Working Together

Project Applicant: **ANGLO AMERICAN INYOSI COAL (PTY) LTD**

Project:

Phola-Kusile Overland Coal Conveyor

Report Name:

ENVIRONMENTAL IMPACT ASSESSMENT REPORT

Volume 1: Main Report, Appendix A and B

(of 4 volumes)

Report Status: **(Final)**

Revision No:	01
Report Date:	February 2012
Report Number:	S0403-PK-EIR-01 ENVIRONMENTAL-IMPACT-ASSESSMENT-REPORT
Prepared by:	Mari Wolmarans, Marline Medallie, Vivienne Vorster, Claire Jarvis
Issued by:	Mari Wolmarans
For Submission to:	Mpumalanga Department of Economic Development, Environment and Tourism (MDEDET), as part of the EIA in terms of the National Environmental Management Act. Department of Water Affairs (DWA), as part of the Water Use License Application in terms of Section 21 of the National Water Act.
Reference No:	MDEDET: 17/2/3 N-13 DWA: 16/2/7/B200/K524

Synergistics
Environmental Services
Tel: 011 807 8225 / Fax: 011 807 8226
PO Box 1822, Rivonia, 2128
synergy@synergistics.co.za

PROJECT INFORMATION SHEET

PROJECT:

Phola-Kusile Overland Coal Conveyor

REPORT DETAILS:

Report Name: **Phola-Kusile Overland Coal Conveyor: FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT**

Report Number: S0403-PK-EIR-01
Report Status: FINAL
Revision No: 01
Date: February 2012

PROJECT APPLICANT:

Anglo American Inyosi Coal (Pty) Ltd (*AAIC*)
Contact Person: Henri Nieuwoudt
Designation: Head of Mining and Property Law: South Africa
Tel: 011 6383781
Fax: 011 6384608
Email: hnieuwoudt@angloamerican.co.za
Postal Address: PO Box 61587, Marshalltown, Johannesburg, 2017

INDEPENDENT ENVIRONMENTAL CONSULTANT:

Synergistics Environmental Services (Pty) Ltd *(Synergistics)*

Contact Persons: Mari Wolmarans / Marline Medallie
Designation: Independent Environmental Consultant and Environmental Assessment Practitioner (EAP)
Tel: 011 807 8225
Fax: 011 807 8226
Email: marline@synergistics.co.za / mari@synergistics.co.za
Postal Address: PO Box 1822, Rivonia, Johannesburg, 2128

EAP: Mari Wolmarans

EAP Expertise: BL Arch, UP, 1991.
Environmental Assessment Practitioner Certified by the Interim Certification Board (EAPSA).
Professional member South African Institute of Ecologists & Environmental Scientists (SAIE&ES).
20 years environmental management and assessment experience, mainly in the mining and infrastructure development sectors.
Environmental Impact Assessment: Project Management.

S0403-PK-EIR-01 **February 2012**

ANGLO AMERICAN INYOSI COAL (PTY) LTD

Phola-Kusile Overland Coal Conveyor

ENVIRONMENTAL IMPACT ASSESSMENT REPORT (Final)

Table of Contents

LIST OF TABLES

LIST OF FIGURES

LIST OF PLATES

LIST OF APPENDICES

TERMS AND ABBREVIATIONS

~	approximately
AA	Anglo American
AAIC	Anglo American Inyosi Coal (Pty) Ltd
AEMFC	African Exploration Mining and Finance Corporation
dBA	decibels adjusted (measurement for determining the sound exposure of humans)
DAFF	Department of Agriculture, Forestry and Fisheries
DARDLA	Mpumalanga Department of Agriculture, Rural Development and Land Administration
DMR	Department of Mineral Resources
DPWRT	Mpumalanga Department of Public Works, Roads and Transport
DRPW	Department of Roads and Public Works
DWA	Department of Water Affairs
DWEA	Department of Water and Environmental Affairs (National)
EAP	Environmental Assessment Practitioner
EIA	Environmental Impact Assessment
EMP	Environmental Management Programme
GGP	Gross Geographic Product
GN	Government Notice
GNR	Government Notice Regulation
ha	hectare
HH1 to HH45	Homesteads and buildings along the conveyor route (Table 7-2).
I&AP	Interested and/or Affected Party
km	kilometre
Kusile	Eskom's Kusile Power Station
kV	kilovolt
LED	Light-emitting diode (a type of energy-saving light)
m	metre (measurement for distance)

m^2	square metre (measurement for surface area)
m^3	cubic metre (measurement for volume)
mg	milligram
Mℓ	mega litres
MDEDET	Department of Economic Development, Environment and Tourism (Mpumalanga)
MPRDA	Mineral and Petroleum Resources Development Act (No 28 of 2002)
NDEA	Department of Environmental Affairs (National)
NEMA	National Environmental Management Act (No 107 of 1998)
NEMAQA	National Environmental Management: Air Quality Act (No 39 of 2004)
NEMWA	National Environmental Management: Waste Act (No 59 of 2008)
NWA	National Water Act (No 36 of 1998)
PM10	Particular matter smaller than 10 microns (<10 µm)
Phola CPP	Phola Coal Processing Plant
pillars	Support structures for Environmental Gantries
R/E	remaining extent
SANBI	South African National Biodiversity Institute
SAHRA	South African Heritage Resources Agency
SANS	South African National Standards
Synergistics	Synergistics Environmental Services (Pty) Ltd
TS	Transfer Station
WCS	Wildlife Conservation Society
y	year

GLOSSARY OF TERMