprolite) forms. Their colours vary considerably and include red yellow and yellow-brown A and B-horizons. Due to the presence of red A-horizons with a certain degree of structure this area will also include soils of the Shortlands (Orthic A-horizon / Red Structured B-horizon / Unspecified material – usually weathering rock) form. In some areas rock outcrops occur and soils of the Glenrosa (Orthic A-horizon / Lithocutanic B-horizon), Mispah (Orthic A-horizon / Hard Rock) and Mayo (Melanic A-horizon / Lithocutanic B-horizon) forms are found sporadically. Large areas of the Valsrivier and Swartland soils are currently used for irrigated sugarcane production. Although suitable for sugarcane production, these soils are considered potentially problematic for this land use due to poor internal and external drainage of water. These characteristics lead to long-term challenges regarding water and salt management.

Structured soils associated with drainage depressions (Bo/Sw)

The drainage depressions on the site are characterised by soils that exhibit a larger degree of clay formation in the surface horizons as well as presence of lime in the subsoils. These soils are predominantly of the Bonheim (Melanic A-horizon / Pedocutanic B-horizon) and Swartland (Orthic A-horizon / Pedocutanic B-horizon / Saprolite) forms. In certain areas soils of the Steendal (Melanic A-horizon / Soft Carbonate B-horizon) form also occur. As is the case for the level terrain areas, soils of the Shortlands (Orthic A-horizon / Red Structured B-horizon / Unspecified material – usually weathering rock) form also occur sporadically.

Soils associated with the Komati River channel (Du/Oa/Streambed)

The soils associated with the Komati River channel are recent soils of the Dundee (Orthic A-horizon / Stratified Alluvium) and Oakleaf (Orthic A-horizon / Neocutanic B-horizon / Unspecified) forms.

Soils in residential areas (Residential/Urban)

The soils in residential and urban areas are similar to those described above with the exception that they have been impacted significantly by human activities.

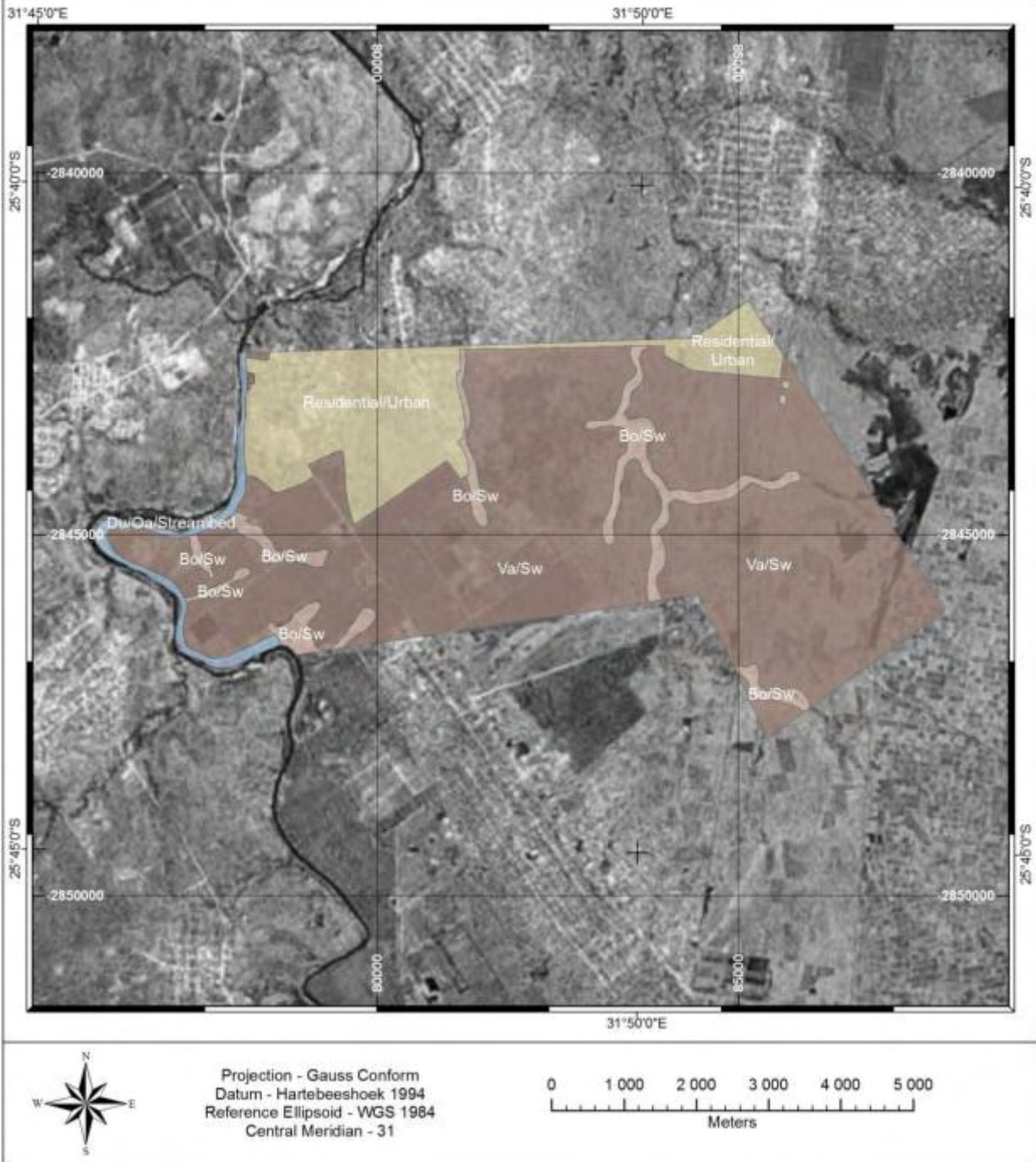


Figure 16: Generalised soil map of the KaNgwane Anthracite Map.

Agricultural Potential

The irrigation potential of the soil is moderate as these soils pose certain challenges regarding salt and water management due to poor internal and external drainage. The soils are, however, suitable for irrigated sugarcane and vegetable production. The areas falling outside of the irrigation fields are highly suited to extensive grazing.

Soil Wetness Expression

The soils on the site exhibit few- or no signs of wetness predominantly due to the climate as well as inherent soil characteristics, which includes the shallow nature of the weathered rock in the soils profiles.

2.9. Surface Water

The information presented in this section of the report has been sourced from the specialist 100 year flood line assessment conducted by African Environmental Development (AED) in February 2012, and the complete specialist assessment study conducted in October 2012 (A copy of this study is contained as Appendix 3).

2.9.1. Description of the catchment

The proposed KaNgwane Anthracite mine area the study area falls right across the border between Quaternary Catchments X13J and X13K in the Inkomati River Catchment. The X13K catchment occupies the eastern side (59%) of the study area and has a mean annual rainfall (MAR) of 608.54 mm. The X13J catchment occupies the western side (41%) of the study area and has a mean annual rainfall of 676.32 mm.

Within the catchment there are four main rivers, namely the Komati River, the Lomati River, the Crocodile River (East), and the Sabie River. The Komati River confluences with the Crocodile River at the border between South Africa and Mozambique where it becomes the Rio Inkomati. Figure 17 indicates the location of the Komati River in relation to the Crocodile River and the confluence of the two rivers.

Komati River

The Komati River is a large perennial river which forms part of the western boundary of the study area. The Komati River exists in a largely modified state. Water uses associated with the Komati River include agricultural practices (associated with large-scale water abstraction) such as sugarcane production and maize farming. Local communities utilise the river in places for bathing and the washing of clothes.

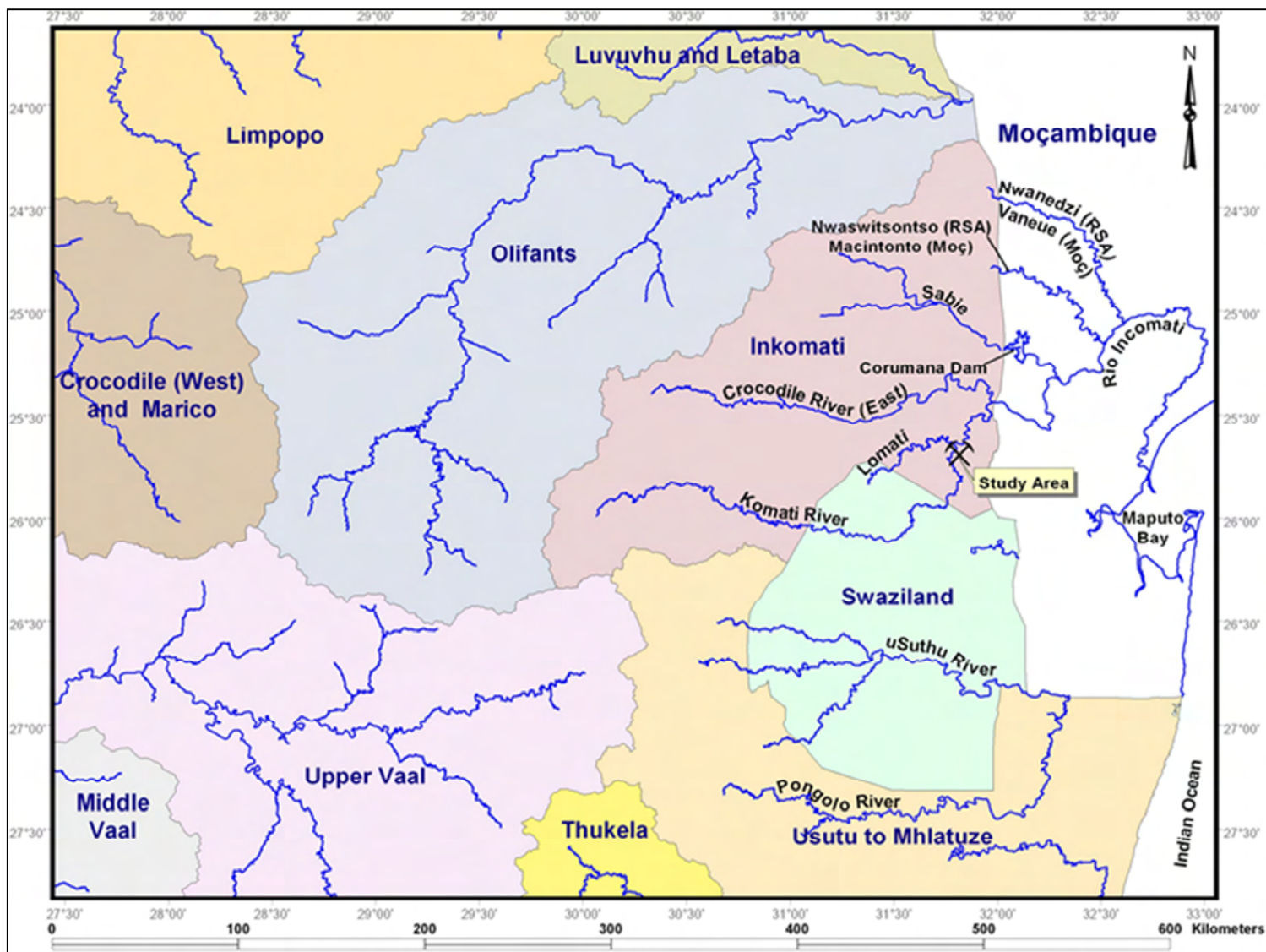


Figure 17: The location of the Komati River in the Inkomati River Catchment (AED, 2012).

The confluence of the three main tributaries of the Komati River, the Vaalwaterspruit, the Boesmanspruit and the Witkloofspruit occurs within the Nooitgedacht Dam just north of the town of Carolina. From here the Komati River flows in a generally easterly to south easterly direction through the Vygeboom Dam near Badplaas and through the Songimvelo Game Reserve, before crossing the international border into Swaziland. It then meanders through the northern parts of Swaziland before crossing the border back into South Africa just south of the study area.

The Komati River passes roughly from south to north to the west of the proposed KaNgwane Anthracite Mine. Although this river is close to the proposed mine, it is not in direct contact with the mining area. However, a tributary of the Komati River, the Mambane River, passes right through the proposed mine.

After passing the study area at the towns of Tonga and Phiva (at the confluence of the Lomati River with the Komati River), the Komati River continues meandering in a generally northerly direction up to its confluence with the Crocodile River (East), at the border post of Komatipoort.

Mambane River

The Mambane River is a non-perennial river which runs through the centre of the project area. It flows from south to north through the study area with its confluence with the Komati River at the northern boundary of the study area, to the north of the township of Sibayeni. This river is largely modified due to agricultural practices and the influence of the local communities. It has a catchment of 57.37 km².

A second, unnamed, stream passes along the western side of the proposed mine and will drain these parts (the western side) of the mine. This stream flows roughly parallel to the Mambane River in a northerly direction with its confluence with the Komati River some 8.5 Km upstream from the confluence of the Mambane River with the Komati River. This stream is referred to as "**Stream 3**". There is further a small, unnamed tributary of the Mambane River, passing in a generally northerly direction between the No 1 underground mining area and the Mambane River itself will be referred to as "**Stream 2**". Similarly, another tributary of the Mambane River flowing from east to west north of the proposed discard dump is called "**Stream 1**".

The proximity of these streams draining the proposed KaNgwane Anthracite Mine in relation to the proposed development is indicated below in Figure 18.

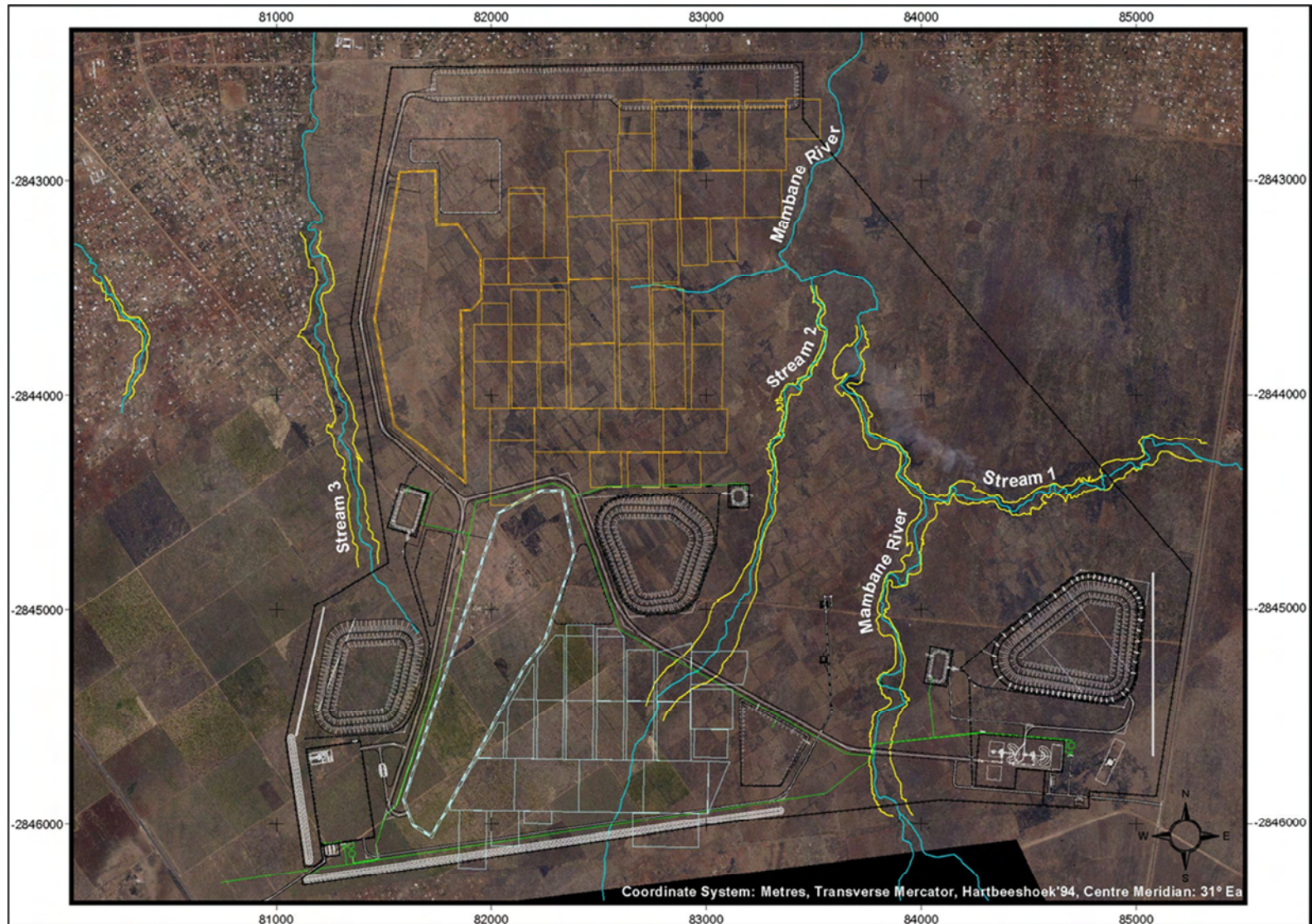


Figure 18: Location of the affected streams in relation to the proposed development.

2.9.2. Conservation Status of Surface Water

According to the MBCP and Council for Scientific and Industrial Research (CSIR), the Komati and Mambane Rivers are both considered to be endangered systems. This means that these ecosystems have lost significant amounts of their original natural habitat and their functioning is therefore compromised. Sections of the Komati River in the area are also considered to be important areas for fish species (fish support areas) according to the National Freshwater Ecology Priority Areas Assessment (FEPA).

2.9.3. Surface Water Flow Patterns

The proposed KaNgwane Anthracite Mine is situated between a small, unnamed, north-flowing, stream arising immediately to the north of the non-carbonaceous overburden dump (west of Pit No 1) and the Mambane River. Figure 20 indicates the layout of the mine in relation to the affected streams. Surface water is expected to flow away from the mining area towards the northwest and northeast.

At present, all rainwater falling on the western side of the watershed associated with KaNgwane, i.e. the non-carbonaceous overburden dump of Pit 1, the MIA-terrace, the No 1 Pit topsoil dump and the western PCD, as well as the western half of the No 1 Pit will drain to Stream 3. Similarly, all rainwater presently falling on the area earmarked for No 2 Pit, the No 2 topsoil dump and the western part of the No 2 non-carbonaceous overburden dump will also drain to Stream 3. Stream 3 drains directly into the Komati River, some 3.3 km downstream from the tarred road bridge immediately north of KaNgwane.

Stream 2 will collect all surface run-off from Pit No 1, the carbonaceous overburden dump and its associated PCD and the eastern part of the northern non-carbonaceous overburden dump. The mine water dam locates on the watershed between Stream 2 and the Mambane River and thus runoff would drain in both directions (west and east) to Stream 2 and the Mambane River.

The plant, its discard dump and its associated PCD locates to the west of the Mambane River. Surface run-off from these areas would either drain directly to the Mambane River or Stream 1 flowing just to the north of the discard dump from east to west into the Mambane River. Figure 19 shows the actual drainage patterns of rainwater across the study area.

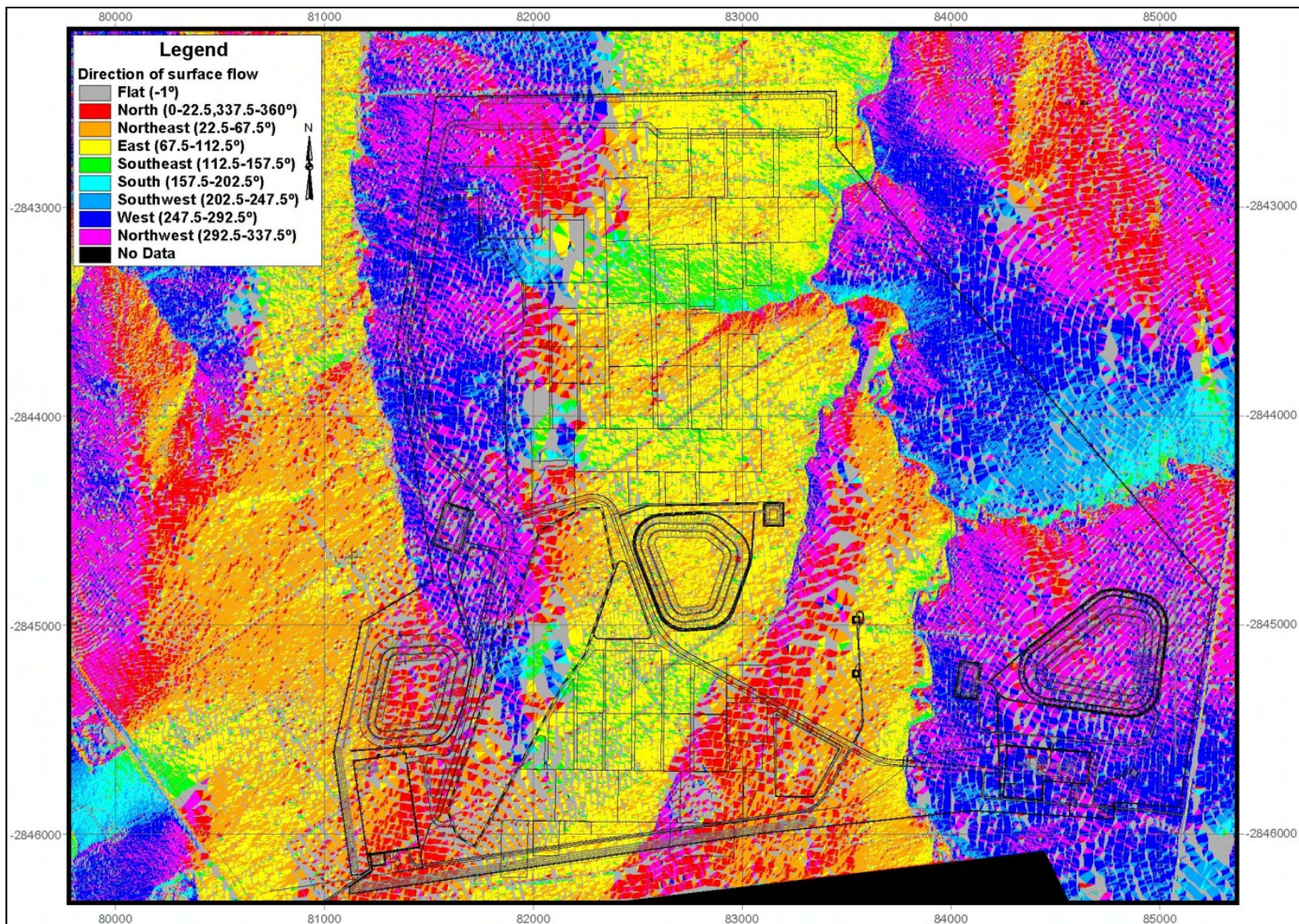


Figure 19: The direction of surface water flow at the proposed KaNgwane mine site (AED, 2012).

2.9.4. Hydrology

Catchment Flow Quantities

Streams 1 and 2 fall within Quaternary Catchment X13K and both are tributaries of the Mambane River. The catchment of *Stream 1* is 9.96 km², while that of *Stream 2* is 6.15 km². *Stream 3* falls within the quaternary catchment X13J. The surface area of the catchment of *Stream 3* is 6.33 km². The total area of the proposed development is approximately 1 151.1 Ha, of which 276.8 Ha falls within Quaternary Catchment X13J and the remaining 847.3 Ha falls in Quaternary Catchment X13K. The volume of surface water runoff from this area to the receiving water resources is calculated as 89.1 MI/a to the Komati River annually via *Stream 3* and 160.1 MI/a via the Mambane River and its tributaries (*Streams 1* and *2*), i.e. a total of 249.2 MI/a of surface run-off to the Komati River (about 682.8 m³/day).

Peak Flow Conditions

A modelling exercise to calculate the conditions associated with a 50-year storm event arising at KaNgwane revealed that a total surface run-off of **1 294 607 m³** would occur over the entire 24-hour period flowing during a 50-year flood event (or 19.9 litres per m²).

Floodlines

Figure 20 illustrates the affected rivers and their respective floodlines in relation to the layout of the proposed KaNgwane Anthracite Mine.

Surface infrastructure will remain well outside the 100-year flood lines. Stream 3 rises on the mining area, while Stream 2 rises immediately to the south of the mine. In the case of Stream 2 the flood lines diverge as one approaches the origin of the stream. Stream 3 flows away from the mining area as it progresses northwards.

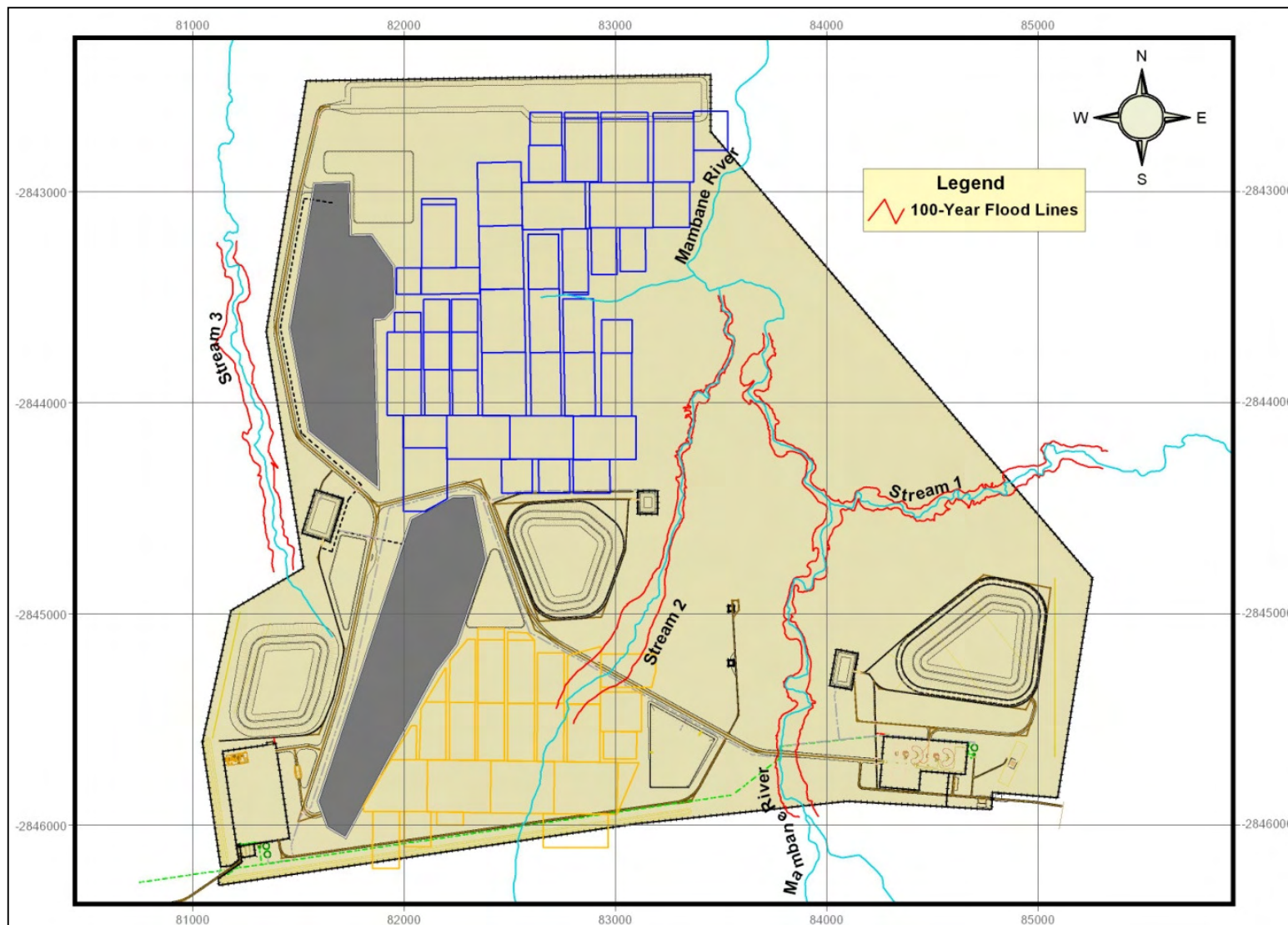


Figure 20: The 100-year flood lines for the three streams relevant to the layout plan of the KaNgwane Anthracite Mine (AED, 2012).

Downstream from the point where the flood lines end, the Mambane River centreline comes relatively close to the proposed underground mining areas, in one instance it is ~57 m away from one of the underground mining blocks in Mining Area No 2, while right at the northern-most point where the Mambane River leaves the mining area, its centreline comes to within ~68 m from the edge of the underground mining block. From a surface infrastructure point of view, the Mambane River's centreline never gets closer than ~137 m from any surface infrastructure, in this case, the eastern side of the northern, non-carbonaceous, overburden dump. It is only the Mambane River that comes closer than 100m from a small part of the northern section of Underground Mining Area No 1.

The underground mine below the of the Mambane River is approximately 160 m below the surface and the likelihood of direct water ingress into the mine from the Mambane River is unlikely. The aquifers investigated in these areas are "tight" and pump tests that were conducted rapidly depleted water in the tested boreholes, while the recovery of the boreholes took an exceedingly long time. This indicates that there are adequately impervious rocks between the mine and the watercourse which will prevent any significant leakage into the mine workings.

2.9.5. Surface Water Quality

Surface water chemistry sampling points

To assess the surface water quality at the KaNgwane mine, five water samples were collected, three from the Komati River, the receiving body of water of any run-off from the mining area and two from the Mambane River, the stream flowing through the mine. These sites are illustrated in Figure 21.

Water quality and chemistry

The sample results were compared with the South African National Standard, SANS 241:2011. In the case of the Komati River samples, all determinants complied with the best values of the SANS 241:2011 Drinking Water Standard. However, this was not the case with the water from the Mambane River. Table 15 is a representation of the results obtained from the laboratory analysis.

In spite of the good water quality, there is a very slight, but noticeable, water quality change between the upstream- and downstream sampling sites.

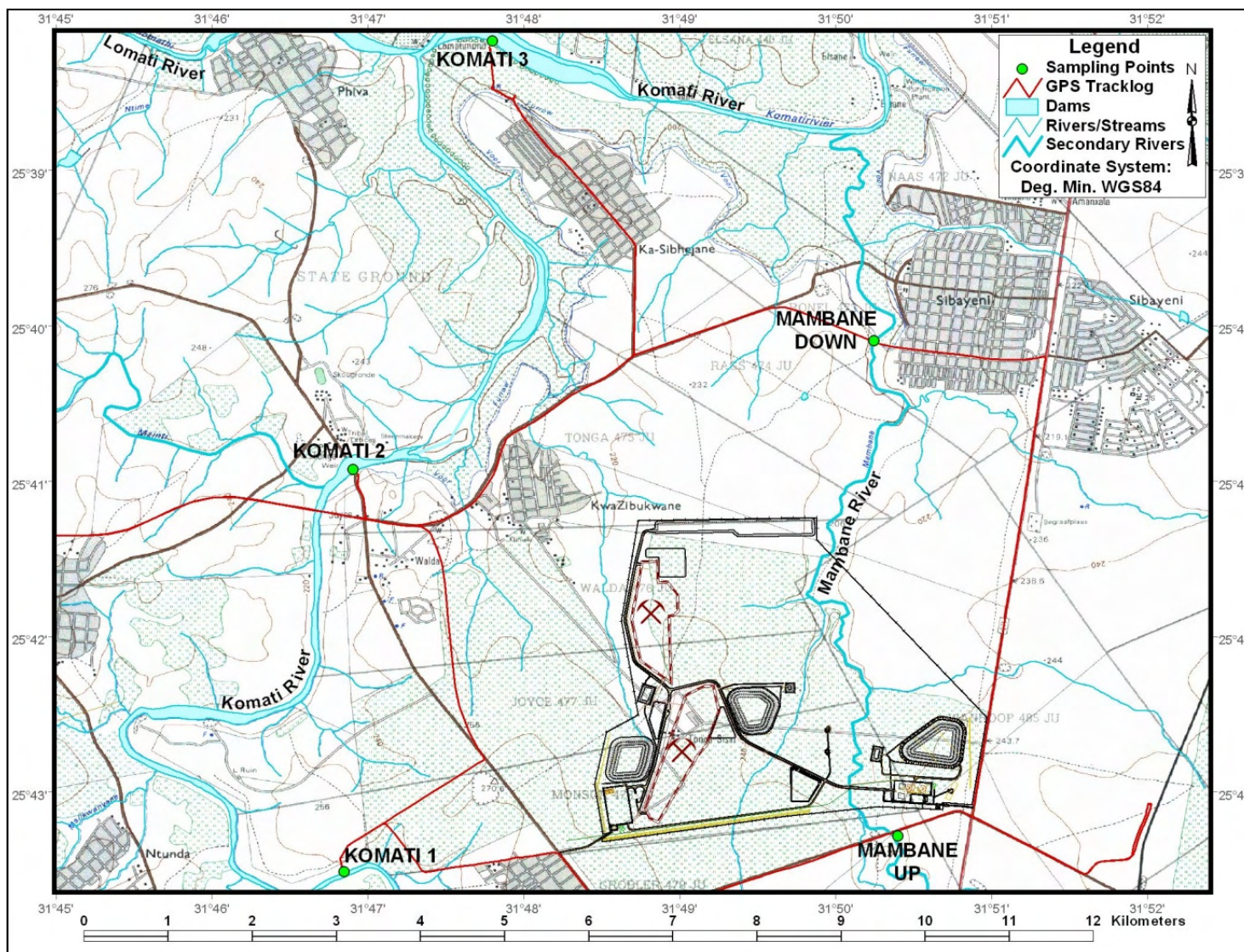


Figure 21: The location of the sampling points around the proposed mining site (AED, 2012).

Table 15: Results of the water samples taken in the Komati and Mambane Rivers (AED, 2012).

Sample ID → Determinant ↓	Units ↓	Komati 1	Komati 2	Komati 3	Mambane Upstream	Mambane Downstream	SANS 241:2011 (except where indicated otherwise)	
Macro and Physical Determinants							Standard Limits	Risk
pH	@25°C	8.2	8.2	8.3	8.1	8.4	≥5.0 - ≤9.7	Operational
Conductivity	mS/m @25°C	56	46	66	337	259	≤170	Aesthetic
Total Hardness	mg/l CaCO ₃	180	159	214	1327	560	0-50 Soft, 50-100 Moderately Soft, 100-150 Slightly Hard, 150-200 Moderately Hard, 200-300 Hard, >300 Very Hard (SA Water Quality Guidelines Domestic, 1996)	
Chloride	mg/l	86	61	112	1000	456	≤300	Aesthetic
Sulphate	mg/l	<50 (17)	<50 (12)	<50 (19)	<50 (36)	<50 (27)	250 and 500	Acute Health: ≤500 Aesthetic: ≤250
Nitrate	mg/l N	<0.02	0.3	0.4	0.3	0.5	≤11	Acute Health
Calcium	mg/l	25	23	30	285	63	<150 (SANS 241:2006 Class I)	
Magnesium	mg/l	29	25	34	150	98	<70 (SANS 241:2006 Class I)	
Sodium	mg/l	71	58	81	301	414	≤200	Aesthetic
Potassium	mg/l	2	2	2	15	4.7	<50 (SANS 241:2006 Class I)	
Manganese	mg/l	0.011	0.004	0.003	0.005	0.002	0.1 and 0.5	Chronic Health: ≤0.5 Aesthetic: ≤0.1
Iron	mg/l	0.016	0.020	0.012	0.009	0.010	0.3 and 2.0	Chronic Health: ≤2.0 Aesthetic: ≤0.3
Total Alkalinity	mg/l CaCO ₃	139	135	157	206	643		
Micro Determinants								
Aluminium	µg/l	20	35	16	8.4	17	≤300	Operational
Antimony	µg/l	0.06	0.06	0.08	0.1	0.22	≤20	Chronic Health
Arsenic	µg/l	1.4	1.2	1.8	2.6	3.1	≤10	Chronic Health
Barium	µg/l	51	46	52	533	181		
Beryllium	µg/l	0.19	0.13	0.16	0.21	0.21		
Bismuth	µg/l	<0.01	<0.01	<0.01	<0.01	<0.01		
Cadmium	µg/l	0.11	0.1	0.07	0.1	0.07	≤3	Chronic Health
Chromium	µg/l	0.44	0.35	0.37	0.41	0.35	≤50	Chronic Health
Cobalt	µg/l	0.12	0.1	0.1	0.32	0.48	≤500	Chronic Health
Copper	µg/l	3.1	3	4.1	3.6	4.1	≤2 000	Chronic Health
Lanthanum	µg/l	0.04	0.03	0.02	0.08	0.11		
Lead	µg/l	0.03	0.04	0.03	0.02	0.04	≤10	Chronic Health
Lithium	µg/l	1.9	1.7	3.1	1.6	3.8		
Mercury	µg/l	0.33	0.31	0.3	0.3	0.29	≤6	Chronic Health
Molybdenum	µg/l	0.96	0.92	1	2.4	2.4		
Nickel	µg/l	1.1	1	0.98	3.1	3.7	≤70	Chronic Health
Platinum	µg/l	<0.01	<0.01	<0.01	<0.01	<0.01		
Selenium	µg/l	2	0.32	1.6	12	10	≤10	Chronic Health
Tellurium	µg/l	0.05	0.08	0.11	0.27	0.29		
Thallium	µg/l	0.12	0.12	0.11	0.09	0.09		
Tin	µg/l	0.07	0.05	0.06	0.08	0.13		
Titanium	µg/l	0.31	0.33	0.12	16	0.32		
Vanadium	µg/l	2.7	2	2.9	6.6	19	≤200	Chronic Health
Zinc	µg/l	34	14	7.8	12	5.2	≤5 000	Aesthetic

Although both samples, Komati 1 and Komati 2 exhibit a very similar chemical composition, almost all the macro determinants at Komati 3 are slightly higher than at the two downstream sampling sites. Although this could be related to the higher degree of urbanisation between Komati 2 and Komati 3, it is likely that this is attributed to the water from the Lomati River. This river's confluence with the Komati River occurs immediately upstream from the weir from which the Komati 3 sample was collected. Although the Lomati River rises in Mpumalanga east of Swaziland, it flows through Swaziland and a large percentage of its catchment located in this country. Immediately upon leaving, it enters a relatively large dam, the Driekoppies Dam. From this dam up to the confluence of the Lomati River with the Komati River, the water in the Lomati River is used extensively for agricultural purposes and we presume that farming activities along this reach

of the river is the probable cause for the slight increase in almost all the major cations and anions in the Komati River up- and downstream from the Lomati River confluence.

In contrast to the water quality of the Komati River flowing around the western extremities of the study area, the water quality in the Mambane River is of a relatively poor quality. In both the up- and downstream samples, the sodium, magnesium and chloride concentrations were higher than expected, resulting in a high electrical conductivity and a high total hardness. According to the geology map, the Mambane River rises on basalt of the Letaba Formation, of the Lebombo Group and then flows onto the rocks of the Karoo Supergroup. It is probable that the igneous and sedimentary rocks mentioned above are responsible for the high salt load in the water of this river. From what can be seen in recent satellite photography, there are no industries whatsoever in the upper reaches of the Mambane River. The part of the Mambane River upstream from the sampling site is characterised by natural veld and (mostly unused) patches of agricultural fields. It is therefore unlikely that the salt load in the Mambane River has any relationship with human activities in the catchment of the river.

The major cation and anion equivalents for the samples analysed were plotted on a Piper Diagram (Figure 22) in order to provide a fingerprint of the quality of water resources associated with the proposed KaNgwane Anthracite Mine prior to any development occurring.

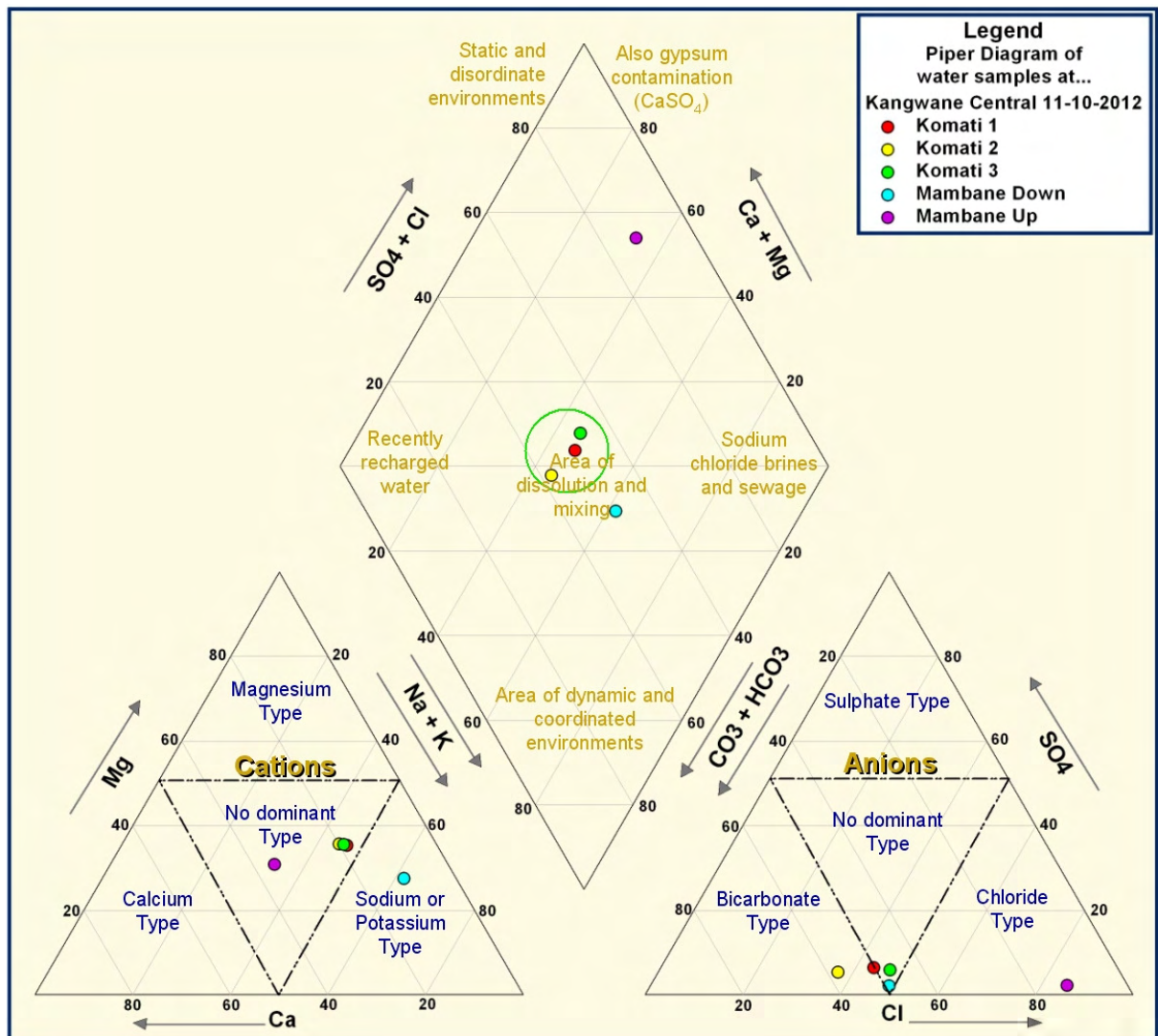


Figure 22: Piper Diagram of the water samples collected at the study site on 11/10/2012 (AED, 2012).

The samples collected from the Komati River up- and downstream from the study area, present a very simple Piper Diagram with all three samples plotting in virtually the same area in the centre of the diagram. The water sampled from the Komati River thus has a balanced cation/anion character, indicating natural water that has acquired some mineralisation along its flow path.

From the anion triangle at the bottom right of the piper diagram, it can clearly be seen that the violet point of the Mambane upstream sample is dominated by chloride. This comes as no surprise, as the chloride concentration of this sample was 1 000 mg/l.

However, after flowing 7.7 km from the up- to the downstream sampling site, the salts in the Mambane River have stabilised and the equivalents of the cations and anions have become more balanced. Thus, the downstream sample (blue point) plots in the centre of the Piper diagram. Although the top part of the central diamond field of the Piper diagram is normally associated with sulphate contamination, in the case of the upstream sample in the Mambane River, it plots near the top not as a result of the sulphate, but rather as a result of the chloride. The right-hand corner of the Piper diagram is usually annotated as the area associated with sodium chloride

brines; in this case this annotation actually refers to the entire top right-hand side of the central diamond field of the Piper diagram. Hence, the Mambane upstream sample plots along this side as a result of its strong chloride character and not as a result of its sulphate content.

2.10. Groundwater

A specialist groundwater baseline study and conceptual model was prepared for the proposed KaNgwane Project by Future Flow GPM and is contained as Appendix 4 to this report.

2.10.1. Aquifer Description

Three aquifers were identified within the study area and are associated with the following:

- Weathered material;
- Underlying shallow, slightly weathered, fractured rock material;
- Deeper, more competent and less weathered fractured rock;
- The mineable anthracite resources will also serve as fractured aquifer within the deeper fractured rock environment.

Upper weathered material aquifer

The upper aquifer forms due to the vertical infiltration of recharging rainfall through the weathered material being retarded by the lower permeability of the clay content in the weathered material. The groundwater that collects above the weathered material migrates down the topographical gradient to lower lying areas. This groundwater can thus surface later as springs, subject to the proximity to the surface.

Borehole characterisation logs indicate that the topsoil and weathered material have a combined thickness that varies between 14 and 20m. Aquifer transmissivity is approximately 0.3 to 1.1m²/day. The groundwater depth is measured at 1.33 to 2.58 m below ground level (MBGL).

Upper fractured rock aquifer

The vertical filtration of groundwater from the upper weathered aquifer is retarded due to the lower permeability of the competent rock material. Nonetheless, the lower aquifer will be recharged by the upper aquifer. Major fractures are present in the upper aquifer, which aids in recharging the lower aquifer. A thickness of between 30 and 36m was recorded.

The ground geophysical survey conducted revealed a major north-south fault with secondary fracturing. Groundwater flow and contaminant transport will be along pathways associated with secondary fracturing. The transmissivity of this aquifer is approximately 0.1 m²/day. The faulting could, however, act as preferential flow paths, resulting in increased transmissivities of 0.15 to 4 m²/day.

Lower fractured rock aquifer

The lower fractured rock aquifer occurs at greater than 50m within competent fractured rock. Discrete fractures facilitate the recharging of the lower aquifer. The average depth of the aquifer

is estimated at 80 meters, with transmissivity of 0.01 to 4 m² /day. The groundwater depth was measured at 5.84 to 10.30 mbgl.

2.10.2. Groundwater use

A hydrocensus was conducted to ascertain groundwater use and dependency associated with the project area (Figure 23). Existing water mains (municipal supply) and the Komati River are the main sources of water used by the community and local land users for household and irrigation purposes. The hydrocensus identified only three boreholes which are utilised for domestic use (although the number of boreholes within the communities could not be established).

2.10.3. Groundwater Flow

Groundwater flows are directed from high-lying to low-lying topographical areas (culminating in streams). This is illustrated in Figure 24.

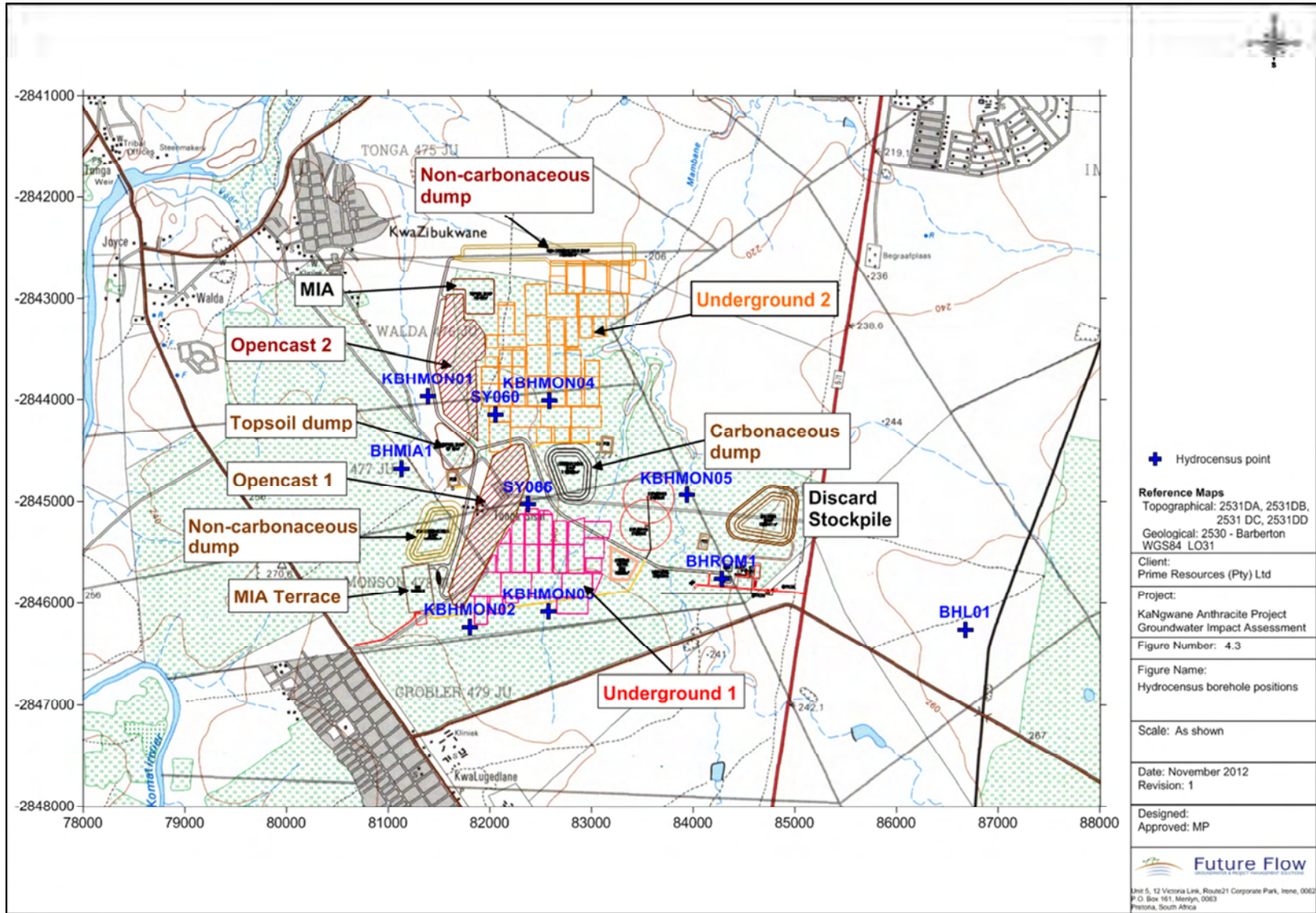


Figure 23: Hydrocensus borehole positions at KaNgwane.

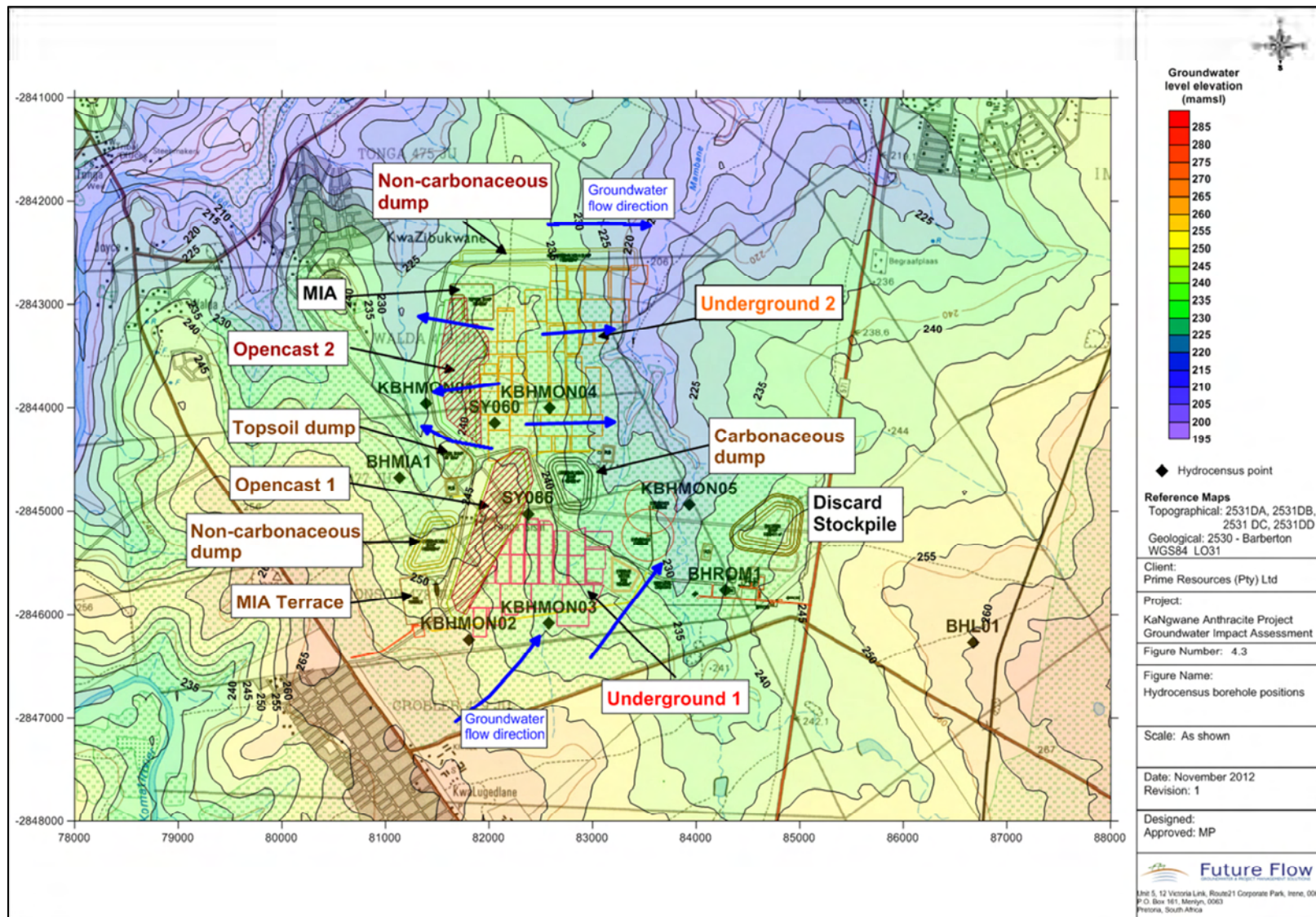


Figure 24: Groundwater Levels and Flow Direction at KaNgwane.

2.10.4. Groundwater quality

The groundwater quality of the area in general is relatively poor. High levels of sodium and chloride are present and are believed to be attributed to the Karoo sediments and anthracite reserves. Iron, manganese and aluminium also indicate elevated levels.

From the water quality testing results, three types of water exist within the study area:

- Bicarbonate –sodium type water;
- Chloride and sodium;
- Sulphate and/ or sodium type water.

The calcium-magnesium-bicarbonate (left quarter) of the Piper diagram (Figure 25) is normally characterised by freshly recharged water. The sodium bicarbonate dominant (bottom quarter) is typical of dynamic groundwater flow within an aquifer, with the sodium replacing calcium and magnesium in solution. The sodium chloride dominant (right quarter) is associated with stagnant or slow moving groundwater with little or no recharge. The sulphate dominant (top quarter) is typical of water impacted by the oxidation of pyrites which is commonly associated with coal mining activities.

The point that should be taken from the available groundwater level and quality data is that it appears that there is some distinction between the weathered material and fractured rock aquifers.

2.10.5. Acid Base Accounting

The potential of coal and discard products to produce acid and the subsequent buffering capacity is referred to as the Acid Base Potential. Acid Base Accounting (ABA) provides an average of this process over a period of time, during which either acidic or alkaline conditions can dominate.

Data was analysed for five samples (which represent all lithologies which occur in the area and are expected to be potentially acid producing, namely carbonaceous shale and sandstones from the roof and floor material, as well as the coal seam itself). The analysis hereof revealed that sulphide percentages in all samples fell below 0.3%, which implies that any acidity can only be yielded in the short-term (a sulphide percentage greater than 0.3% is required for sustainable, long-term acid generation to occur). Further to the above, the Neutralising Potential Ratio (NPR) for all samples was between 23 and 83 – any NPR value greater than 3 is acid neutralising, which was further supported by the Net Acid Generating (NAG) pH of all samples of 8-9. It was subsequently concluded that it is unlikely that the materials will be acid forming. The rock material has a high neutralising capacity which would buffer and neutralise any acid conditions (should some acid conditions form). Additionally, any such acid conditions that form would be characterised by very low sulphur percentages (less than 10mg/L) and would thus only be sustainable in the short term.

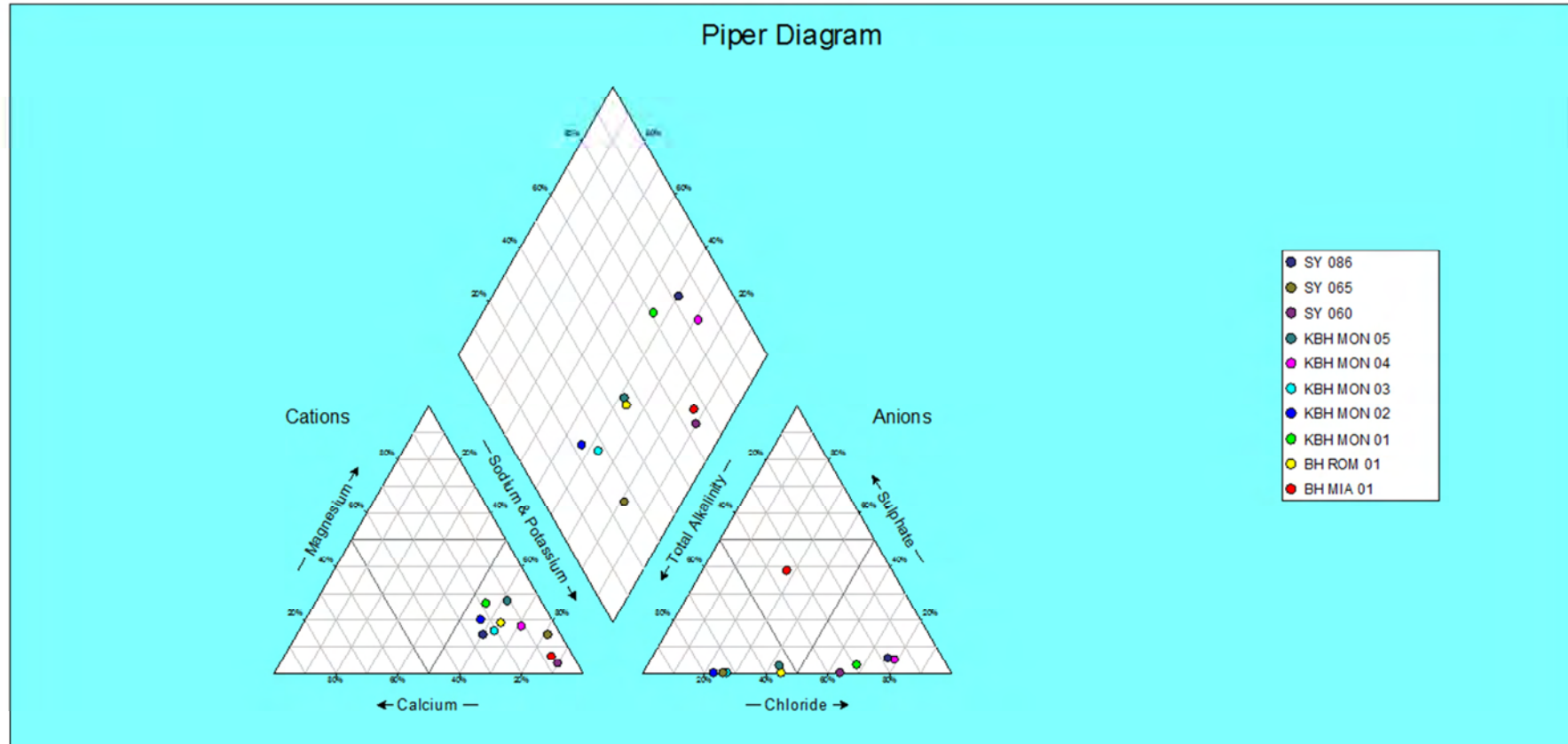


Figure 25: Piper diagram showing water quality constituents.

2.11. Archaeology

A Phase 1 Archaeological, Heritage and Cultural baseline survey and assessment study was conducted by Archaetnos Cultural Consultants (registered with SAHRA) for the proposed development. This study is contained as Appendix 5 to this document.

Three sites of cultural or heritage significance were identified in the study area and are indicated in Figure 26 and discussed further below. None of the specified sites identified are indicated on the SAHRA database.

Sites and tools from the Stone-, Iron- and Historical- ages have previously been found in adjacent areas, however no evidence of the above mentioned ages have currently been identified at the study area other than for the Middle and Late Stone Age artefacts, however, the origin of these is likely outside the study area.

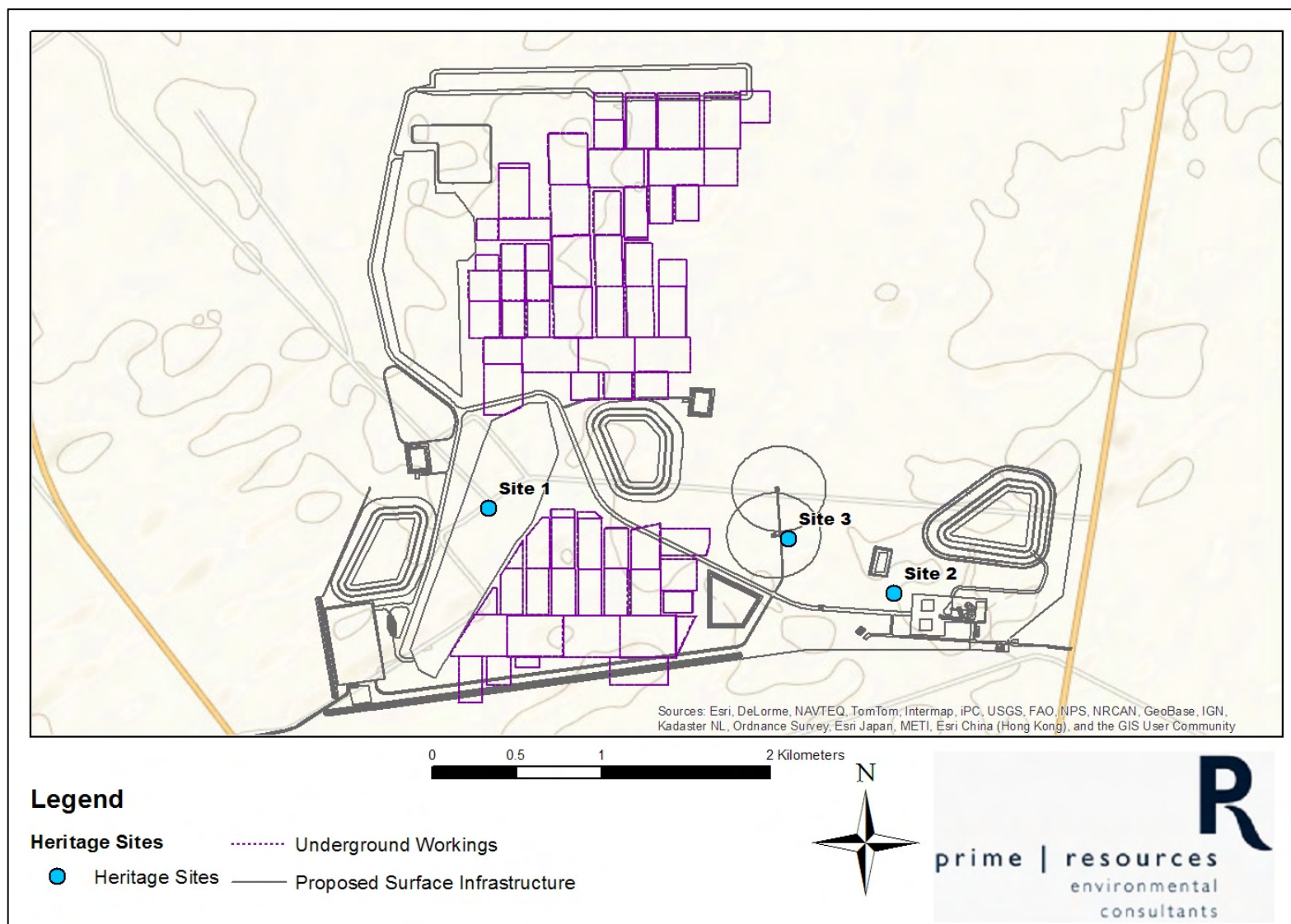


Figure 26: Location of heritage sites within the KaNgwane Project Area.

The following sites and heritage resources were identified:

2.11.1. Site 1

This site contains the remains of old government farm buildings and a farm dam. The buildings are assumed to be younger than 60 years and are of low cultural significance and no heritage value.



Figure 27: Derelict buildings at Site 1.

2.11.2. Site 2

While the Middle and Late Stone Age findings previously mentioned were located on-site, they are believed to have been washed down from an adjacent area. Items include hammers, whetstones and pottery (Figure 28). Preliminary analysis of the pottery seems to indicate that it belong to the Mzonjani facies of the of the Kwale branch of the Kalundu pottery tradition, which is indicative of the Early Iron Age. Not many Early Iron Age findings are known, therefore this site is considered to be of high cultural significance. It is suggested that the site be avoided during mining activities.



Figure 28: Hammers, whetstones and pottery found at Site 2.

2.11.3. Site 3

Although Middle Stone Age tools and Iron Age pottery were identified at Site 3 (Figure 29), Sites 2 and 3 are in close proximity to one other and there is likely some overlap. In addition, there are no other signs that could result in the findings being classified as a site. The artefacts are therefore believed to have washed down from Site 2. The artefacts are thus considered to be a feature rather than a site and are regarded as having a low cultural significance.



Figure 29: Middle Stone Age Tools and Iron Age Pottery Identified at Site 3.

2.11.4. Palaentology

A palaentological desktop impact assessment was completed by Bruce Rubidge from the University of Witwatersrand (Appendix 16). As mentioned in Section 2.4, the entire area is underlain by rocks of the Karoo Supergroup comprising sedimentary rocks of undifferentiated Permian and Triassic deposits. The fact that the geological map (Figure 30) does not differentiate between the Permian and Triassic deposits suggests that the outcrops are poor. As anthracite is present, mining activities will target rocks of the Eccca Group, equivalent to the Vryheid Formation, which were deposited in a delta plain depositional environment.

The rocks of the Eccca Group are renowned for their wealth of plant fossils of the famous Gondwanan *Glossopteris* flora which has been described from Permian-aged rocks. This flora is the source of the coal which is mined from the Vryheid Formation in South Africa. Within the Vryheid Formation there are occurrences of well-preserved elements *Glossopteris* flora comprising wood and/or leaves. Large collections of fossil flora from this Formation are present in the collections of the Council for Geoscience in Pretoria and the BPI Palaeontology at the University of the Witwatersrand in Johannesburg.

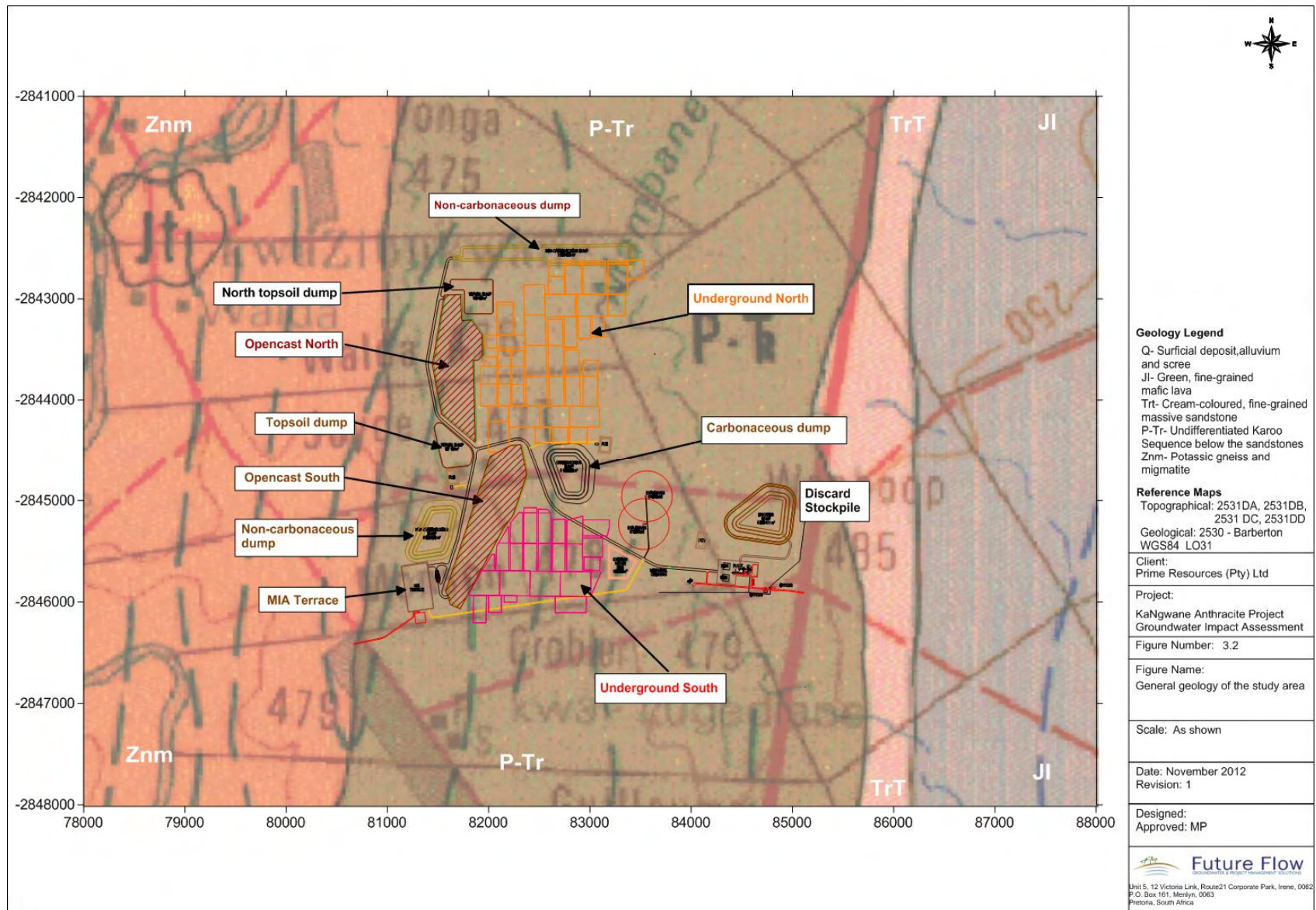


Figure 30: General geology of the study area (Future Flow, 2012).

2.12. Air Quality

An Air Quality Impact Assessment conducted in 2012 by Airshed Planning Professionals for the proposed KaNgwane Anthracite Mine (Appendix 6) indicated that air quality in the region is affected by various emission sources including agricultural emissions, biomass burning (veld and sugarcane fires), household fuel burning and vehicle emissions (both entrainment as well as vehicle tailpipe emissions). Various sources are expected to contribute to the suspended fine particulate concentrations in the region, these include local sources such as wind erosion from exposed areas, fugitive dust from agricultural operations, household fuel burning and vehicle entrainment from roadways. Long-range transport of particulates, emitted from remote tall stacks and from large-scale biomass burning may also contribute to background fine particulate concentrations.

The sensitive receptors in terms of air quality in the vicinity of the proposed KaNgwane Anthracite Mine are the villages of Mzinti, Tonga, Tonga East, Kamaqhekeza, eMangweni, Steenbok, Brink, Ntuda, Kamhlushwa, Vlakhult, Phiva and Sikwahlane.

2.13. Traffic

The general study area surrounding the KaNgwane Anthracite mine is connected by the provincial road R571-1, district road (D797) and gravel / paved local streets provide access to the site. The D797 district road bisects the Nkomazi Local Municipality in an east to west direction and connecting the R571-1 and the R570. The R570 links to the N4 approximately 45km west of the N4 / R571-1 intersection. This carriageway is frequently used as the shorter connecting route to the N4. The D9284 district road intersects both the R571-1 and D797 and runs from north to south from the settlements of Kwazibukwane to Emangweni in the south of the project area. This road is extensively utilised as a connection route between the R571-1 and D797. The D9284 and D797 intersection see traffic moving mostly towards the N4 and east towards the R571-1 / D797 intersection. The roads surrounding the proposed KaNgwane Anthracite Mine are indicated on Figure 31.

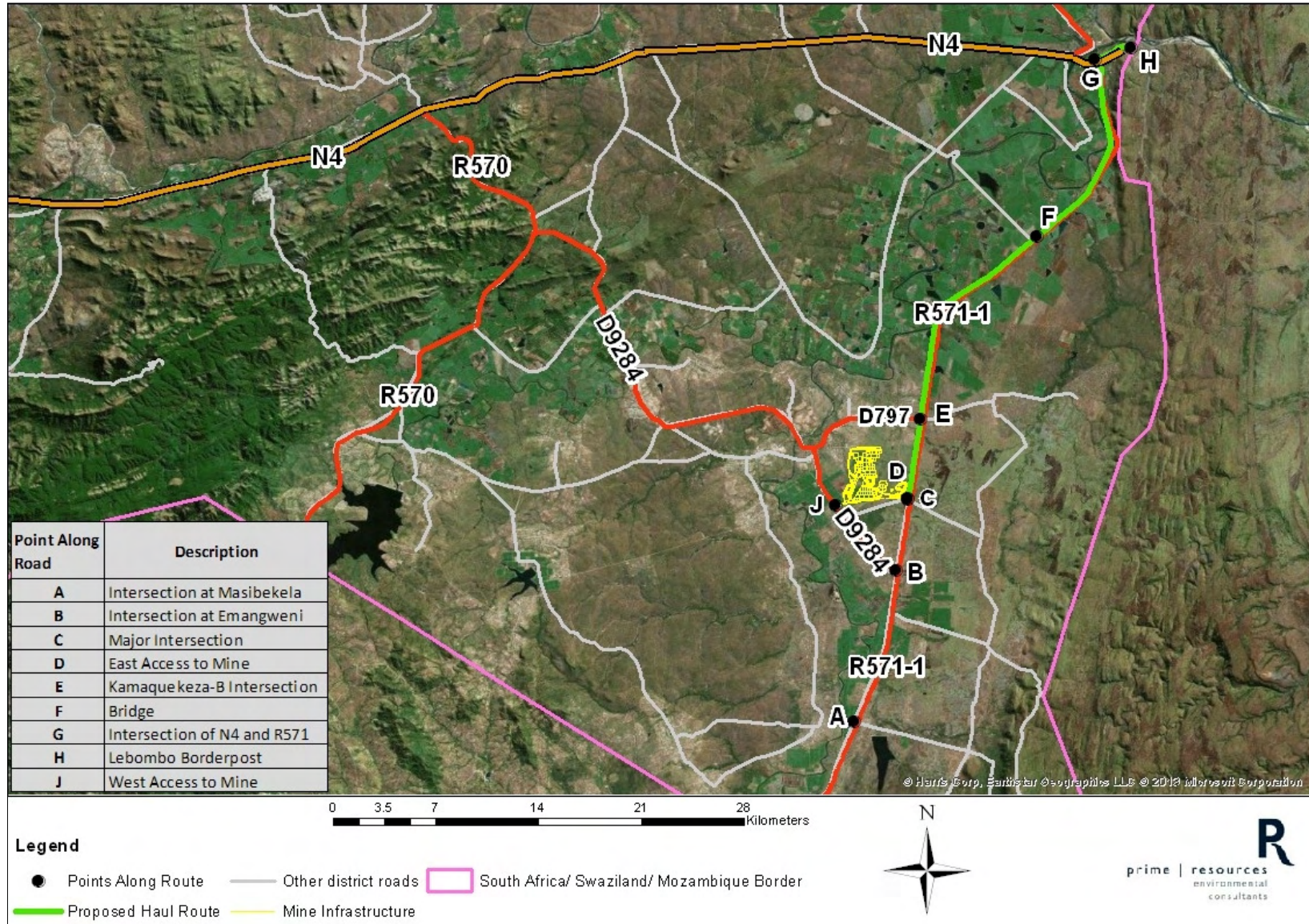


Figure 31: Roads surrounding the proposed KaNgwane Anthracite Mine.

A Traffic Impact Study conducted by UWP Consulting (Pty) Ltd in October 2012 was undertaken for the proposed route for interlink trucks that will haul coal material from KaNgwane to the Lebombo Border post, so that the coal can ultimately be delivered to the Maputo Port.

The R571-1 route that will be used to transport coal from the Mine to the Lebombo Border post is approximately 37 km long. The R571 runs along the eastern section of the study area from north to south. This road intersects the D797 around which intersection the local business district is located. The R571-1 generally appears to be in good condition and since it is a national road, it is well suited in terms of functionality and pavement structure, to carry heavy vehicles. According to SANRAL, this road was rehabilitated in 2010 / 2011. The coal transport route has been assessed on a section by section basis. Figure 31 is a visual representation of the roads in the study area, also illustrating a generalised layout of the mine.

2.13.1. Route sections

The R571 was divided up into the following sections for ease of discussion:

Section 1 (R571-1 South of Kamaquekeza-B): This section is a surfaced national road which is approximately 8m wide and is generally in good condition. This section of the R571-1 is situated between the towns of eMangweni and Kamaquekeza-B. The traffic volumes along this route were observed to be low. The speed limit is 100 km/h (proximity to residential areas).

Section 2 (R571-1 passing through Kamaquekeza-B): This section is also a surfaced national road which is approximately 8m wide but is generally in poor condition. Section 2 passes through the town of Kamaquekeza-B. The traffic volumes along this route were observed to be moderate. The speed limit through this village is 60 km/h.

Section 3 (R571-1 North of Kamaquekeza-B): This section of surfaced national road is also approximately 8m wide and in poor condition. Section 3 does not pass through any towns or villages, but there are a few accesses to farms and factories along the way. The traffic volumes along Section 3 comprise a higher volume of trucks than Section 2, and consist mainly of heavy trucks with six or more axles. The speed limit along this section is 100 km/h and warning signs for pedestrians and heavy vehicles were noted when approaching a few intersections.

Section 4 (N4 from R571-1 to Lebombo Border post): This section of surfaced national road is a four lane road and is generally in good condition. The traffic along this route was observed to be moderate to high volumes and with a higher percentage of trucks than observed along the R571-1. The speed limit along this section is 100 km/h although there are rumble strips to slow down traffic when approaching the border post. There were approximately 730 vehicles per hour recorded (peak), in both directions, with about 20% of the traffic made up of heavy trucks that have more than six axles.

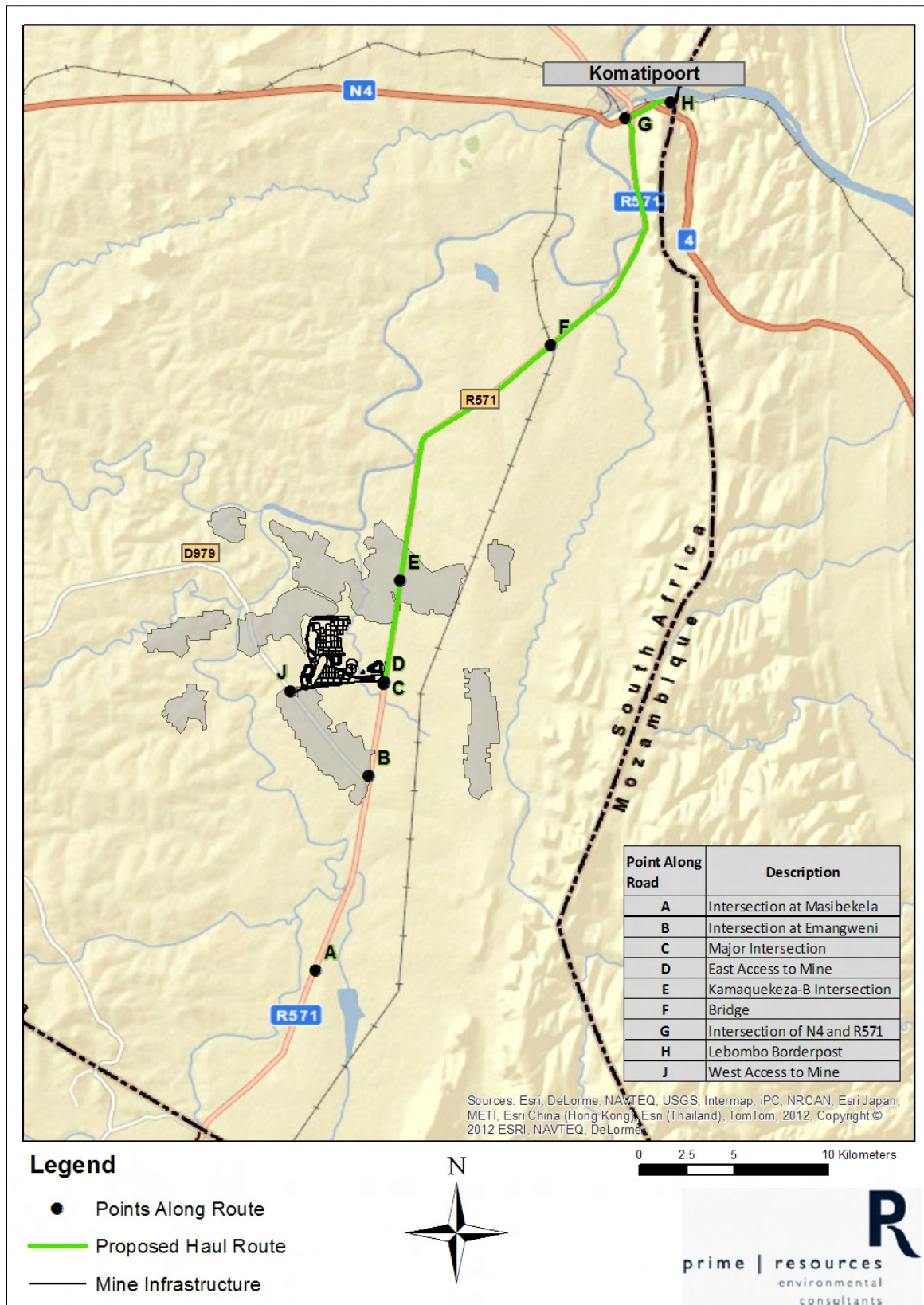


Figure 32: Layout of the affected roads at the KaNgwane Anthracite Mine.

2.13.2. Intersections

Point E: Main intersection along the R571-1 in Kamaquekeza-B, being the intersection of the R571-1 and D797. It is a four way stop controlled intersection. The peak hour occurs from 16h45 to 17h45 and the total of all movements during that hour was 381 vehicles. Approximately 8% of the vehicles were heavy vehicles, consisting mainly of busses.

Point G: T-Junction intersection of the R571-1 and N4 at the junction of Sections 3 and 4. The total of all movements during the peak hour traffic was 619 vehicles. Approximately 19% of the vehicles were heavy vehicles, consisting mainly of the heavy trucks that have more than six axles. The remainder of the R571-1 up to the intersection of the N4 is scheduled for a partial reconstruction in 2013 / 2014.

Point D: East Access to the Mine (proposed new access point off the R571-1). This access will mainly be used by the interlink trucks that will transport coal from the CHPP to the Lebombo Border post and ultimately to the Maputo Port. This access is also to be utilised by personnel wishing to access the coal handling and processing plant and the occasional delivery vehicle and visitor. A traffic count carried out at Point C illustrated that the afternoon peak hour occurs from 16h45 to 17h45 and the total of all movements during that hour was 313 vehicles. Approximately 8% of the vehicles were heavy vehicles, consisting mainly of "light trucks" that have two or three axles and busses.

Point J: West Access to the Mine. The west access to the mine will be off the district road D2948, which is the main road passing through eMangweni and also acts as a link road between the R571-1 and the R570. This access will be used by mine personnel travelling by car, minibus taxi or foot and the occasional delivery vehicle to access the mining contractor terrace. Therefore, the traffic along this road consists of a large percentage of passing traffic during the peak hours. It is estimated that approximately 110 vehicles currently travel in each direction along the D2948 during the peak hour and approximately 5% of those vehicles are heavy vehicles.

2.14. Noise

The information to follow was taken from a noise impact specialist study undertaken by J H Consulting (see Appendix 8). Confirmatory noise measurements of the existing noise climate were made at four defined positions (see Measurement Position 1-4 in Figure 33) to represent the various noise regimes around the proposed site. These positions were chosen as they are in close proximity to sensitive receptors that are likely to be affected by future mine noise. Measurements made at these four points indicate the following:

Measurement Position 1

This position is situated on the periphery of the village Tonga East, 300m west of the R571 tar road. Noise in this area is primarily generated by natural sounds such as bird calls, domestic and animal noise. However, the traffic on the R571 contributes significantly to the background noise

along this corridor. The average daytime noise recording from this position was 49 dB(A); the traffic flow, and therefore the noise level, is consistent throughout the day. The recorded value falls just above the recommended noise limit for rural areas which according to the relevant SANS (South African National Standards) document is 45 dB(A).

Measurement Position 2

This position is situated on the periphery of the village of Tonga and in close proximity to the west of the proposed northern pit. The noise measurements recorded at this position are typical of a rural area with very little- or no man-made noise. Noise generated is primarily natural (from birds and insects) with some noise originating from domestic activities in the village (primarily stemming from domestic animals). The average noise levels recorded in this area are consistent with those recommended by the relevant SANS document as the limit for a rural area – which is 45 dB(A).

Measurement Position 3

Located at the south western corner of the proposed site and on the periphery of the village eMangweni (in close proximity to the proposed southern pit). Noise measurements recorded at this point are typical of a rural area with almost no man-made noise present (although noise from the tar road located approximately 330m to the west of this position is audible). The average daytime noise level recorded was 48 dB(A), this value falls slightly above the relevant SANS document as the limit for a rural area – being 45 dB(A). The majority of noise generated in this area is natural noise generated from the rustling of vegetation, birds and insects with some noise stemming from domestic activities in the adjacent village.

Measurement Position 4

Located at the south eastern corner of the proposed site adjacent to the position of the proposed mine infrastructure (on the periphery of the village eMangweni). The R571 tar road is located approximately 330m to the east of this point. The noise measurements recorded at this point are typical of a rural area with almost no man-made noise; although noise emanating from the R571 tar road is audible from this point. The noise levels recorded at this point are consistent the average of which, being 49 dB(A) falls just above those recommended in the relevant SANS document as the limit for a rural area – which is 45 dB(A). Any noise present stems from natural noise (primarily from birds and insects) and traffic on the R571 tar road.



Figure 33: Baseline noise monitoring points representative of noise sensitive receptors.

2.15. Socio- Economic

Core Earth Resources conducted a social baseline study within the proposed KaNgwane Project Area in January 2012 (see Appendix 9).

2.15.1. Location of the project

The mine project area is situated within the Magisterial District of Ehlanzeni and within the Nkomazi Local Municipality in the Mpumalanga Province. The project area spans across the farms Naas, Ronel, Rags, Tonga, Joyce, Monson and Wanhoop.

The following villages are located within and adjacent to the study areas (Figure 34):

Block A – Tonga East/ Kamaqhaka A

This well established community was established in 1954 and boasts residential units, small and medium sized commercial entities such as banks, supermarkets, spaza shops and hardware stores. This block was formed due the forced relocation of the Shiboshwa Tribe, Block A functions as the administrative hub of the Siboshwa Tribal authorities.

Block B – Kamaqhaka B

Block B is essentially a dormitory settlement and an extension of Block A.

Block C

Block C, also considered an extension of Block A, serves mostly as a residential settlement, with small spaza shops located among the residential units.

Block D – Brink

Block D, also established in 1954, comprises residential units, small spaza shops and family cultivated plots adjacent to the village.

Block E – Albertsnek

Albertsnek is located 4.5 km east of Block D and was also established in 1954, according to the Headman. Similarly to Block D, Albertsnek comprises spaza shops among residential units and small family cultivated subsistence farms.

Tonga

Tonga plays host to the Municipal and Provincial services supporting the study area. The aforementioned villages experienced an increase in population, which led to the establishment of Tonga in 1988.

Steenbok and eMangweni

Steenbok is located to the south-east of the study area and lies within the jurisdiction of the Kwa-Lugedlane Tribal Authority, within political ward 8. eMangweni, located to the south of the study area, also lies within the Kwa-Lugedlane Tribal Authority, but is located within political ward 9.

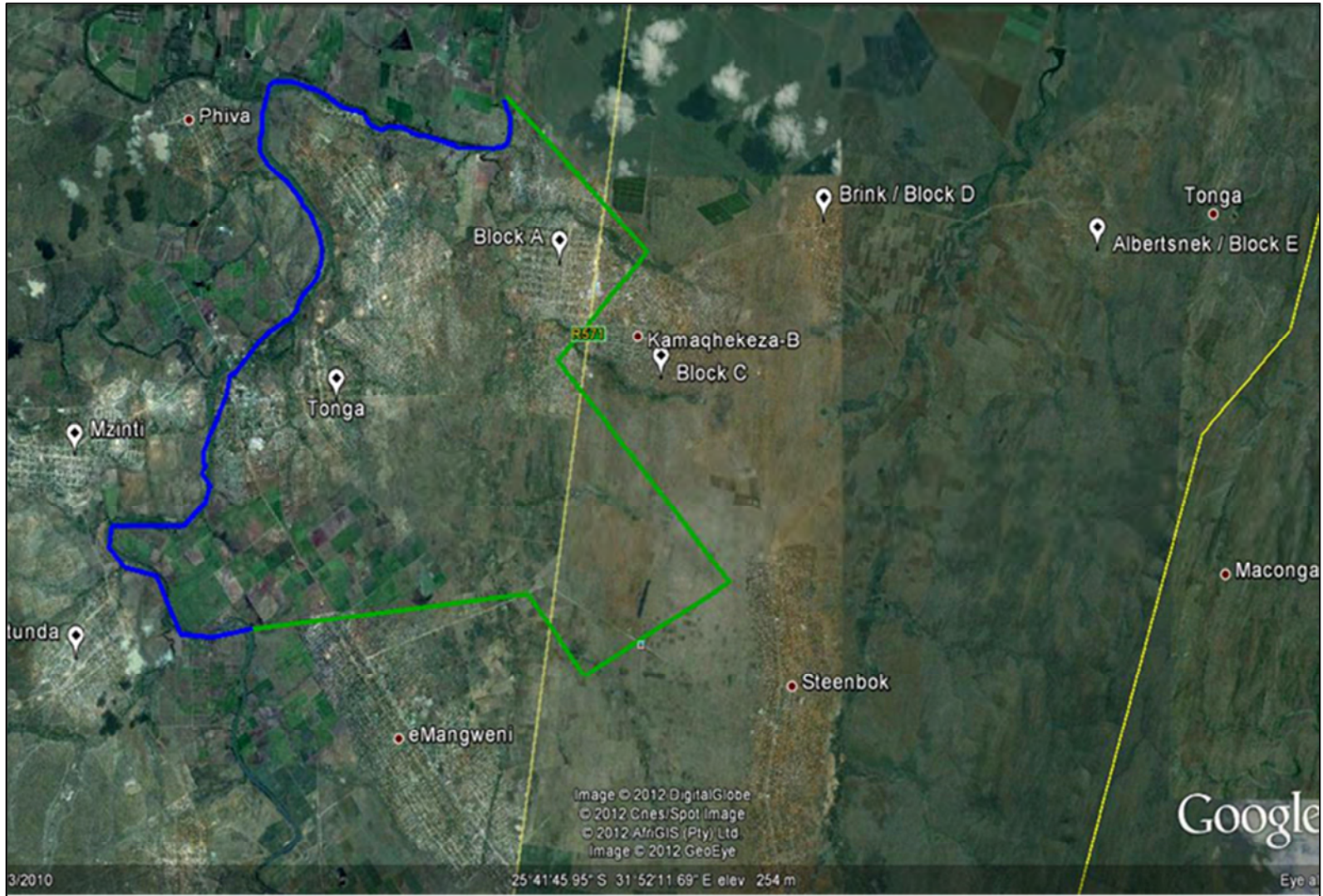


Figure 34: Settlements Associated with the KaNgwane Project Area.

2.15.2. Local Municipality Socio–Economic Environment

The Nkomazi Local Municipality is located in the eastern side of Mpumalanga on the border of South Africa and Mozambique and comprises 4.07% of the Mpumalanga Province land mass.

The Municipality hosts a population 338 095 with 78300 households, with the majority of the residents between 5 and 19 years of age. A large share of the population migrates to larger commercial centres in search of employment and tertiary education (Stats SA 2007).

The agriculture, manufacturing and tourism sectors are the main source of employment in the municipal district. The Municipality faces a shortage of skills and high rate of unemployment and illiteracy due to the rural nature of the municipality. The employment break-down per sector is indicated in Figure 35 below.

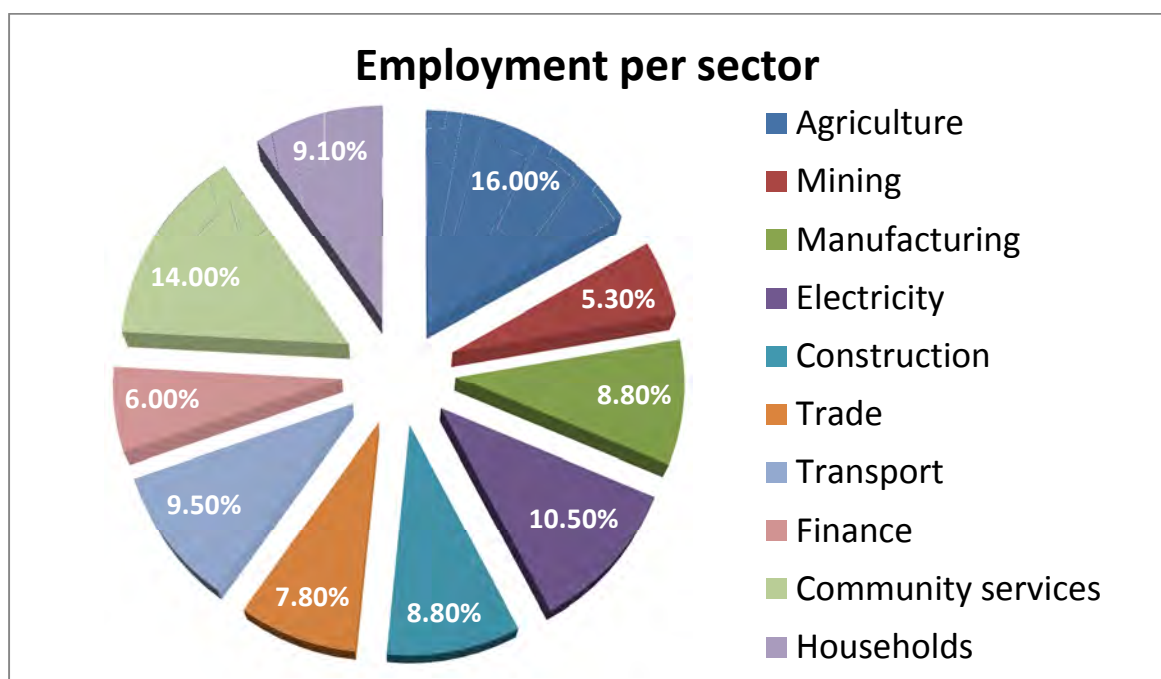


Figure 35: Employment Provided Per Sector in Mpumalanga Province, South Africa.

2.15.3. Study Area Socio–Economic Environment

The proposed development falls under the jurisdiction of the Siboshwa Tribal Authority. The land within the mining right area is considered tribal land which is managed by the tribal authority. The approval of the tribal leadership for any new development is essential. A questionnaire was administered to each village for completion by the respective Headmen (Indunas).

Demographics

According to the 2001 and 2007 Stats SA Household surveys respectively, the population of the Municipality has increased by 1.1%, which is indicative that the Municipality has not experienced a considerable influx of residents. The increase in population is indicated below (Table 16):

Table 16: Population increase in Nkomazi Municipality between 2001 and 2007.

BLACK AFRICAN		COLOURED		INDIAN OR ASIAN		WHITE		TOTAL	
2001	2007 ESTIMATE	2001	2007 ESTIMATE	2001	2007 ESTIMATE	2001	2007 ESTIMATE	2001	2007 ESTIMATE
101633	102751	293	296	58	58	1448	1464	103432	104569

Age distribution, gender and economically active population

A well balanced gender distribution is evident with 47% of the population being male and 53% being female. A total of 54% of the Municipality’s population are considered economically active. ‘Economically active’, refers to a person aged 15 years or more, who is either employed or unemployed but who is looking for work (Stats SA 2001).

Education and skills

The employment potential of residents in the Nkomazi Municipality is highly influenced by skills shortage and illiteracy. As indicated in the literacy levels below (Figure 36), only 21.4% of the population has achieved grade 12 (Nkomazi Municipality IDP).

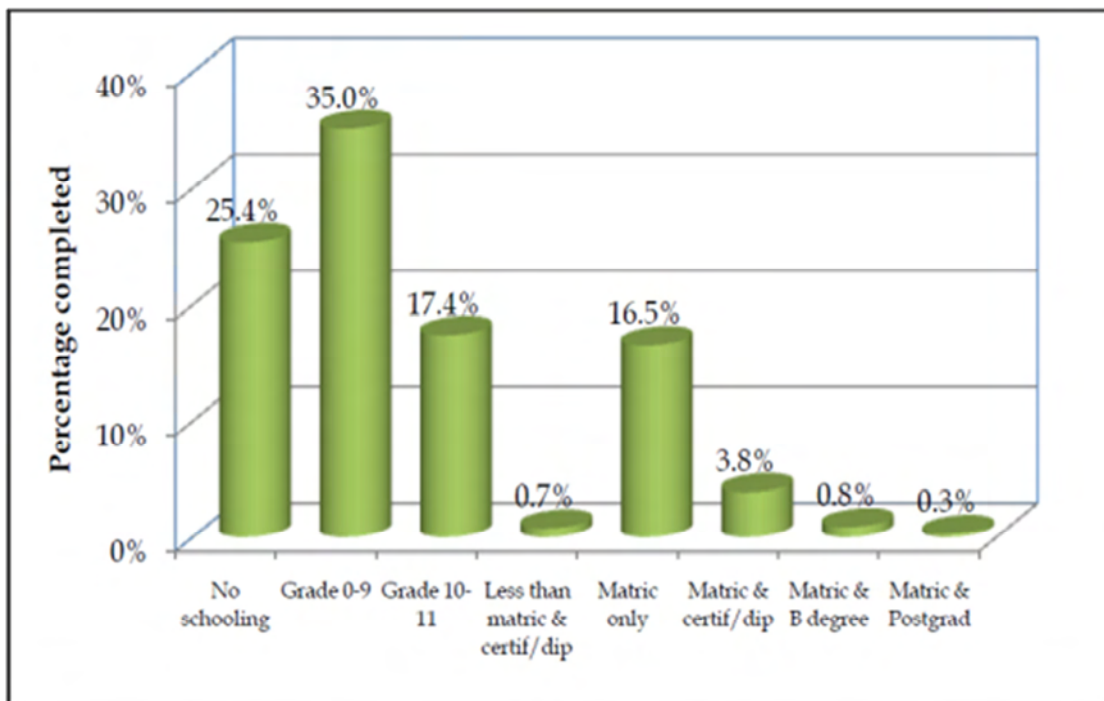


Figure 36: Education Statistics for Nkomazi Municipality, Mpumalanga.

Employment and occupations

Following the consultation session with the Headmen of the villages within the study area, it was evident that there are limited local employment opportunities. Residents are believed to migrate to bigger economic centres in search of employment. There are however, various home-based industries present, such as barbers, spaza shops and auto-spare shops. These are formal employment sectors present within the area and the employment distribution within these sectors are indicated in Figure 37 below:

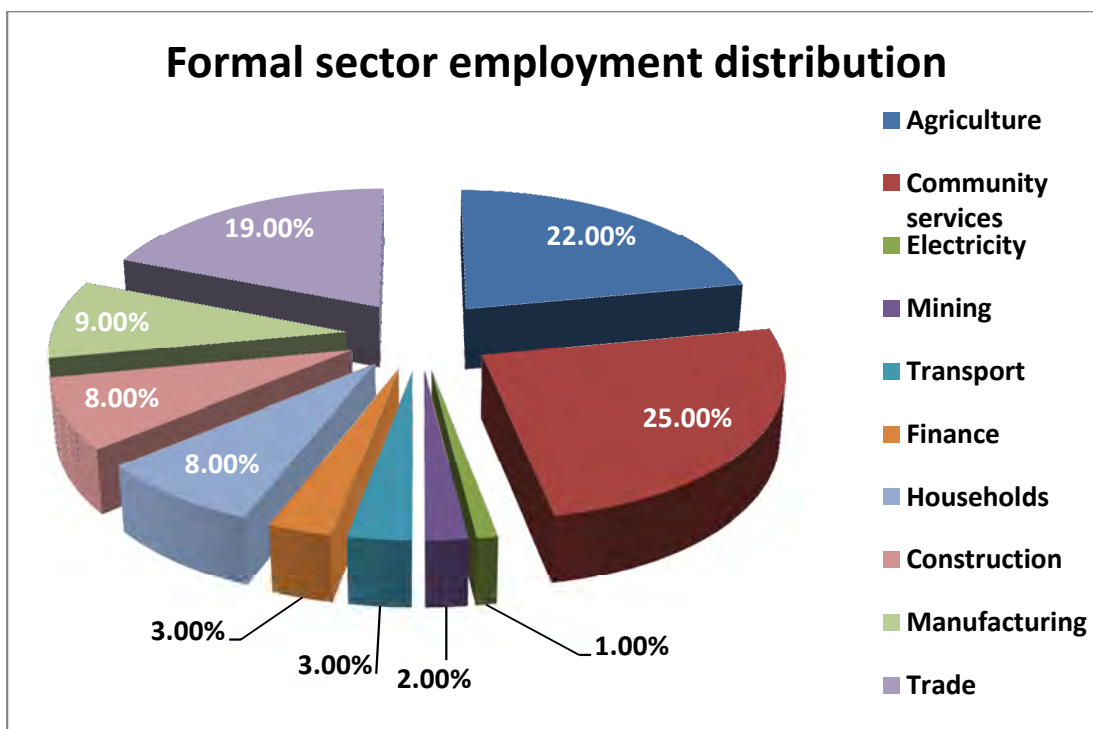


Figure 37: Formal Sector Employment Distribution within Nkomazi Municipality, Mpumalanga.

Water and sanitation

The study area receives water either from the Komati River, which is first purified at one of the purification plants, or from a reservoir in Steenbok. Approximately 66% of households make use of the water supplied from the water scheme, while 15% utilise borehole water (Stats SA 2001). The Headmen, however, indicated that borehole water was not used by households in the villages and that the majority of households make use of the communal taps.

A community survey in 2007 indicated that 59.3% of households have access to piped water either within their dwellings or within their yards, while 31.4% access water from the communal taps.

One of the major challenges of the Nkomazi Municipality is the provision of basic sanitation (Nkomazi Municipality NDP). A comparison of the sanitation usage of the study area between 2001 and 2007 is shown in Table 17 below (Stats SA Census 2001, Household survey 2007).

Table 17: A comparison of the sanitation usage of the study area between 2001 and 2007 (Stats SA, Household survey 2007).

SANITATION SYSTEM	CENSUS 2011 (PERCENTAGE)	COMMUNITY SURVEY 2012 (PERCENTAGE)
Flush toilet (connected to sewer system)	8	5.6
Flush toilet with septic tank	2	1.9
Dry toilet facility	1	1.7
Chemical toilet	6	37.4
Pit latrine w/vent (VIP)	28	35.8
Pit latrine w.o/vent	31	0.1
None	26	17.3

Waste disposal

A municipal landfill site which services the study area is located within the Steenbok village. The landfill site is yet to be fully operational, due to a lack of resources. A number of households utilise informal refuse dumps.

Health and welfare

The access to healthcare is an issue of concern within the study area. There are three medical facilities: The Tonga Hospital, the primary healthcare facility, and two day clinics within the study area.

The Tribal Authority serves as the only welfare resource within the area, although pension and social grants are dispersed from the Tribal Authority office complex.

Emergency services and safety

The Nkomazi Municipality has identified that the policing structure within the study area needs to be improved. The Tonga Police Station services the study area, while the Tribal Authority traditionally police the areas within the tribal land.

Land ownership and housing

According to the information obtained from the tribal Headmen, the occupation of land is subject to an annual fee payable to the Tribal Authority. The land within the study area is mostly used for subsistence farming and small vegetable gardens. Residential and cultivated areas are generally located close to the Komati River and its tributaries. The majority of the residents own the dwelling in which they reside and a small amount of houses are being rented.

Transport and communication

Public transportation services do exist within the study area, but certain areas are not fully serviced. According to the Headmen, some residents need to walk great distances to collection points. The Nkomazi Municipality has also identified the state of transportation as an issue of great concern.

Telkom lines are present in the study area, except in Block D and E. A cellular network is also available.

Sources of energy

Information obtained from the Headmen indicates that around 70% of the study area has access to electricity, but the inconsistency of supply raised concern. Wood and paraffin are also used for lighting and cooking.

2.15.4. Community needs

As mentioned before, discussions were held with the Headmen of the respective villages. From the information gathered from the discussions, the following needs were raised:

- There is a clear general consensus that the day clinics should operate for extended hours, as they are only operational until 16h00 daily;
- Access to potable water is in dire need throughout most of the villages;

- Electricity supply is required in most villages;
- Malambisa and Nhalakahle villages in Block C raised the need for a primary and secondary schooling facilities;
- The Headmen of Albertsnek and Tonga also indicated the need for tarred roads, a community hall and fencing for cattle pens;
- The need for a sports facility was raised in Block C;
- No concern was raised over employment expectations, assuming that the unemployment level of 21% is of little or no concern to the economically active population.

2.15.5. Issues and Concerns Raised during Socio-Economic Survey

The following issues and concerns were raised during the Socio-Economic Survey:

- Impact on heritage resources;
- There is concern over the formalised graveyard adjacent to the proposed mining area;
- Loss of cultivated and grazing land;
- Loss of agricultural and grazing land and the effect on households utilising the area for subsistence farming and larger scale sugar cane production.

2.15.6. Issues and Concerns Raised during the Public Consultation Process

The following issues and concerns were raised during the public consultation process:

- The effects of noise, blasting and dust produced by the opencast mining operation on surrounding communities;
- How the local community will benefit from the proposed mining project;
- The land associated with the mining project is currently leased to the community by the Tribal Authority. There is concern over land ownership and compensation for loss of agricultural land;
- The potential impacts to the ground water supply in the area, community members emphasized the need for detailed specialist studies.

3. DESCRIPTION OF THE PROPOSED DEVELOPMENT

Refer to Appendix 10 for a copy of the general arrangement / layout plan for the proposed development.

All technical information presented below has been taken from the Bankable Feasibility Study (BFS), compiled by the RSV ENCO project team.

3.1. Mineable Resources

The preliminary geological data available and modelled defined a total Gross Tonne in Situ (GTIS) resource of 92,802 million tonnes of anthracite (these tonnes exclude the S1 seam which at this stage is uneconomical to mine). The intention is to mine the identified resource through opencast and underground mining techniques at KaNgwane with associated supporting infrastructure on surface as discussed further below.

3.2. Mining Method and Sequence

Opencast mining will occur in the form of two opencast pits. The underground mining will focus on extracting the No. 2 Seam. The operation will start with Opencast Pit 1 (OC1) before progressing to Underground Mining Area 1 (UG1) moving over to OC2 then UG2 as indicated in Figure 38.

Table 18 indicates the mine plan schedule over a 20 year period. It reflects the envisaged extent of material that will be mined at KaNgwane.

Initially, two or three opencast strips of 40m by 200m will be exposed by means of a box-cut to allow room for mining purposes. Access to the opencast mining area will take place through a ramp established on the south western portion of the reserve. This will allow development of the cuts to take place in a northerly direction which will enable establishment of access to the southern underground block (illustrated in Figure 38) without interference from opencast operations once the high-wall has been established (opencast mining operations are planned to be completed at least six months prior to the establishment of the infrastructure required to access the underground operations). A 22m-wide ramp is to be developed to cater for 100 ton dump trucks with a gradient of 8° and to a depth of 58 m in order to access the No 2. Seam.

Access to the northern opencast mining area will take place through a ramp established on the north western portion of the reserve and the development of the cuts will take place in a southern direction. A similar ramp structure will have to be developed to the No 2 Seam in this mining block to a depth of 33 m.

The opencast mining process involves the clearance of vegetation from the surface, the removal and stockpiling of topsoil in the designated area. Overburden material will then be removed (either mechanically for free-dig material only or following a drilling and blasting exercise) and separately stockpiled (for carbonaceous and non-carbonaceous overburden). Finally, the target resource will be mined (utilising the drill and blast method with truck and shovel extraction).

Thereafter, overburden material extracted from the strips being mined will be progressively placed into the excavation remaining from the previously mined strips (i.e. progressive rehabilitation).

Underground mining has been designed as a bord and pillar operation utilising a continuous miner in three mining sections and supported by one stone section (to handle dolomitic material encountered) utilising drill and blast methods.

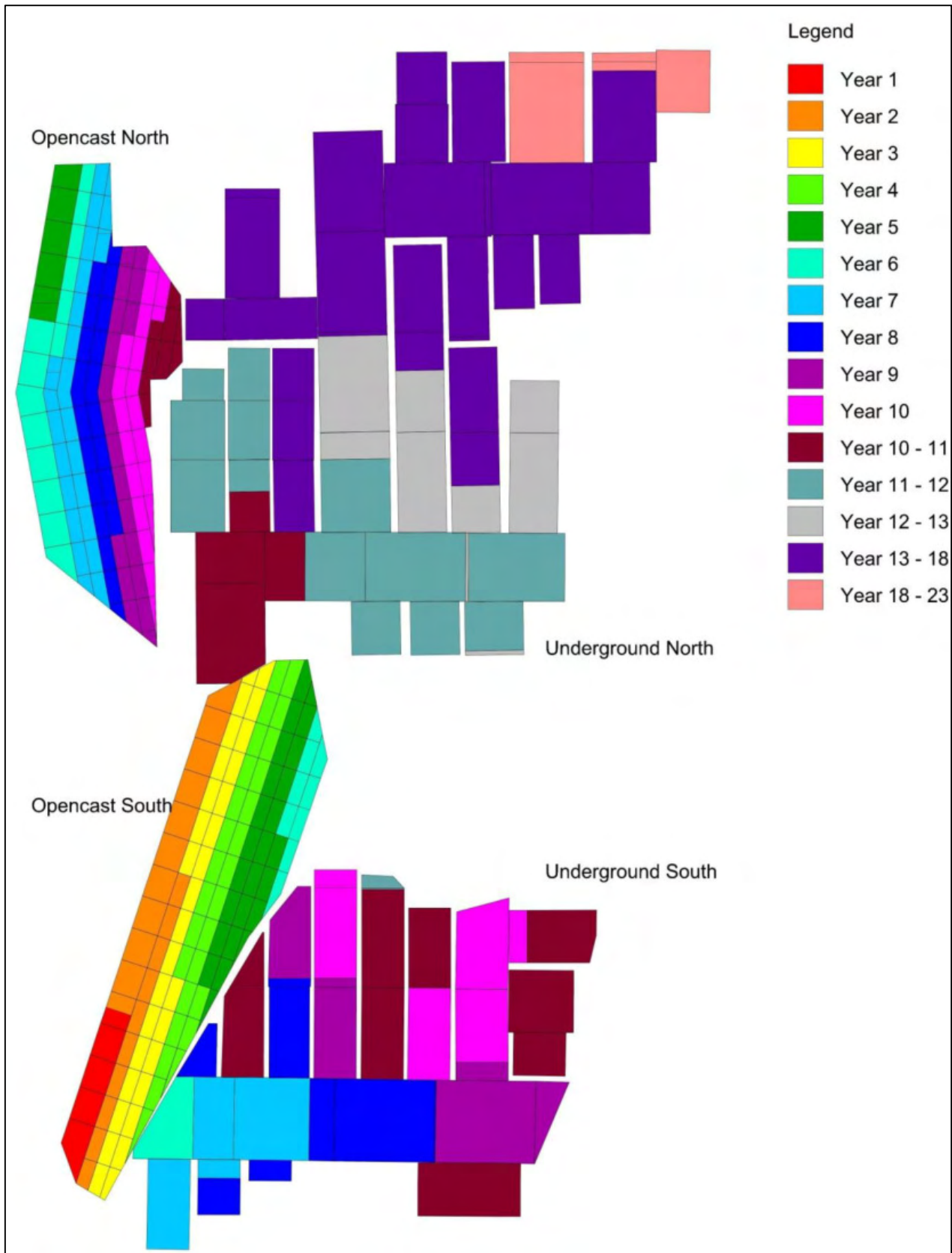


Figure 38: Schedule Plot layout (BFS, RSV ENCO 2012).

Table 18: Mine Plan Schedule (BFS, RSV ENCO 2012).

Mine Schedule Item	TOTAL	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
		Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	Y10	Y11	Y12	Y13	Y14	Y15	Y16	Y17	Y18	Y19	Y20
Opencast South																					
Topsoil	491,413	134,566	81,539	105,762	91,888	74,235	3,422	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Softs	4,914,128	1,069,666	953,665	1,065,890	916,407	814,970	93,531	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Softs	4,914,128	1,069,666	953,665	1,065,890	916,407	814,970	93,531	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S7 Hard Overburden Volume	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S6 Hard Overburden Volume	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S5 Hard Overburden Volume	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S4U Hard Overburden Volume	23,050,933	3,714,210	4,549,299	4,181,760	4,374,494	5,420,371	810,799	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S4L Hard Overburden Volume	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S3 Hard Overburden Volume	1,662,771	157,014	379,472	767,008	314,311	44,967	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S2 Hard Overburden Volume	5,114,524	257,278	1,147,778	1,077,489	1,240,761	1,167,457	223,761	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Hards	29,828,228	4,128,502	6,076,549	6,026,256	5,029,567	6,632,795	1,034,560	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Overburden	34,742,356	5,198,167	7,030,214	7,092,146	6,845,973	7,447,764	1,128,091	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S7 Coal Tonne	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S6 Coal Tonne	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S5 Coal Tonne	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S4U Coal Tonne	735,067	100,841	140,300	139,297	168,350	163,061	23,217	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S4L Coal Tonne	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S3 Coal Tonne	281,896	43,063	76,638	108,585	48,295	5,315	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S2 Coal Tonne	4,017,814	412,426	983,062	952,118	854,989	674,936	140,282	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Coal Tons	5,034,776	556,330	1,200,000	1,200,000	1,071,635	843,313	163,499	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S2 Seam Raw Qualities																					
S2 Yield - Opencast South	-	64.09	67.72	68.46	70.49	71.55	74.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S3 Seam Raw Qualities																					
S3 Yield - Opencast South	-	60.19	56.68	57.74	63.15	66.65	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S4U Theoretical Yield																					
S4U Yield - Opencast South	-	88.70	83.34	86.24	87.74	89.19	87.61	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Opencast North																					
Topsoil	455,782	-	-	-	-	98,742	67,456	88,749	73,477	63,693	48,790	14,676	-	-	-	-	-	-	-	-	-
Softs	4,557,824	-	-	-	-	987,418	594,560	967,492	654,768	716,928	487,895	148,762	-	-	-	-	-	-	-	-	-
Total Softs	4,557,824	-	-	-	-	987,418	594,560	967,492	654,768	716,928	487,895	148,762	-	-	-	-	-	-	-	-	-
S7 Hard Overburden Volume	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S6 Hard Overburden Volume	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S5 Hard Overburden Volume	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S4U Hard Overburden Volume	3,699,562	-	-	-	-	-	-	424,420	520,989	1,064,460	1,098,602	591,090	-	-	-	-	-	-	-	-	-
S4L Hard Overburden Volume	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S3 Hard Overburden Volume	649,530	-	-	-	-	-	-	27,287	90,179	195,246	249,714	87,104	-	-	-	-	-	-	-	-	-
Total Hards	10,866,041	-	-	-	-	1,723,122	1,810,720	1,762,894	2,491,322	1,379,566	1,445,986	252,431	-	-	-	-	-	-	-	-	-
Total Overburden	19,772,957	-	-	-	-	2,710,541	2,405,280	3,182,093	3,757,258	3,356,201	3,282,198	1,079,386	-	-	-	-	-	-	-	-	-
S7 Coal Tonne	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S6 Coal Tonne	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S5 Coal Tonne	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S4U Coal Tonne	107,343	-	-	-	-	-	-	8,992	23,415	27,658	31,565	15,714	-	-	-	-	-	-	-	-	-
S4L Coal Tonne	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S3 Coal Tonne	94,484	-	-	-	-	-	-	466	17,662	32,389	34,056	9,912	-	-	-	-	-	-	-	-	-
S2 Coal Tonne	3,842,807	-	-	-	-	347,171	886,503	740,543	558,923	539,953	534,380	235,334	-	-	-	-	-	-	-	-	-
Total Coal	4,044,634	-	-	-	-	347,171	886,503	750,000	600,000	600,000	600,000	260,960	-	-	-	-	-	-	-	-	-
S2 Seam Raw Qualities																					
S2 Yield - Opencast North	-	-	-	-	-	56.55	64.09	61.79	61.61	59.44	52.85	58.25	-	-	-	-	-	-	-	-	-
S3 Seam Raw Qualities																					
S3 Yield - Opencast North	-	-	-	-	-	-	-	42.96	43.78	44.18	46.28	44.22	-	-	-	-	-	-	-	-	-
S4U Theoretical Yield																					
S4U Yield - Opencast North	-	-	-	-	-	-	-	52.52	52.50	54.46	52.44	43.15	-	-	-	-	-	-	-	-	-
Underground Tons																					
Underground South	3,534,566	-	-	-	-	-	150,000	450,000	600,000	600,000	600,000	600,000	518,220	16,346	-	-	-	-	-	-	-
Underground North	6,720,825	-	-	-	-	-	-	-	-	-	-	-	225,000	381,780	883,654	900,000	900,000	900,000	900,000	643,323	600,000
Total Coal	10,255,391	-	-	-	-	-	150,000	450,000	600,000	600,000	600,000	600,000	825,000	900,000	900,000	900,000	900,000	900,000	900,000	643,323	600,000
S2 Yield - Underground	-	-	-	-	-	-	64.74	67.32	76.83	80.26	72.29	66.10	65.97	43.60	57.62	57.15	49.27	55.14	55.64	56.06	65.36
Mining Rights Area - Total Coal	19,334,801	556,330	1,200,000	1,200,000	1,071,635	1,190,484	1,200,001	1,200,000	1,200,000	1,200,000	1,200,000	1,085,960	900,000	900,000	900,000	900,000	900,000	900,000	900,000	643,323	600,000

The northern underground workings will be ventilated via 1 fan at 330 m³/s and a blade setting of 45° for three production sections and the southern ventilated with a similar fan with a blade setting at 35° (two production sections). These fans will be installed in the box cut at the high wall approximately 70 meters bgl.

3.3. Processing

A Coal Handling and Preparation Plant (CHPP) will be established on surface with a capacity to treat 1.2 Mt pa Run of Mine (ROM) material.

The plant design will be a single stage wash facility capable of delivering a single ash quality product at a time. ROM material will be trucked and tipped at the plant feed-end with CAT777 dump trucks. Front-end loaders will shovel the ROM material onto an apron feeder arrangement feeding onto the plant feed belt via a primary crusher at a rate of 200 tons per hour.

A tailings thickener and filter-press will be installed at the plant to dewater the fine plant waste and discard so that process water can be recycled in the circuit. Discard and dewatered fines will be discharged to a discard bin from where it will be loaded onto Articulated Dump Trucks (ADTs') for deposition to a discard dump on surface.

Anthracite product will be stockpiled by means of a spreader conveyor. The spreader conveyor creates the opportunity for stockpiling different ash products as required. The product will be loaded onto trucks with front-end loaders and transported via the R571 and N4 to Maputo for the export coal market.

Coal will be transported in 32 ton interlink trucks from the East Access of the Mine at Point D, to the Lebombo Borderpost. The trucks will be operational during daylight hours from 05h00 to 19h00, Monday to Saturday and it is expected that 8 interlink truck trips will take place in each direction per hour.

The Discard Dump is to be situated to the north of the CHPP and will be accessed by means of a road coming in from the west. There will be a dirty water drain surrounding the discard dump which will feed into the pollution control dam which is located near the South-Western corner of the discard dump.

3.4. Manpower

The manpower required for the contract mining operation is estimated at 350 persons. The mine will operate on a shift-basis, 24 hour working day, 7 days a week, at 100% productivity for 360 days of the year.

The man power for the CHPP is estimated at maximum 60 people.

3.5. Supporting Infrastructure

Access Road

The proposal is for two new access roads to be positioned at the following points:

- On the Western side there will be a new T-junction from an existing main road for access to the mining contractor terrace;
- On the Eastern side there will be an access road from the R571 leading towards the Mine Offices and CHPP.

Service Roads

Service roads have been positioned for convenient access to the areas where needed. These include roads leading to Pollution Control Dams (PCD's), explosive storage facilities and the road linking the Mining Infrastructure Area (MIA) and Plant Infrastructure Area (PIA).

Haul road

A Haul Road will connect the North and South pit ramps. There will be a main Haul Road leading from between the North and South Opencast Pits to the ROM tip at the CHPP. Haul Roads also lead to all overburden dumps.

The Haul Roads has been designed to cater for 100 tonne Dump Trucks. The width of the Haul Road will be 22m to allow for bi-directional traffic. Safety berms have been positioned wherever deemed necessary for safety reasons along the road. The Haul Road near the plant will be crossing the Mambane stream, which is classified to be a non-perennial stream. Provision has been made for a low level crossing, sufficient to cater for a 1:50 year flood event.

The mine will further comprise typical infrastructure such as change-houses, workshops, security and administration offices. Water and sewage treatment plants will also be installed (see further below).

3.6. Bulk Services

Figure 39 indicates the water reticulation network. Borehole water is used to supply the potable water treatment plants for make-up during dry seasons and is also used to supplement the service water during dry seasons. The design is such that only clean borehole water is used for potable water.

The PCDs are kept dry at all times by pumping water from the PCDs into the service water supply line. If all the service water storage tanks are full the excess water is pumped into the storage dam for use during the dry season. Borehole water is used for service water only if the water make is negative and this will mostly be during winter months.

Maximum use is made of recovery water from water treatment plants and the use of filter presses in the coal process plant.

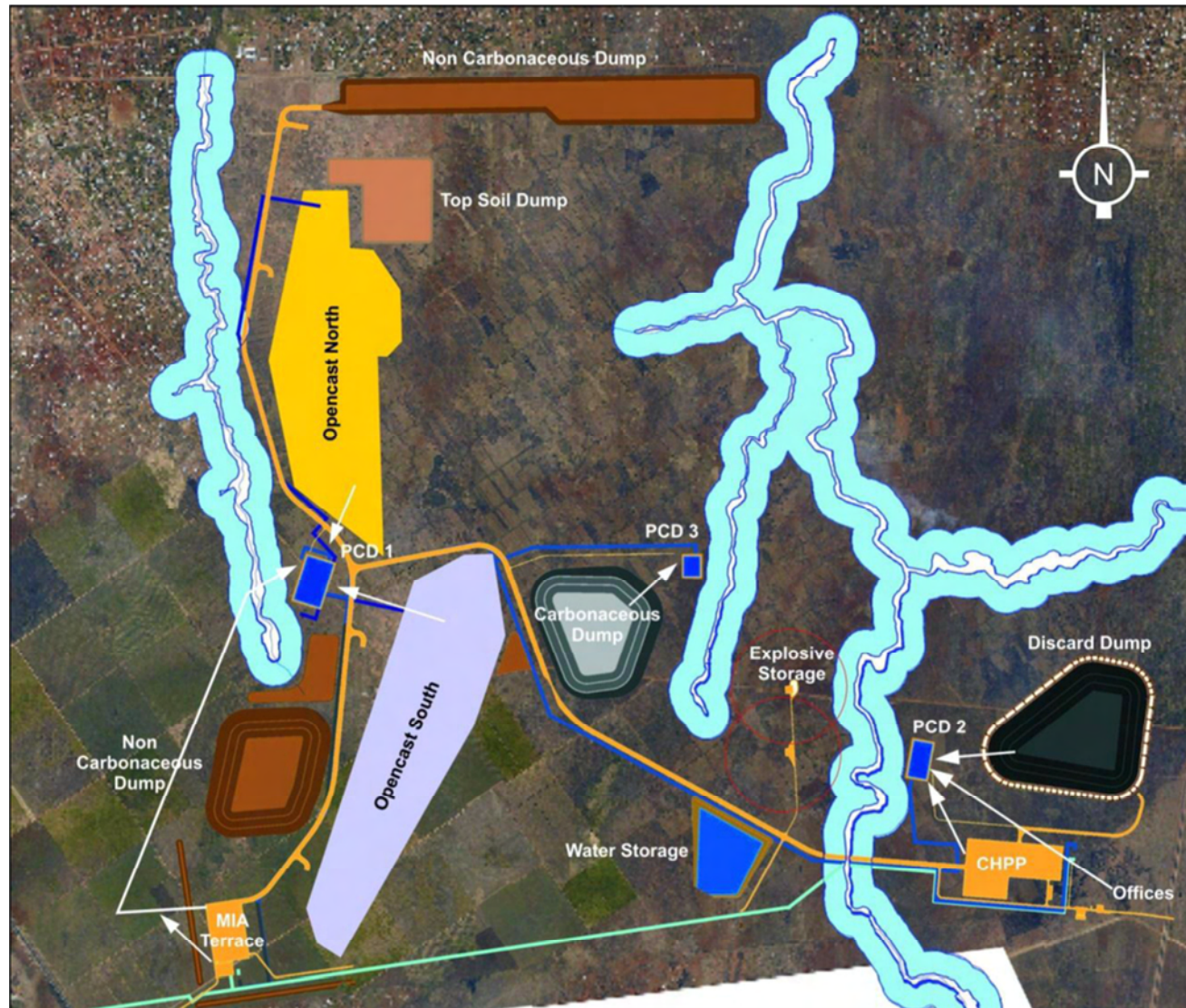


Figure 39: Water Reticulation Network (BFS, RSV ENCO 2012).

3.7. Water Balance

The differences in summer and winter rainfall are substantial for the Komatipoort area. Water balances have thus been done by RSV ENCO for both seasons to determine the make-up water demand per season. Mining is also done in several phases and water balances have been done for the various phases (refer to Figure 39 above).

Phase 1: Opencast Mining only

Phase 2: Opencast Mining and Underground Mining

Phase 3: Underground Mining only

Phase 4: End of U/G Mining Closure

Phase 5: Post Closure

3.7.1. Phase 1: Start of O/C Mining

At the start of mining the following is considered for the water balance:

- Rainfall/run-off from all areas is considered;
- Underground mining has not commenced and is disregarded;
- The water storage dam is empty;
- Pit aquifer is dewatered by pre-drilling around pit.

The system is water positive in summer with excess water as follows:

Table 19: Start of O/C Mining – Water In/Out Summary.

	SUMMER M3/DAY	WINTER M3/DAY
Borehole Supply Water	89	1475
Bulk Water Into Storage Dam	886	0

A total of 143 063 m³ will be accumulated in the storage dam by end of summer and this is sufficient to supply the mine for the first 2 months of winter. Borehole water will only be required for the remaining 4 months.

3.7.2. Phase 2: Start of U/G Mining

At the start of U/G mining the following is considered for the water balance:

- Rainfall/run-off from all areas is considered;
- Service water is supplied to the UG workings;
- Return water from the UG workings is accommodated;
- Pit aquifer is dewatered by pre-drilling around pit (out-of-pit dewatering).

The system is water positive in summer with excess water as follows:

Table 20: Start of UG Mining – Water In/Out Summary.

	SUMMER M3/DAY	WINTER M3/DAY
Borehole Supply Water	89	1518
Bulk Water Into Storage Dam	843	0

A total of 135 287 m³ will be accumulated in the storage dam by end of summer and this is sufficient to supply the mine for the first 2 months of winter. Borehole water will only be required for the remaining 4 months.

3.7.3. Phase 3: Underground Mining only

At the end of O/C mining the following is considered for the water balance:

- Rainfall/run-off from all areas is considered;
- Service water is supplied to the UG workings;
- Return water from the UG workings is accommodated;
- UG Seepage is accommodated.

The system is water positive in summer with excess water as follows:

Table 21: UG Mining only – Water In/Out Summary.

	SUMMER M3/DAY	WINTER M3/DAY
Borehole Supply Water	89	1454
Bulk Water Into Storage Dam	907	0

A total of 146 779 m³ will be accumulated in the storage dam by end of summer and this is sufficient to supply the mine for the first 2 months of winter. Borehole water will only be required for the remaining 4 months.

3.7.4. Phase 4: End of U/G Mining

At the end of UG mining the following is considered for the water balance:

- Rainfall/run-off from all areas is considered;
- Service water is supplied to the UG workings;
- Return water from the UG workings is accommodated;
- UG Seepage is accommodated.

The system is water positive in summer with excess water as follows:

Table 22: End of UG Mining – Water In/Out Summary.

	SUMMER M3/DAY	WINTER M3/DAY
Borehole Supply Water	89	1383
Bulk Water Into Storage Dam	980	0

A total of 159 700 m³ will be accumulated in the storage dam by end of summer and this is sufficient to supply the mine for the first 3 months of winter. Borehole water will only be required for the remaining 4 months.

3.7.5. Phase 5: Post Closure

Aspects pertaining to post-closure groundwater quantity and quality, refer to Section 7.6.3 below.

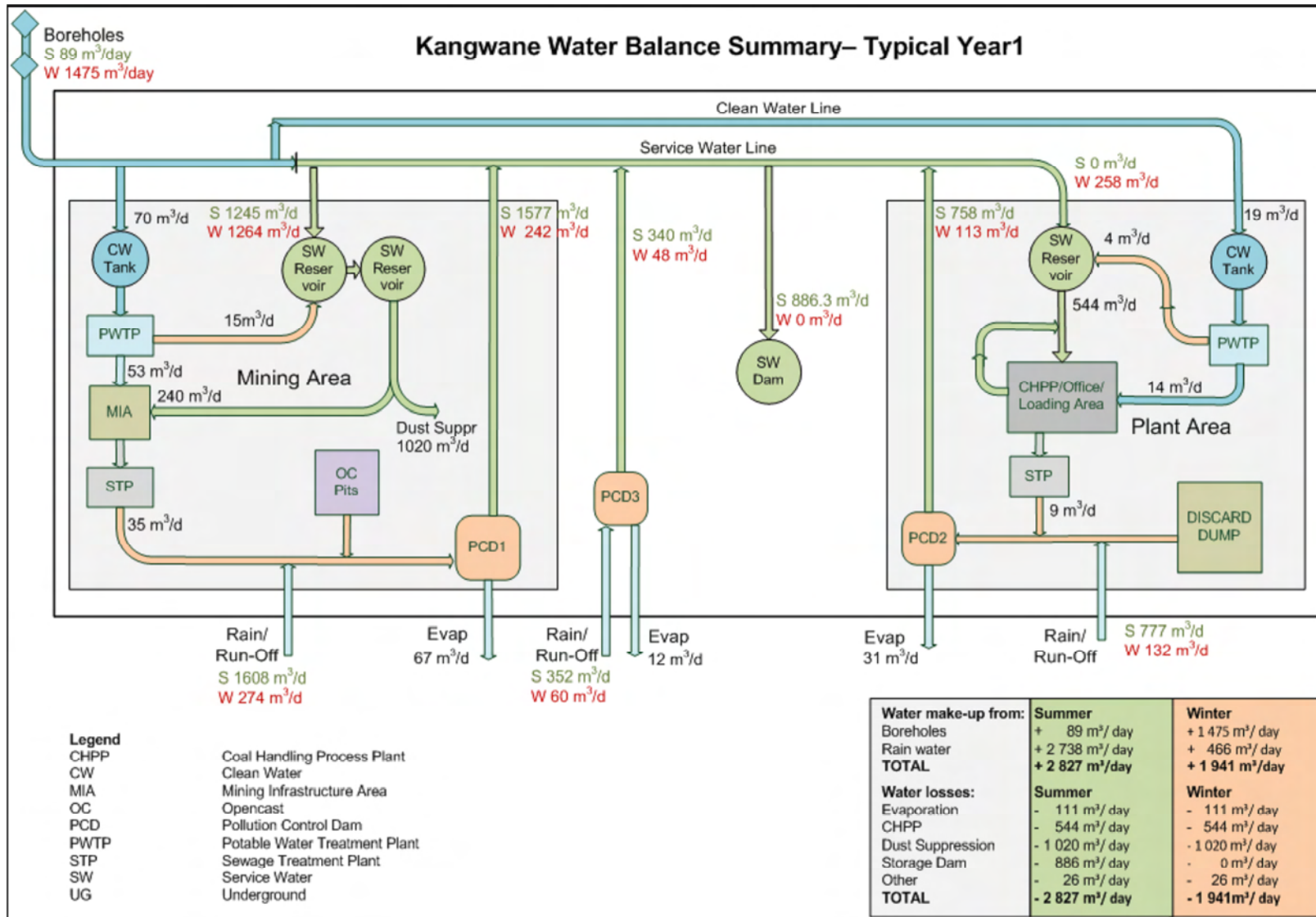


Figure 40: Water Balance Block Flow Diagram (BFS, RSV ENCO 2012).

3.8. Clean and Dirty Water Handling

Provision has been made to keep all possible clean water from natural sources in the natural waterways wherever possible:

- River crossings and culverts have been placed strategically below the Haul Road so as to not disturb the natural flow of water;
- On the southern side of the CHPP and ROM tip a clean water drain has been positioned so as to catch the clean water in the southern catchment area and discarding it into the natural stream at the river crossing closest to the ROM tip;
- A clean water cut-off has been placed on the southern and western side off the overburden stockpile and will be discharging into the closest possible stream on the western side of the stockpile.

Dirty water containment will be achieved by means of the following:

- Three Pollution Control Dams have been placed at the various necessary points to catch water from the dirty water areas and stockpiles as indicated below:

PCD	TOTAL DAM CAPACITY (M ³)
PCD 1	46 000
PCD 2	22 000
PCD 3	8 000

- PCD1 is situated close to the pit area and receives run-off from the Mining Infrastructure Area (MIA) and the Pit area. It also receives underground seepage water from the underground mines but excludes dewatering of the pit. Owing to an excess of water in the rain season the current recommendation is to dewater the pits by drilling around the pits and releasing this water into the environment;
- PCD2 is situated close to the Discard Stockpile and receives run-off water from the Discard Stockpile and the Process and Washing Plant (CHPP) and the office area;
- PCD3 is situated at the Carbonaceous Overburden Dump (COB) and receives run-off water from the COB.
- The PCDs' have the following inflows:
 - PCD1 water inflow from
 - Pit rain/run-off;
 - MIA rain/run-off;
 - Underground seepage from UG mines;
 - Underground return water;
 - MIA sewage treatment plant effluent;
 - Rain direct.
 - PCD2 water inflow from
 - Discard dump rain/run-off;
 - Product loading area rain/run-off;

- Offices rain/run-off;
- CHPP rain/run-off;
- CHPP sewage treatment plant effluent;
- Rain direct.
- PCD3 water inflow from
 - COB rain/run-off
- A water storage dam has been incorporated into the water network to store excess summer rainfall water for use in the winter. This dam is positioned in a suitable area in the centre of the mining complex.
- The PCDs' have been designed as per the requirements of GN704 of the National Water Act (No. 36 of 1998), i.e. to accommodate a 1:50 year return event for a period of 24-hours with 0.8m freeboard.
- Dirty water drains have been placed at carbonaceous dumps for collecting and transferring dirty water to the PCDs'.
- Water from the various stockpiles and terraces will be routed to their applicable PCD.

All water captured in the above dirty water system will be recycled to the mine water circuit to reduce the requirement for make-up water.

The surface water specialist assessed the capacity of the stormwater management system and concluded that the PCDs and the mine water dam were adequately sized to contain surface run-off from all contaminated areas produced by a storm with a return period of 50 years, falling over the catchment areas of these dams, provided that the dams had a freeboard of 600 mm at the time of the 50-year storm.

3.9. Electrical Reticulation

Electrical supply to the Mine will be via a 22kV Eskom line to the Main Consumer Substation situated at the MIA. Power will be reticulated from here to the mining operations, plant, PCDs', boreholes, explosive storage facility, offices, security building and helipad.

4. PROJECT ALTERNATIVES

4.1. Introduction

The objective of this section is to identify land use and development alternatives to the proposed KaNgwane Anthracite Mine.

4.2. Alternative Locations / Techniques

The design of the mine has been optimised by RSV ENCO based on the position of the available resources and taking cognisance of environmentally sensitive features identified during the initial phases of the project. The possible locations of the opencast pit are restricted by the location of the resource and presence of surrounding settlements (Figure 34). A further 8.2 MTIS of anthracite is present to the north of the project area (over the farms Naas, Ronel, Rags and Tonga, 472-475 JU) and was initially included as a second opencast pit in the mine design. This northern pit, however, falls in close proximity to the Komati River and the residential areas of Sibayeni, Ka-Sibhekane and KwaZibukwane and was thus considered to be fatally flawed.

While it was originally envisaged that all coal resources would be mined by opencast means (Figure 41), further consideration of the strip ratios indicated it more economically viable to separate the originally envisaged one opencast pit into two smaller opencast pits with underground components to access the deeper coal leading off the opencast high-wall.

There are further two current alternatives in terms of discard management, in that discard can either remain on surface and become a feature of the landscape post-closure (with due rehabilitation) or alternatively be backfilled to the opencast pits as part of continuous rehabilitation. Considering the outcomes of the geohydrological assessment and the resulting low-AMD potential of the material, the option for the discard dump to remain on surface post-closure will be pursued further.

Regarding logistics, it was originally envisaged that the anthracite product would be loaded to train at the Steenbok railway siding. Considering the ownership and legacy issues which may be associated with this option, the project is rather pursuing the alternative to truck anthracite via the existing road network (R571 and the N4).

The alternative identified in this section will be further assessed in the EIA and the preferably option selected.

4.3. Assessment of Alternatives

A high-level assessment of the alternatives considered was undertaken utilising the significance criteria described in Section 7.2 below. The considerations were given to the overall potential for impacts in terms of (1) financial impact to the Applicant, (2) potential impacts to the environment and (3) potential social impacts. The significance arrived at for each was then totalled to ascertain the overall significance value, the lesser option for which was selected as the preferred alternative (indicated by underlining). The no project alternative is also weighed against the situation of the development proceeding.

ALTERNATIVE CONSIDERED	SIGNIFICANCE			
	FINANCIAL	ENVIRONMENTAL	SOCIAL	TOTAL
TRANSPORT OF COAL MATERIAL				
Rail siding	55	27	60	142
Road transport	52	20	40	<u>112</u>
MINING METHOD				
Opencast (1 Pit)	60	64	44	168
Opencast (2 Pits) and Underground	52	56	44	<u>152</u>
DISCARD HANDLING				
Dump on Surface	52	44	8	<u>104</u>
Backfilling to Pit	44	60	11	115
PROJECT				
Project Proceeds	30	44	55	<u>129</u>
No-Project Alternative	64	6	72	142

From the above it is ascertained that the preferable options for the development are:

- Utilisation of road as opposed to rail transport as the social aspects of developing the rail siding are greater when considering the utilisation of the area by artisanal miners and the proximity to the additional community of Steenbok;
- The mining of two smaller opencast pits with an underground component rather than a single, larger opencast pit which exerts a greater environmental and financial impact; and
- The discarding of CHPP waste to a dump on surface rather than backfilling thereof into the opencast excavation due to the higher environmental impact of backfilling.

Considering the project as a whole, the development proceeding is preferable to the no-project alternative. While the project proceeding exerts a greater impact on the environment, it provides greater benefits in terms of social and financial benefits.

4.4. No Project' Alternative

Should the proposed development not proceed, the anthracite resources identified will remain *in situ*. The landowners and legal occupants will continue to utilise the area for grazing and cultivation. There will thus be no added socio-economic benefits over the long-term (described

further in Section 7.3.11) if the proposed mine was not to proceed, however, potential environmental impacts (as per Section 7), which may result from the proposed mining operation will be avoided. These aspects are considered in the table above.

5. MOTIVATION FOR THE PROPOSED PROJECT

The following section describes the need and desirability of a proposed development.

5.1. Introduction

The concept of need and desirability relates to the type of development being proposed, for which “need” refers to time and “desirability” to place. The key issues to be considered in determining need and desirability are:

- The scale of the proposed development;
- The numbers of people affected by the proposed development;
- Present users of the property proposed for the development;
- The impact on the existing character of the development footprint;
- Potential impacts to:
 - Protected or conserved area;
 - Traffic implications;
 - Past site history if possible;
 - Future development proposals;
 - Non-agricultural uses in the area;
 - New/existing buildings.

5.2. Need

The employment opportunities to be afforded at the proposed KaNgwane Anthracite Mine will contribute towards maintaining and improving long-term employment in the Nkomazi Municipality. The provision of employment at KaNgwane will positively influence the region through the multiplier effect and contribute to Mpumalanga's Gross Geographic Product (GGP). The export of coal from the proposed mine will also boost the local economy in terms of tax revenue, mining royalties and foreign investment.

5.3. Desirability

The scale of the proposed development

The KaNgwane Anthracite Project is a large scale development (approximately 1000 ha), to be situated in close proximity to the surrounding communities (nearest points of the proposed Mine to each of the surrounding communities is indicated below:

COMMUNITY	APPROXIMATE DISTANCE FROM THE PROPOSED MINE
Tonga	50 m
Tonga East	400 m

COMMUNITY	APPROXIMATE DISTANCE FROM THE PROPOSED MINE
eMangweni	70 m
Steenbok	4400 m
Kamaqhekeza	2800 m

The development thus has the potential to exert an influence on the surrounding communities and the receiving environment as per the content of this EIA / EMP and described further in Section 7 below.

The numbers of the population implicated in the proposed development

The mining industry is responsible for creating employment opportunities and contributing to over one fifth of Mpumalanga's GGP (Mpumalanga State of the Environment Report, 2003). The planned workforce at KaNgwane Anthracite Mine is approximately 284 permanent employees, 83 % of the KaNgwane Anthracite Mine workforce will be sourced from Mpumalanga which would be approximately 227 individuals. The mine intends to provide housing allowances to mine employees and facilitate development of suitable housing for purchase. The provision of employment and housing will have a positive impact on the multiplier factor of the municipal area as it will not only be the employees that benefit but also their families and the municipal area.

Present users of the property

The land is owned by the State and under the control of Department of Rural Development and Land Reform, with the Siboshwa Tribal Authority as custodian thereof. The land is zoned as "agricultural and rural / undeveloped land. The land owners and legal occupants utilise the land for grazing and cultivation. Land is allocated on a rental basis by the Siboshwa Tribal Authority to a particular user who can then develop the land in terms of residence or by preparing cultivated land for the production of sugarcane which is then sold per agreement to TSB Sugar.

The southern to western portion of the project area is currently utilised for agricultural activity dominated by large scale sugar cane production. In addition, a large portion of land in the centre of the southern proposed surface right area comprises small agricultural plots (subsistence farming).

The impact on the existing character of the development footprint

- The loss of the sugar cane production as well as the subsistence farm plots would have an impact on the households farming and employed at the various portions of land. The Applicant has undertaken an exercise to identify the number of subsistence farming plots as well as the extent of the sugar cane farming operations which will be impacted by the proposed mine plan. An exercise to determine the monetary compensation for the loss of cultivated land is currently being undertaken by the Applicant. The intention is to agree to a compensation strategy and value with all affected farmers prior to commencing with mining operations
- A large portion of land in the centre of the southern study area comprises small agricultural plots (subsistence farming) demarcated by shrub fences and wind breaks of

sisal plants and other robust thorny shrubs currently growing un-controlled. These lands are lying fallow and represent a severely disturbed vegetation cover or bare ground. Few small areas are cultivated by subsistence farmers or grazed by cattle and goats. The proposed mine would result in the loss of access to grazing land as well as the removal of grazing vegetation.

- The Eastern portion of the study area exhibits less disturbed natural veld. The least disturbed of this veld is found in the southern area, while the veld in the northern portion closer to the residential areas is very disturbed, dominated by *Dichrostachys cinerea* shrub veld. Portions of this land will be transformed through development of the proposed KaNgwane Anthracite Mine.
- The area directly to the north of the project area is densely populated by the settlements of Tonga and Tonga East. The southern section of the settlement of Tonga extends into the northern region of the project area. The existing character of these settlements will not be disturbed as no mining will occur within residential areas and there is thus no requirement for the displacement of individuals within formal villages and settlements.

From the above, it can be ascertained that the proposed development could potentially impact the character of the existing footprint. The potential impacts to this end are discussed further in Section 7.

Impact on a protected or conserved area

As discussed above the land is mostly utilised for grazing, cultivation and housing and the area is of no significant importance for the conservation of biodiversity in the Mpumalanga province.

Traffic implications

The traffic on the national roads such as the R571-1 will increase significantly due to the transport of coal from the Mine to the Lebombo Border post which may have an impact on surrounding communities. See Section 7.3.10, 7.4.10 and 7.5.10 for a more detailed traffic impact assessment.

Past site history if possible

The KaNgwane project area is located within the Magisterial District of Barberton, Mpumalanga Province on farms zoned as "agricultural and rural / undeveloped land". The surrounding areas are mostly characterised by sugarcane and maize farming. Heritage resources were identified at three sites within the proposed project area. Refer to Section 2.11 for a detailed description of the heritage resources identified in the area. However, only one of the sites, (Site 2) where pottery that belonged to the Mzonjani facies of the of the Kwale branch of the Kalundu pottery tradition in the Early Iron Age, was identified to have cultural significance.

Future proposals

There are currently no known future proposals for the area other than the proposed KaNgwane Anthracite Mine.

Non-agricultural uses in the area

The only other land use in the area excluding agriculture is housing, as the settlement of Tonga extends into the northern region of the project area.

New/existing buildings

Existing buildings in area include the residential dwellings within the Tonga settlement. No new or existing buildings currently being utilised have been identified within the proposed area for development.

5.4. Disadvantages

The potential disadvantages of the proposed development are the potential negative impacts which are discussed further in Section 7.

6. PUBLIC PARTICIPATION

6.1. Introduction

This Chapter details the Public Participation process that has been followed to date as well as planned future public consultation activities for the proposed development. The Chapter concludes with an overview of all the issues and concerns raised during Public Consultation and provides reference to the issues trail (Table 23), which details all concerns raised and the responses to these concerns. The issues trail details all issues raised by authorities and IAPs and has been categorised as initial site meeting with authorities, socio-economic, blasting, land use, public consultation process, heritage and water supply issues.

6.2. Initial Scoping Phase Public Participation Process Conducted by SPM Consulting in 2009 for the Proposed KaNgwane Anthracite Mine

6.2.1. Consultation with Authorities

MDALA (now MDEDET) and the MTPA provided comments on the draft scoping report submitted to the DMR at the time. The comments received related to:

- The importance of the Komati River as an aquatic corridor for Hippopotamus and the Nile Crocodile;
- The approval of a Petroline petroleum pipeline associated with the farms Walda 476 JU, Monson 478 JU, Joyce 477 JU and Waanhoop 485 JU;
- The location of the project within an aquatic sub-catchment zoned as "Irreplaceable".

The Department of Land Affairs and the Nkomazi Local Municipality were informed telephonically and via email about the proposed project and were invited to the proposed project's open day.

6.2.2. Communications with Tribal Leaders

Meetings with the Tribal Authorities date as far back as 2006.

6.2.3. Community Liaison

The following public participation activities and meetings were carried out:

- Traditional Leader, Emma Sando;
- Posters informing the public about the proposed project were placed in the nearby vicinity of the proposed project within the surrounding communities;
- The surrounding communities were notified of the proposed project via the distribution of Background Information Documents (BIDs);

- An advert announcing the project was released in the local newspaper (Ziwaphi) in the 30 January – 12 February publication;
- A public open day was held.

6.3. Scoping Phase Public Participation Process for the Proposed KaNgwane Anthracite Mine

Below is a summary of the consultation undertaken during the Scoping Phase within the surrounding communities of Tonga, Steenbok and eMangweni. The process followed is as per Regulation 54 of the EIA Regulations of GNR 543 of 2010 and in terms of Section 22(4)(b) of the MPRDA as per the DMR Guideline for Consultation with Communities and Interested and Affected Parties.

6.3.1. Authorities Meetings and Site-visit

A presentation and site-visit were arranged with representatives from the MTPA, MDEDET, the DWA Inkomati Catchment Management Authority (ICMA) and the DMR on 22 February 2012 (meeting minutes can be viewed in Appendix 12). The purpose of this meeting was to present the proposed project to the authorities as well as the baseline information and environmental opportunities and constraints. The Authorities were then given an opportunity to raise queries and make comments before a way-forward was discussed (these comments have been included into the Integrated Issue Trail, Table 23). A visit to the proposed project area was then undertaken.

A meeting with MTPA was conducted with Mr Hannes Botha on the 18th July 2012 to discuss the ecological corridor, which runs through the project area (meeting minutes can be viewed in Appendix 12). Finally, a pre-application WULA consultation meeting was conducted with Mr Adolph Mbetse, Mr Golden Mthembi and Mr Mduduzi Nkuna in Nelspruit on the 16th August 2012. Minutes of this meeting are also contained in Appendix 12.

Apart from the aforementioned meetings, the following authorities were also consulted with and were provided with environmental documentation for comment: Nkomazi Local Municipality, Mpumalanga Department of Agriculture, Rural Development and Land Administration (MDARDLA), Ehlanzeni District Municipality, Mpumalanga Department of Culture, Sport and Recreation, Inkomati Irrigation Forum and the South African Heritage Resources Agency (details of these authorities may be found in the IAP database – Appendix 11).

6.3.2. Interested and Affected Parties

An IAP Database (Appendix 11) has been compiled for the Public Consultation process which includes the relevant authorities, the landowner (the State and under the control of Department of Rural Development and Land Reform, with the Siboshwa Tribal Authority as custodian thereof), as well as the legal occupant/s of the land and adjacent occupants. The residents of the towns of Tonga, Steenbok and eMangweni were targeted in this regard. These IAPs were identified through

existing tribal structures as well as by registration of any potential IAP who was made aware of the project by the means described in Sections 6.3.3, 6.3.4, 6.3.5 and 6.3.6 below.

6.3.3. Background Information Document

The BIDs served to briefly describe the background of the project, the proposal in brief, the environmental process, potential impacts identified and included contact details of whom to contact should any queries arise (see Public Consultation Materials in Appendix 13). The BID was further distributed to all IAPs that attended the Open Days, the BID was made available in both English and SiSwati.

6.3.4. Media notices

A Media Notice (advertisement) was prepared which gave a brief description of the proposed project, the environmental process to be followed, details of applicable legislation as well as contact details for the EAP, where further information can be obtained, the availability of a draft Scoping Report for comment, commenting periods and an invitation to attend the public meetings in eMangweni, Tonga and Steenbok. Two media notices were submitted for publication; the English media notice was submitted to The Lowvelder for publication on the 18th July 2012 (due to a technical error by the publisher, the English media notice was only published on the 24th July 2012 in The Corridor Gazette) and the SiSwati media notice was published in Ziwapahi from the 27 July until the 9th August 2012. A follow-up media notice was prepared to advertise the eMangweni meeting which had to be rescheduled due to the occurrence of service delivery protests on the originally scheduled day; this media notice was published in The Lowvelder on the 7th August 2012 (see Public Consultation Materials in Appendix 13).

6.3.5. Site notices

A2 site notices describing the proposed mining activities were published in both English and SiSwati and posted up for display at the following locations (see Public Consultation Materials in Appendix 13);

COMMUNITY	LOCATION
KaMaqhekeza	KaMaqhekeza SuperSpar
KaMaqhekeza	Siboshwa Tribal Authority Office
KaMaqhekeza	KaMaqhekeza Community Clinic
Steenbok	Steenbok Community Clinic
Steenbok	Steenbok General Dealer
Steenbok	eHlabeni Road Crossing to the R 571 to Komatipoort
eMangweni	Proximity to the Proposed Mining Site – Along the Dirt Road to eNhlabeni Crossing at R571 Provincial Road
eMangweni	eMangweni Community Clinic
eMangweni	KwaLugedlane Post Office
Tonga	Nkomazi Total Filling Station

COMMUNITY	LOCATION
Tonga	Chief Makunyula Primary School at Block A

This provided IAPs with the opportunity to peruse the notices and be made aware of the proposed activities and details of the environmental processes to be followed. The site notices invited stakeholders and IAPs to attend public meetings (refer to the Public Consultation Material in Appendix 13). The site notices advised IAPs of the availability of the draft Scoping Report for comment and noted the deadlines for the submission of IAP comments. These site notices also provided contact details to allow all IAPs the opportunity to raise queries and concerns and find out further details regarding the proposed activities over the commenting period.

6.3.6. Public meetings

The first public open-day was scheduled and held on the 25th July 2012 at Chief Makunyula Primary School in Tonga from 10h00 to 17h00. The second public open-day was initially scheduled for the 26th of July 2012 at eMangweni Community Hall from 10h00 to 17h00, however, due to service delivery protests in eMangweni this meeting was rescheduled and held on the 16th of August 2012. Finally, the third public open-day was scheduled for the 27th July 2012 at Steenbok Community Hall in Tonga from 10h00 to 17h00, however due to the protests in eMangweni this meeting was moved forward to the 26th of July 2012 at 12h00. The open-day meeting minutes for all three meetings can be viewed in Appendix 14.

IAPs were invited to attend these meetings via the Site Notices, Media Notices and BIDs. Landowners who had previously provided their contact details for inclusion on the IAP database were notified of the above by SMS. Furthermore, a roving loudhailer vehicle was employed to canvas the respective communities advertising each session of each meeting in both English and SiSwati.

Poster presentations were prepared (refer to the Public Consultation Material in Appendix 14), which summarised the details of the draft Scoping Report, including details of the baseline environment identified, the project description, potential impacts to be investigated and details of the environmental process. The posters were formally presented to all IAPs by means of a Microsoft Powerpoint slideshow at each meeting (in both English and by means of a SiSwati interpreter who was both born in the region and is further experienced as an Environmental Assessment Practitioner), and IAPs were allowed to raise any concerns or questions they may have had on a one-on-one basis or during the question and answer sessions following each presentation (all incorporated in the integrated issues trails, Table 23) and add their details to the IAP database (Appendix 11). Attendance registers were filled in by all who attended the public open-days in Tonga, Steenbok and eMangweni; these are included in Appendix 14. Additionally, commenting forms were issued to the attendees of the public meetings, these commenting forms were either filled out by the attendees on the day or were later faxed to Prime Resources (incorporated in the integrated issues trail, Table 23).

6.3.7. Commenting period

The commenting period commenced once the media and site notices were published and the draft Scoping Report became available for comment (17th July 2012). The media notices, site notices and BID all provided information on how to contact the independent environmental consultants, and indicated that comments should be sent before the end of the commenting period (28th August 2012). The commenting period provided IAPs with 40 days during which any comments, concerns, issues and requests for more information could be raised through registration on the IAP database.

In addition, in line with the requirements for disclosure of all relevant project related information, the draft scoping report was made available for comment at the following locations within the community as well as on the Prime Resources website:

COMMUNITY	LOCATION
Tonga	Siboshwa Tribal Authority Office
Tonga	KaMaqhekeza Community Clinic
Steenbok	Steenbok Community Clinic
eMangweni	eMangweni Community Clinic

All written comments received during the 40-day commenting period as well as any responses thereto are included in Table 23.

The draft Scoping Report was made available for the duration of the 40 day commenting period during which stakeholders and IAPs had the opportunity to review the documentation and provide comments to the independent environmental consultant. After 40-days (from 27th August 2012), the draft Scoping Report was revised to include any comments, issues or queries received during the commenting period as well as to include the minutes of all meetings held. This final Scoping Report was made available to registered IAPs for a further 21 days to comment (written comments made on the final Scoping Report during this period are contained in Table 23). The availability of the report was indicated to all registered IAPs by means of SMS (refer to Appendix 14 for details of SMS's sent) or email. Any further comments received during the final 21-day commenting period were incorporated into the final Scoping Report and submitted to MDEDET and the DMR (written comments made on the final Scoping Report during this period are contained in Table 23).

6.3.8. Integrated Issues Trail

An Integrated Issues Trail was maintained and updated regularly throughout the Public Consultation Process with any comments, queries or concerns raised by any IAP or authority and which are further assessed in Section 7 of this EIA / EMP and management / mitigation measures proposed in Section 7. Response forms were distributed at the public open-days and 26 were returned within the 40-day commenting period. These response forms were captured and have been incorporated into the issues trail (Table 23). Verbal comments and concerns raised during the meeting, as well as comments and concerns received via telephone and email after the meeting have also been added into the issues trail (Table 23) (copies of all written and emailed comments received and the responses hereto are included in Table 23).

Table 23: Integrated Issues Trail

NAME	ORGANISATION / COMMUNITY	POSTAL / PHYSICAL ADDRESS	CONTACT NUMBER	EMAIL ADDRESS	COMMENT	RESPONSE	PLACE IN THIS DOCUMENT WHERE ADDRESSED
INITIAL SITE MEETING WITH AUTHORITIES (22 FEBRUARY 2012)							
Golden Mthembi	Department of Water Affairs (ICMA)	-	0838258844	mthembig@dwa.gov.za	ICMA queried the bulk water supply for the project and queried what the alternative sources of water supply would be. It was requested that no single environmental process be favoured and that an integrated approach is followed for transparency.	The bulk water supply for the project will be sourced from dewatering boreholes supplemented with water captured in the Mine's dirty water catchment.	Section 3.6
Martha Mokonyane	Department of Mineral Resources	Cnr. Kruger and Botha Street, Witbank, 1035.	0824472400	Martha.mokonyane@dmr.gov.za	It was queried whether the application will only include the first 15 years / opencast operation or whether the underground operations would be included. Pit rehabilitation options were queried. The land-ownership of the affected farms was queried.	The application includes both opencast and underground operations. Roll over mining practices will be utilised. Once the underground mining begins the opencast pit will be filled in and rehabilitated where possible. The landowners affected by mining operations have been consulted with compensation agreements are currently being negotiated.	Section 5
December Mambane	SiBoshwa Tribal Office (STO)	P.O. Box 6, Komatipoort, 1340	0760862138	-	The SiBoshwa Tribal Authority queried the extent of operations due to a concern about a school, communities and graveyard in close proximity to mining operations.	All specialist studies have identified surrounding sensitive receptors. The effects of blasting and vibrations will be mitigated using tulip plugs to prevent flyrock (and further by the measures proposed in the relevant section of the EMP). Air quality and noise levels will be mitigated as per the measures indicated in this EMP and monitored to ensure acceptable levels are maintained. Traffic safety will be adhered to by all contractors	Section 7

NAME	ORGANISATION / COMMUNITY	POSTAL / PHYSICAL ADDRESS	CONTACT NUMBER	EMAIL ADDRESS	COMMENT	RESPONSE	PLACE IN THIS DOCUMENT WHERE ADDRESSED
						and staff to minimise the impact on surrounding communities.	
Robyn Luyt	Mpumalanga Department of Economic Development, Environment and Tourism (MDEDET)	50 Murray Street, Nelspruit, 1200	0826727868	rluyt@mpg.gov.za	It was indicated that discussions with a Director at MDEDET revealed that the Economic Development sector of the Department are investigating the possibility of subsidising sugarcane farming in the area and extending into Swaziland and thus it is recommended that the Economic Development Department be further engaged for details in order to address the issue of potentially conflicting land uses. It was further recommended that Love Shabane from the Department of Agriculture be consulted in this regard.	A copy of the Final Scoping Report was submitted to MDARDLA for review and comment. They responded explaining that the proposed project land is State owned and is being leased to local farmers. They provided a list of items to be addressed before mining commences.	Section 6.3.1
Hannes Botha	Mpumalanga Tourism and Parks Authority (MTPA)	Halls Gateway Centre, N4 National Road, Nelspruit, 1205	0825754240	nilecrocs@mweb.co.za	The relevant Irrigation Boards should be similarly engaged. The ICMA indicated that the relevant persons currently partake in the Catchment Forum. The Irreplaceable Aquatic Biodiversity sub-catchment is of critical importance in meeting the Mpumalanga biodiversity target as approximately 80% of the Province is the subject of Mining Right applications. It was indicated that development within such a sub-catchment is not, however, impossible, but that the applicant would have to provide further specialist study of the area in question and then engage the	A meeting was held with the MTPA on the 18th July 2012. The relevant specialist studies have been provided to the MTPA including the draft scoping report and the draft EIA / EMP. A registered IAP also represents the Irrigation Board.	Section 6.3.1

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					MTPA who assess the area and needs and targets of the greater province in order to potentially identify an offset area, the conservation of which can be contributed towards (or actively managed / mitigated through some other mechanism). It was requested that the baseline Terrestrial and Aquatic Ecology specialist study conducted between November 2011 and January 2012 be submitted to the MTPA who will provide written comments and recommendations thereon for consideration as part of the Assessment Phase study required and also that a meeting in terms of the above be arranged.		
SOCIO-ECONOMIC							
Cleopus Ebbie Phangisa	Heaven Orphanage Centre / eMangweni	P.O. Box 1200, Kwalugedlane, 1341	0723422663	heavenorphangecentre@gmail.com	Appreciates the mine coming to the area and would like eMangweni to be given the opportunity to expand and be offered skills training.	Noted. The IAP database will be submitted to the client and when the procurement process begins local people will be prioritised for training and employment opportunities.	Section 5 Section 6.4.2
Oscar Ngomane	eMangwani	P.O. Box 889, Kwalugedlane, 1341	0763695346	-	Would like the mine to provide enough jobs for the community.	Noted. The IAP database will be submitted to the client and when the procurement process begins local people will be prioritised for employment opportunities.	Section 5 Section 6.4.2
Sphamandla Cyprian Mahlahla	South African Red Cross Society	P.O. Box 1068, Kwalugedlane, 1341	0723665979	sphamandla.cyprian@facebook.com	Appreciates the mine coming to the area. Would like the mine to provide jobs and skills training to the community. How can they have	Noted. The IAP database will be submitted to the client and when the procurement process begins local people will be prioritised for training	Section 1.5 Section 6.4.2

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					confirmation that the mine will not withdraw without prior notice as others have done?	and employment opportunities. A mining right application has been granted by the DMR, the Applicant is now awaiting approval of the EIA/EMP and the WULA before mining can begin.	
Sthandwa Princess Mbosotwa	eMangweni	P.O. Box 1498, Kwalugedlane, 1341	0784088923	-	Would like skills training and a job.	Noted. The IAP database will be submitted to the client and when the procurement process begins local people will be prioritised for training and employment opportunities.	Section 5 Section 6.4.2
Thembinkosi Nkos	eMangweni	-	0734727980	-	Would like a job at the mine.	Noted. The IAP database will be submitted to the client and when the procurement process begins local people will be prioritised for training and employment opportunities.	Section 5 Section 6.4.2
Thabiso Joshua Zitha	Thulane	P.O. Box 1046, Kwalugedlane, 1341	0733770164 0840857057	-	Would like a job at the mine.	Noted. The IAP database will be submitted to the client and when the procurement process begins local people will be prioritised for training and employment opportunities.	Section 5 Section 6.4.2
Edward Waites Mabuyangwe	CPF	P.O. Box 982, Kwalungedlane, 1341	0794475984	edmabuyangwe@webmail.co.za	Appreciates the mining project coming to the area and would like the mine to bring job opportunities to the community. Would like the community to elect a forum/committee including people from SACP, ANCYL, traditional leaders and ward councillors who will represent the community. Says the problem with the Benicon Mine was that the representatives were paid off and became corrupt, with this project	Noted. The IAP database will be submitted to the client and when the procurement process begins local people will be prioritised for employment opportunities. A committee/ representative forum will be set up together with the Applicant once mining commences to maintain ongoing communication between the Mine and the community.	Section 5 Section 6.4.2

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					there must be honesty and transparency from the forum.		
Maqaqula Gairlle Katego	eMangweni	P.O. Box 52, Kwalugedlane, 1341	0827505009	-	Welcomes the mine but wants the community to benefit from the mine through job creation and skills training.	Noted. The IAP database will be submitted to the client and when the procurement process begins local people will be prioritised for training and employment opportunities.	Section 5 Section 6.4.2
Junior Ngomane	eMangweni	Stand No. 368, eMangweni	0765800165	-	Will the mine employ unskilled workers? Wants the mine to educate the community so that they can get jobs at the mine.	Noted. The IAP database will be submitted to the client and when the procurement process begins local people will be prioritised for training and employment opportunities.	Section 5 Section 6.4.2
Johannes Lubisi	eMangweni	P.O. Box 1652, Kwa-Lugedlane, 1341	0793273437	-	Wants to be updated on information pertaining to job creation.	Noted. The IAP database will be submitted to the client and when the procurement process begins local people will be notified of potential employment opportunities.	Section 5 Section 6.4.2
Mbobeni Given	eMangweni	P.O. Box 878, Kwa-Lugedlane, 1341	0734445990	-	Suggests that the mining company must employ people from the local community.	Noted. The IAP database will be submitted to the client and when the procurement process begins local people will be prioritised for employment opportunities.	Section 5 Section 6.4.2
Surprise Donald Khoza	eMangweni	P.O. Box 932, Kwa-Lugedlane, 1341. Stand No. 365 eMangweni	0793029941	-	Suggests that the mining company must employ people and contractors from the local community. The landowners who are affected by the mining activities should be employed over any other. The mining company should provide the affected community	Noted. The IAP database will be submitted to the client and when the procurement process begins local people will be prioritised for training and employment opportunities. Social development initiatives are subject to the Social and Labour Plan	Section 5 Section 6.4.2

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					with bursaries and skills training. Roads within the community should be built. The mining company should also focus on hiring unskilled people(s).	(SLP) which must be approved by the DMR before mining can commence.	
Lewis Khosa	Wonder-funi Trans Construction	Stand No. 271, eMangweni	0822189732	-	Owns a construction company and is hoping to be used during the construction period.	Noted. The IAP database will be submitted to the client and when the procurement process begins local companies will be prioritised employment opportunities.	Section 5 Section 6.4.2
Sonila John	eMangweni	P.O. Box 704, Kwa-Lugedlane, 1341	0769026861	-	Indicates that the community needs skills development training because unemployment is high.	Noted. The IAP database will be submitted to the client and when the procurement process begins local people will be prioritised for training and employment opportunities.	Section 5 Section 6.4.2
Ndumiso Christopher Mdaka	eMangweni	P.O. Box 1884, Kwa-Lugedlane, 1341	0823474042	-	Is positive about the mining development but hopes that the mining company will adhere to their promises.	Noted.	
Mambia Madonscia	eMangweni	P.O. Box 1899, Kwa-Lugedlane, 1341	0727510253	-	Worked on an open-cast mine 6 years ago and has a drivers licence.	Noted. The IAP database will be submitted to the client and when the procurement process begins local people will be prioritised for employment opportunities.	Section 5 Section 6.4.2
Patrick Madonscia	eMangweni	P.O. Box 1899, Kwa-Lugedlane, 1341	0767922720	-	Is happy that he may have an opportunity to be employed by the mine. He has mining work experience with Belton Mining.	Noted. The IAP database will be submitted to the client and when the procurement process begins local people will be prioritised for employment opportunities.	Section 5 Section 6.4.2

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David Msimango	eMangweni	P.O. Box 721, Kwan-Lugedlane, 1341	0727229843	-	Has had work experience with Belton Mining where he worked for three years. He was a belt operator and has a belt license.	Noted. The IAP database will be submitted to the client and when the procurement process begins local people will be prioritised for employment opportunities.	Section 5 Section 6.4.2
Mlambo Joshua	eMangweni	P.O. Box 1771, Kwa-Lugedlane, 1341	0711785718	-	He worked at Gloria Mine where he trained as a beltsman.	Noted. The IAP database will be submitted to the client and when the procurement process begins local people will be prioritised for employment opportunities.	Section 5 Section 6.4.2
Sindisiwe Sylvia Mbazima	South African Red Cross	P.O. Box 939, Kwa-Lugedlane, 1341	0731931331	-	She is happy with the development.	Noted.	
Thembinkosi Lubisi	eMangweni	P.O. Box 1321, Kwa-Lugedlane, 1321.	0728650905	-	She wants the community to benefit from job creation.	Noted. The IAP database will be submitted to the client and when the procurement process begins local people will be prioritised for employment opportunities.	Section 5 Section 6.4.2
Naphton Mgobeni	eMangweni	-	0715650433	-	Would like to be employed by the mine or would like to receive some benefit from the mining development.	Noted. The IAP database will be submitted to the client and when the procurement process begins local people will be prioritised for employment opportunities. The mining company will implement a Social and Labour Plan so ensure surrounding communities can benefit from the project.	Section 5 Section 6.4.2
Sbambo Adriaan Florch	eMangweni	Stand No. 50, eMangweni or P.O. Box 878, Kwalugedlane,	0724848661	-	Welcomes the mine but wants the community to benefit from the mine through job creation and skills training. Doesn't want the mine to just employ	Noted. The IAP database will be submitted to the client and when the procurement process begins local people will be prioritised for training	Section 5 Section 6.4.2

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		1341			workers from outside the area.	and employment opportunities.	
Annie Mathomsi	Steenbok	P.O. Box 282, Steenbok, 1347	0799854131	-	Agrees with the mining development and indicates that there is a need for additional police stations within the community.	Noted.	
S.C. Madondela	Steenbok	P.O. Box 282, Steenbok, 1347	0797959527	-	(1) Indicates that the mine will bring job opportunities. (2) Indicates that Steenbok is lacking water supply. (3) Indicates that if the mining development benefits the community he/she will be happy.	Noted. The IAP database will be submitted to the client and when the procurement process begins local people will be prioritised for employment opportunities. The Social development projects are subject to approval of the SLP by the DMR.	Section 5 Section 6.4.2
Nomsa Khoza	Steenbok	P.O. Box 38, Steenbok, 1347	0767271340	-	She is happy about the mining development and possible job opportunities.	Noted.	
Zenzile Mkatshwa	Steenbok	P.O. Box, 105, Komatipoort, 1340	0766233004	-	Would like to get employed by the mine because she has a matric and wants to build on her skills level.	Noted. The IAP database will be submitted to the client and when the procurement process begins local people will be prioritised for training and employment opportunities.	Section 5 Section 6.4.2
Thulani Thobela	eMangweni	-	0761070310	-	Looking for a job.	Noted. The IAP database will be submitted to the client and when the procurement process begins local people will be prioritised for employment opportunities.	Section 5 Section 6.4.2
Isingo Thembe	Tonga	-	0720623269	-	Looking for a job.	Noted. The IAP database will be submitted to the client and when the procurement process begins local people will be prioritised for employment opportunities.	Section 5 Section 6.4.2

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Vusimizi John Chibi	Steenbok	P.O. Box 488, Steenbok, 1347	0729834536	-	(1) Indicates that disabled people should also be employed by the mine. (2) Indicates that his leg is disabled but he still wants to work.	Noted. The IAP database will be submitted to the client and when the procurement process begins local people will be prioritised for employment opportunities. The mine will adhere to an authorised Social and Labour Plan which will make allowances for employees with disabilities.	Section 5 Section 6.4.2
Greg Beyers	Environmental Assessment Practitioner (representing various stakeholders including TSB Sugars)	-	-	gregbeyers@telkomsa.net	Would like to know: (1) Some of the cane growers have agreements in place for the following ten years. How will these be addressed with the various financial institutions and companies? (2) Once the farming land has been 'purchased' from the communities' currently growing sugar cane, what will happen to the labour? (3) There should be a comparison of earning potential in the short, medium and long term.	The Applicant has consulted with the farming financiers and the affected farmers themselves through a forum in order to compile a compensation plan which will compensate each farmer for their capital, crop and return on future crops. These farmers have agreed upon this and so will continue to receive an income during the LOM – the onus will be on individual farmers to honour any debt commitments. Most of the sugarcane farms will continue to operate, only the farms located directly within the project area will form part of the compensation plan. The IAP database will be submitted to the client and when the procurement process begins local people will be prioritised for employment opportunities.	Section 5 Section 6.4.2

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Jan Venter	The Mpumalanga Department of Agriculture, Rural Development and Land Administration	Building number 6, Riverside Govt. Complex, Govt. Boulevard, Nelspruit, 1200	0826537611	jv16@telkomsa.net	Indicates that the area is comprised of agricultural fields / agricultural projects and indicates that his department will investigate if public funds have been invested in these agricultural projects.	The Applicant has consulted with the farming financiers and the affected farmers themselves through a forum to compile a compensation plan which will compensate each farmer for their capital, crop and return on future crops. These farmers have agreed upon this and so will continue to receive an income during the LOM – the onus will thus be on individual farmers to honour any debt commitments. Most of the sugarcane farms will continue to operate, only the farms located directly within the project area will form part of the compensation plan.	Section 5 Section 6.4.2
Mthulisi Ndlovu	Steenbok	-	0749620343 0748491990	mthulisiquiet@gmail.com	Has underground mining experience working in Arnot at Exxaro Mine and would like a job.	Noted. The IAP database will be submitted to the client and when the procurement process begins local people will be prioritised for employment opportunities.	Section 5 Section 6.4.2
Xolani David Mahlalela	Steenbok	-	0842625253	davidxolani37@gmail.com	Looking for a job.	Noted. The IAP database will be submitted to the client and when the procurement process begins local people will be prioritised for employment opportunities.	Section 5 Section 6.4.2
Sydwell Calvin Zitha	Steenbok	-	0711028756	sydwellboodylee@gmail.com	Looking for a job.	Noted. The IAP database will be submitted to the client and when the procurement process begins local people will be prioritised for employment opportunities.	Section 5 Section 6.4.2

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Mbongeni Mlotshwa	Steenbok	-	-	mbongenimmlotshwa@gmail.com	Looking for a job.	Noted. The IAP database will be submitted to the client and when the procurement process begins local people will be prioritised for employment opportunities.	Section 5 Section 6.4.2
Bonginkosi Mbombi	Steenbok	-	0822135395	bongzabongi@gmail.com	Looking for a job. Has N3 in mechanical engineering and code10.	Noted. The IAP database will be submitted to the client and when the procurement process begins local people will be prioritised for employment opportunities.	Section 5 Section 6.4.2
Tebogo Veris	-	-	0738863834 0788773438	tebogoveris@gmail.com	Looking for an apprenticeship/learnership/job, has experience as a conveyor operator/belts man and has an N5 in electrical engineering. Has done safety courses SHE REP OSHAS18001, risk assessment and mine health and safety.	Noted. The IAP database will be submitted to the client and when the procurement process begins local people will be prioritised for employment opportunities.	Section 5 Section 6.4.2
Roger Armitage	Akwandze Agricultural Finance (Pty) Ltd	P.O. Box 47, Malelane, 1320	0823150425	ArmitageR@tsb.co.za	Suggests that the long-term yield potential of the sugar cane is in excess of 90 tons of sugarcane per hectare per annum which indicates a higher resource potential than suggested in the draft Scoping Report. Additionally, they suggest that the draft Scoping Report underestimates the socio-economic contribution made by the sugarcane industry on the rural economy. It is further highlighted that the sugarcane industry is important for job creation and economic development to the surrounding	The Applicant has consulted with the farming financiers and the affected farmers themselves through a forum in order to compile a compensation plan which will compensate each farmer for their capital, crop and return on future crops. These farmers have agreed upon this and so will continue to receive an income during the LOM – the onus will thus be on the individual farmers to honour any debt commitments. Most of the sugarcane farms will continue to operate, only the farms located	Section 5

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					communities, the Walda irrigation project creating 135 full time jobs alone (they suggest that the renewable nature of sugarcane production assures continued job creation beyond the lifespan of a mining project.	directly within the project area will form part of the compensation plan.	
Isaac Sam Khoza	Tonga	P.O.Box 9649, Kwa-Lugedlane 1341	0712785436 0734160953	-	Would like to find a job.	Noted. The IAP database will be submitted to the client and when the procurement process begins local people will be prioritised for employment opportunities.	Section 5 Section 6.4.2
Lucky Sibusiso Nyambi	Tonga	P.O.Box 9649, Kwa-Lugedlane 1342	0790315042	-	Would be like to be one of the people to be employed at the mine.	Noted. The IAP database will be submitted to the client and when the procurement process begins local people will be prioritised for employment opportunities.	Section 5 Section 6.4.2
Simanga Mathebula	Tonga	Stand No. 301 Tonga	0711418384	-	Wishes that the mine will be a success as to provide job opportunities which will improve the standard of living of the people in the area.	Noted. The IAP database will be submitted to the client and when the procurement process begins local people will be prioritised for employment opportunities.	Section 5 Section 6.4.2
Vusi Ndlovu	Tonga	Stand No. 305 Kwa-Lugedlane 1342	0761926497	-	Wishes that the mine will be a success as to provide job opportunities and would like to be on the list of people who will be employed.	Noted. The IAP database will be submitted to the client and when the procurement process begins local people will be prioritised for employment opportunities.	Section 5 Section 6.4.2
Community member	Tonga	-	-	-	Is the mine able to provide skills training? Who will qualify?	Yes there is provision for training within the SLP but only after the DMR authorises the SLP will the work out the details regarding training.	Section 5 Section 6.4.2

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Community member	Tonga	-	-	-	When will the mine start? Which farms will be affected?	Depending on the turnaround time for the various permits and assuming these are all granted, the likely commencement date is 2014 / 2015. . The Applicant has worked out exactly which farms will be affected. There are 36 farms and all the landowners have been consulted with and will be compensated accordingly.	Section 4.2
Community member	Tonga	-	-	-	Do all the farmers know if they are affected or not. Do only the affected farmers get compensated?	The Applicant has consulted with the farming financiers and the potentially affected farmers themselves to compile a compensation plan by which each affected farmer will be compensated for their capital, crop and return on future crops. The terms hereof have been negotiated and finalised.	Section 6.4.2
Community member	Tonga	-	-	-	Will the fields where the children play be affected by the mining operations?	If these fields are owned by someone, the applicant will arrange for the playgrounds to be relocated to a nearby area where they will not be affected.	Section 3
Nicholas	Tonga	-	-	-	There is a mine layout plan indicating where the infrastructure will be.	Only dangerous areas will be restricted, the whole Mining Right area won't be fenced off.	Section 3
Community member	Tonga	-	-	-	The mine will be close to the communities. Will there be mining underneath the communities?	No undermining of any residential areas will take place.	Section 3

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Elvis Xhosa	Tonga	-	-	-	How many job opportunities will there be once the mine begins? How long is the life of the mine?	There will be approximately 410 job opportunities and the mine will try to employ locally. The life of mine will be 23 years.	Section 3.4
Community member	Tonga	-	-	-	What jobs are available now?	No jobs are available at the moment there will only be jobs available once the DMR has issued a mining right.	
Community member	eMangweni	-	-	-	From now until the end of the process, how long will it take until mining starts?	It will be approximately 13-15 months until the Department gives approval and mining will start in approximately June 2014.	Section 3.2
Community member	eMangweni	-	-	-	What minimum requirements are required by the mine for jobs?	Minimum requirement will be looked at once the Department has given authorisation. The approved SLP states that an employment consultant will work out the minimum requirements.	Section 3.4
Noah Pesane	eMangweni	-	-	-	How will farmers working where no irrigation exists i.e. dry-land / subsistence farmers be compensated?	Such farmers will be individually identified and will be engaged through a forum in the same manner by which the sugarcane farmers have been engaged. As such, the value of such land and activities being undertaken will be determined and the affected dry-land farmers will be compensated accordingly.	Section 6.4.2
Community member	Steenbok	-	-	-	It is good that the mine is coming here as it will bring job opportunities for the youth in the community.	Noted.	
BLASTING							

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Banda Moses Mbokotho	eMangweni	P.O. Box 789, Kwalugedlane, 1341	0724148898	-	The blasting from the mine will damage their houses.	The blasting specialist has suggested tulip pugs are utilised during blasting to ensure that impacts on surrounding communities from blasting are limited. Management measures to limit potential impacts in this regard are contained in the EMP.	Section 7.3.2
Community member	Steenbok	-	-	-	Concern over damages to houses from blasting and the mine providing compensation.	A blasting specialist study has been undertaken and measures proposed to limit impacts in this regard. The mine will continuously monitor any cracking and other potential damages to houses and compare it to baseline photographs. Should the cause be blasting activities, a compensation protocol will be implemented.	Section 7.3.2
Community member	Tonga	-	-	-	The houses that will be affected by blasting, will the people be relocated?	Measures suggested by specialist blasting studies including tulip plugs and berms will be employed to minimise the effects of blasting. There will also be tests done to check the effects of blasting outside the blast radius. By doing this, no people will need to be relocated.	Section 7.3.2
LAND USE							
Piet Repinga	eMangweni Community member	P.O. Box 962, Kwa-Lugedlane, 1341	0783040455	-	He owns a stand that is in close proximity to the proposed mining area.	Noted. All specialist studies have identified surrounding sensitive receptors. The effects of blasting and vibrations will be mitigated using tulip plugs to prevent flyrock. Air quality and noise levels will be	Section 7.2

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						mitigated and monitored to ensure acceptable levels are maintained. Traffic safety will be adhered to by all contractors and staff to minimise the impact on surrounding communities. Management measures to limit potential impacts to surrounding communities have been included in the EMP to which the Applicant must conform.	
Marius Gumbi	eMangweni Community member	P.O. Box 1884, Kwa-Lugedlane, 1341	0715457748	-	Is concerned over his 9-Ha piece of cultivated land that she uses to support her family.	The Applicant has consulted with the farming financiers and the potentially affected farmers themselves to compile a compensation plan which will compensate each farmer for their capital, crop and return on future crops. The terms hereof have been negotiated and finalised. Dry-land farmers will similarly be identified and compensated based on the value of the affected land.	Section 6.4.2
Mauayisi Burgs Mabona	eMangweni Community member	P.O. Box 1054, Kwa-Lugedlane, 1341	0794562695	-	Has a 15 Ha farm by the Mambane River and is worried if it is to be affected by the mining development. Indicates that a steel pipe on his farm was marked recently and thinks the mining company did this. If the mine has interest in his farm they must contact him.	The Applicant has consulted with the farming financiers and the potentially affected farmers themselves via a forum in order to compile a compensation plan which will compensate each affected farmer for their capital, crop and return on future crops. The terms hereof have been negotiated and finalised.	Section 6.4.2
Simon Gwazikisa	eMangweni Community	P.O. Box 1054, Kwa-	0823631674	-	Has a 10 Ha farm around the Mambane River. If the mine has	The Applicant has consulted with the farming financiers and the potentially	Section 6.4.2

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Mabina	member	Lugedlane, 1341			interest in developing on his farm they should contact him.	affected farmers themselves to compile a compensation plan which will compensate each farmer for their capital, crop and return on future crops. The terms hereof have been negotiated and finalised.	
Thulani Wiseman Sambo	Masakhane Project	P.O. Box 1045, Kwalugedlane, 1341	0737345364	-	I have a farm bordering on the open cast pit close to the Nkomazi river, what will happen to my farm?	If this farm does not fall within the project area as per the layout plan, it will not be directly affected by the mine. The few farms that do fall within the project area will be compensated according to the agreements which have been negotiated between the Applicant and the affected persons.	Section 6.4.2
Edward Lushaba	Hlangvuka	P.O. Box 615, Kwalungedlane 1341	0725272367	-	Would like to know about the mine location because he has a plot of land next to Steenbok - will it be affected by the mine?	If this farm does not fall within the project area as per the layout plan it will not be directly affected by the mine. The few farms that do fall within the project area will be compensated according to the agreements which have been negotiated between the Applicant and the affected persons.	Section 6.4.2
B.P. Mashabane	Steenbok	-	0762191680	-	Owns a plot that is in close proximity to the proposed development	If this farm does not fall within the project area as per the layout plan it will not be directly affected by the mine. The few farms that do fall within the project area will be compensated according to the agreements which have been negotiated between the Applicant	Section 6.4.2

NAME	ORGANISATION / COMMUNITY	POSTAL / PHYSICAL ADDRESS	CONTACT NUMBER	EMAIL ADDRESS	COMMENT	RESPONSE	PLACE IN THIS DOCUMENT WHERE ADDRESSED
						and the affected persons.	
B.M. Sibiya	kwa-lugedlane	-	0837182793	-	Has raised a concern regarding the land around the Mambane River, indicating that they currently use this land for grazing purposes. He is worried that this land will be enveloped / affected by the proposed mining development. He indicates that within this area there are approximately 99 households who own approximately 1089 cattle that use this area for grazing purposes. He suggests that before mining starts the cattle farmers in this area must be consulted with.	If this farm does not fall within the project area as per the layout plan it will not be directly affected by the mine. The few farms that do fall within the project area will be compensated according to the agreements which have been negotiated between the Applicant and the affected persons.	Section 6.4.2
Jan Venter	The Mpumalanga Department of Agriculture, Rural Development and Land Administration.	Building number 6, Riverside Govt. Complex, Govt. Boulevard, Nelspruit, 1200	0826537611	jv16@telkomsa.net	Feels that the agricultural fields surrounding the proposed project will be affected, this impact must be addressed and mitigated. Indicates that food security is a big issue in this area hence the agricultural potential of the land must not be impacted upon due to improper consultation.	If these fields do not fall within the project area as per the layout plan they will not be directly affected by the mine. The few farms that do fall within the project area (both sugarcane and dry-land) will be compensated according to the agreements which have been negotiated between the Applicant and the affected persons. The rehabilitation strategy of the mine proposes returning the affected land to grazing potential.	Section 6.4.2
Roger Armitage	Akwandze Agricultural Finance (Pty) Ltd	P.O. Box 47, Malelane, 1320	0823150425	ArmitageR@tsb.co.za	They have provided credit to sugar cane growers in the region. Their clientele include small scale growers from the Walda Irrigation Project who may be affected by the proposed mine.	The Applicant has consulted with the farming financiers and the affected farmers themselves via a forum in order to compile a compensation plan by which each farmer will be	Section 6.4.2

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					The growers have a right to occupy (RTO) the land issued by the Siboshwa Tribal Authority. Some RTO holders have leased their land to other growers, these rentals are authorised by the Tribal Authority. Akwandze's outstanding loan book at Walda Irrigation Project is R4.2 million with a further R0.9 million in committed loans, the majority of these loans are being paid over a 6 year period. Akwandze must be consulted with as written permission is required from them before the temporary or permanent disposal of a grower's land is contemplated. Financial compensation due to a grower arising from the temporary or permanent disposal of his/her land will firstly be used to repay his/her Akwandze debt the net compensation will be given to the grower concerned.	compensated for their capital, crop and return on future crops. The few farms that do fall within the project area will be compensated according to the agreements which have been negotiated between the Applicant and the affected persons. Most of the sugarcane farms will continue to operate, only the farms located directly within the project area will form part of the compensation plan. The onus will be on the affected farmers who receive compensation to honour any debt agreements.	
Zieta Van Rensburg	Van Rensburg Attorneys	-	0137901645	jwaprok.zietta@telkomsa.net	Represents Walda farmers and could not make the scheduled open day meetings but instead wanted a separate meeting for themselves and the Walda farmers because she felt that 3 working days' notice of the organised meeting was not reasonable notice. Furthermore, she requested access to information form ZYL Mining regarding prospecting rights.	Prime Resources referred Van Rensburg Attorneys to the Applicant (Main Street 800) who, through their Attorneys Webber Wensel, has consulted with Van Rensburg Attorneys and provided all relevant documentation as listed by the DMR Directive dated the 13 th Dec 2012. The Applicant has negotiated with the farmers affected by the project	Section 6.4.2 See Appendix 12

NAME	ORGANISATION / COMMUNITY	POSTAL / PHYSICAL ADDRESS	CONTACT NUMBER	EMAIL ADDRESS	COMMENT	RESPONSE	PLACE IN THIS DOCUMENT WHERE ADDRESSED
						and a compensation agreement has been reached.	
PUBLIC-CONSULTATION							
December Sibusiso Mashabane	eMangweni	P.O. Box 1464, Kwalugedlane, 1341	0795912692	-	Appreciates the fact that the community has been consulted with; he indicates that this shows a sign of respect. He looks forward to the anthracite project and is excited at the prospect of new jobs and the development of the community.	Noted.	
Samuel E. Mondlane	eMangweni	P.O. Box 404	0728903838	-	Wants to be informed through SMS as to when the next meeting will be etc.	All IAPs will be notified by sms/email of any further public engagement.	Section 6.4.2
Johannes Lubisi	eMangweni	P.O. Box 1652, Kwa-Lugedlane, 1341	0793273437	-	Wants to be kept informed as to what the next steps will be and when the next meeting will be held.	All IAPs will be notified by sms/email of any further public engagement.	Section 6.4.2
Lindani Masuaba	Steenbok	P.O. Box 128, Komatipoort, 1340	0723948721	-	She agrees with what had been presented to her and is happy with the project.	Noted.	
Friday Fakudze	Steenbok	P.O. Box 105, Komatipoort, 1340	0711523077	-	Wants the project to continue and feels that the project should not be disturbed.	Noted.	
Thulani Nkuna	Steenbok		0784774499	-	Indicates that he wants to be kept informed and is concerned over power generation issues.	All IAPs will be notified by sms/email of any further public engagement. Power will come from Eskom and this will not affect surrounding communities.	Section 3.9 Section 6.4.2
Zenzile Mkatshwa	Steenbok	P.O. Box, 105, Komatipoort, 1340	0766233004	-	Is happy that she is getting informed	Noted.	

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John Lubisi	Steenbok	-	0839804387	-	Wanted to know when the next public consultation meeting would be and where he could view the final scoping report.	All IAPs will be notified by sms/email of any further public engagement and location of future reports available for public review.	Section 6.4.2
Anna Sindane	Steenbok	P.O. Box 564, Steenbok, 1347	0725367051	-	(1) Wants copies of people's I.Ds to be collected in a box at the next meeting. (2) Wants notifications of new meetings to be sent via SMS.	Attendance registers are completed by all attending the meeting and are included into reports. All IAPs will be notified by sms/email of any further public engagement.	Section 6.3.6 Section 6.4.2
Amanda Ngomane	Steenbok	P.O. Box 568, Steenbok, 1347	0725536367	-	Suggests that all community members who attended the meeting must be informed via SMS.	All IAPs will be notified by sms/email of any further public engagement.	Section 6.4.2
Gabriel	Tonga	-	-	-	How did you inform the public about this project? This meeting has poor feedback.	A public notice, site notices and a loud hailer were used in August 2012 for the scoping phase meetings where approximately 500 people attended. For the assessment phase smses were sent out to all the registered IAPs to make them aware of the feedback meeting.	Section 6.3
Joe	Tonga	-	-	-	Some people did not receive the sms. If the process followed during the scoping phase had been followed more people would have attended the meeting.	Noted. The sms's were sent out to all IAP's identified during the scoping phase.	Section 6.4.2
Gabriel	Tonga	-	-	-	The sms system doesn't work as the people who cannot read or write don't know about it. These people ignore the sms because they cannot understand it. The farmers consulted were they only the sugarcane farmers or the subsistence farmers as well?	Noted. The Applicant has appointed a team to identify the subsistence / dry-land farmers which will be affected but the proposed development. These farmers will be individually identified and similarly engaged as with the sugarcane	Section 6.4.2

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						farmers so as to determine the value of the property and the activities being undertaken and thereby establish a compensation agreement similar to that of the sugarcane farmers.	
Gabriel	Tonga	-	-	-	What about the subsistence farmers? Who will provide their families with food?	Noted. The Applicant has appointed a team to identify the subsistence / dry-land farmers which will be affected but the proposed development. These farmers will be individually identified and similarly engaged as with the sugarcane farmers so as to determine the value of the property and the activities being undertaken and thereby establish a compensation agreement similar to that of the sugarcane farmers.	Section 6.4.2
ARCHAEOLOGY / HERITAGE							
B.P. Mashabane	Steenbok	-	0762191680	-	Expresses concern over graveyard locations.	The project area has been studied for archaeological remains and graves. Only one site of high cultural significance was identified and will be demarcated as a no-go area. If any graves are found during construction a archaeologist will be consulted and will mitigate the situation. All existing identified graves are not within the project area. The EMP provides measures on how to handle any chance-finds which may occur.	Section 7.3.12 Section 10.11

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Jenna Lavin	SAHRA	111 Harrington Street, Cape Town, 8000	0214624502	jlavin@sahra.org.za	A Palaeontological study must be undertaken to assess whether or not the development will impact upon significant palaeontological resources. Alternatively, a letter of exemption from a Palaeontologist is required to indicate that this is unnecessary. If the area is deemed sensitive or if significant heritage is identified, a full Palaeontological Report may be required.	A Palaeontological study has been undertaken and management measures for chance finds have been included into the EMP.	Section 10.11.1
Community member	Tonga	-	-	-	The graves that were identified, will they be affected?	No graves within the construction area were identified and thus all graves which were identified will be unaffected by the project. The EMP does, however, make provision for any chance-find heritage resources including graves which may be discovered.	Section 7.3.12
WATER SUPPLY / QUALITY							
Greg Beyers	Environmental Assessment Practitioner (representing various stakeholders including TSB Sugars)	-	-	gregbeyers@telkomsa.net	TSB sugar operates a sugar mill downstream of the proposed mine and relies on the current water quality of the Komati River, other farmers and Cane Delivery Agreements (CDAs) are also dependant on the water quality of the Komati. He recommends that the following be addressed in studies to follow: (1) Assessment of the potential impacts of acid mine drainage in the short, medium and long term. (2) Sufficient financial quantification in the	The groundwater specialist study conducted has confirmed that there is little potential for acid mine drainage in the long-term. A financial provision and preliminary closure plan has been calculated to ensure allowance has been made for early closure. The water quality will be unaffected as groundwater from dewatering activities and that captured in the mines dirty water facilities will be utilised at the mine.	Section 7.3.5 Section 7.3.6 Section 15

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					event the mine goes into maintenance or closure. (3) Assessment of the potential impacts of any fluctuations in water quality on sugar cane farming. (4) A complete reserve determination and water quality impact assessment.	No water will be removed from the Komati. Please refer to the ground- and surface water related potential impacts and management measures in this EIA / EMP.	
Mduduzi J Nkuna	Department of Water Affairs (ICMA)- Environmental Officer	-	0137539000 0836348769	nkunam@inkomat icma.co.za	The applicant is required to be more explicit in terms of the sewage treatment system going to be used, how many people it is going to service and the relevant water uses with regards to the proposed treatment plant. Approved civil designs of Pollution control dams and the sewage treatment works from a suitably qualified civil engineer must be submitted to ICMA. A full wetland study with relevant classifications must be done by a wetland specialist. Mitigation measures for all the cumulative impacts must be addressed. Please Note: The project manager must at all times adhere to the requirements of the regulations on the use of water for mining and related activities aimed at the protection of water resources as promulgated under the Government Notice No. 704 and published in Government Gazette No. 20119 of June 1999.	The relevant specialist studies will be submitted with the WULA and the EIA/EMP. The PCDs and clean and dirty water systems have been designed by civil engineers RSV ENCO who were tasked with the mine design. These designs will be included with the WULA application. The sewage treatment works are temporary portable facilities that utilise a modern biological digestion system that doesn't produce typical sludge and only requires cleaning every few years. The sewage treatment works at the opencast pits will service the mining contingent of staff and the sewage treatment works at the administration buildings will service administration staff.	Section 3.6 Section 3.7 Section 3.8

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Jan Venter	The Mpumalanga Department of Agriculture, Rural Development and Land Administration	Building number 6, Riverside Govt. Complex, Govt. Boulevard, Nelspruit, 1200	0826537611	jv16@telkomsa.net	Suggests that the potential impacts on groundwater and other natural resources must be thoroughly investigated based on the fact that this is a water scarce area.	The groundwater specialist has confirmed that there is little potential for acid mine drainage. The mine will operate a clean and dirty water separation system to ensure all dirty water is directed to PCDs and ensure that no surface water or groundwater contamination can occur. Complete ground- and surface water specialist investigations have been conducted and the resultant potential impacts and management measures included in this EIA / EMP.	Section 7.3.5 Section 7.3.6
Ronnelle Putter	Inkomati Irrigation Forum	-	-	ronelle.putter@lantic.net	Has interests relating to water use and applications relating to a water use license and the environmental impacts of mines in the area.	Noted. A WULA will be submitted with the EIA/EMP to the DWA. All water uses will be included into this as well and relevant specialist studies. The Water Uses being applied for are included in the legal assessment section of this EIA / EMP.	Section 1.5.5
Frans Krige	MTPA	Dullstroom Municipal Offices, Chunky Masangu Drive, Dullstroom	0132540279	frans@mtpa.co.za	Is there a potential for AMD in this area and will this project increase the risk of this?	There is very little or no potential for AMD in this region.	Section 7.6.3

6.4. Assessment Phase Public Participation Process for the Proposed KaNgwane Anthracite Mine

Further Public Consultation was conducted in order to meet the requirements of Chapter 6 of the EIA Regulations of GN543, 2010 and promulgated in terms of NEMA. Below details the Public consultation process, which was followed in order to meet these NEMA requirements.

6.4.1. Authorities Commenting Period

The draft EIA / EMP was made available to the following Authorities for comment;

- DMR;
- MDEDET;
- DWA;
- MDARDLA;
- MTPA;
- SAHRA;
- Ehlanzeni District Municipality;
- Nkomazi Local Municipality.

These authorities had 40 days to comment on the draft EIA / EMP. All comments received have been included into the final EIA / EMP and into the integrated issues trail.

MTPA

Feedback was received from Mr Frans Krige at the MTPA regarding the potential for AMD, however as discussed in Section 7.6.3, it was explained that there is very little / no potential for AMD in this region (this correspondence can be found in Appendix 12).

DWA

Feedback was received from the Inkomati Catchment Management, which has been included and addressed in the Integrated Issues trail (Appendix 12).

SAHRA

Feedback was received from SARHA regarding the EIA / EMP, where it was recommended that a Paleontological study be undertaken. This has been undertaken, addressed and included into the Integrated Issues Trail (Table 23).

6.4.2. Interested and Affected Parties

A concise and abridged version of the draft EIA / EMP was made available to all IAPs at Kwa-Lugedlane Tribal Office, Tonga Nkomazi Garage, Chief Makunyula Primary School, eMangweni Clinic, KaMaqhekeza Library and Sifiso Cafe. A complete and unabridged draft of the EIA / EMP was also made available to all IAPs at Siboshwa Tribal Office and Kwa-Lugedlane Tribal Office. The availability of the abridged report was indicated to all registered IAPs by means of SMS / email.

IAPs had 30 days to comment on this report, after which their comments were included and addressed within the integrated issues trail. The final EIA / EMP was then made available for final comment for a period of 21 days.

Inkomati Irrigation Forum

The Applicant consulted with the farming financiers and the potentially affected sugarcane farmers (see list of affected farmers in Appendix 12) in order to compile a compensation plan to compensate each farmer for their capital, crop and return on future crops (the details of this correspondence can be found in Appendix 12). The Applicant proposed the following payment mechanisms over the ten year LOM period:

- The capital expenditure for the laying of infrastructure for a farm during the first year;
- Working capital linked to seedlings and fertilizers spent in the year 2013 estimated for fertile land and for dry land;
- An annual profit cover for fertile land and for dry land for the next ten years, starting in 2014 to 2023;
- The annual payment for the ten year lease will be escalated at the inflation rate.

This agreement has been accepted by the farmers with the following conditions;

- The water rights for the affected land will be part of the deal;
- The mine will pay a proportionate amount towards pumping costs. The electricity will be paid on a per hectare basis;
- The mine will also pay a proportionate amount towards the security of the pumps and transformers;
- The annual levies to the irrigation board will be paid proportionately;

Subsistence Farmers

The Applicant has designated a legal team to identify the subsistence farmers which will be affected but the proposed development. This team will consult with these farmers and establish and compile a compensation protocol similar to that of the sugarcane farmers.

6.4.3. Public Meetings

Three public open-days were held in Tonga, eMangweni and Steenbok on the 21st and 22nd of February 2013. These open-days provided an opportunity for comments raised during the Scoping Phase to be addressed and for new comments received to be included into the integrated issues trail. The details of the open-days (date, time, place etc.) were indicated to all registered IAPs by means of SMS / email. A presentation summarising the EIA / EMP findings was given at each open day.

6.4.4. Background Information Document

A BID was distributed to all IAPs attending the open-days. This BID summarised the EIA / EMP findings and provided Prime Resources' contact details should any IAPs have comments and

feedback after the open-days. These additional comments have been included into the integrated issues trail.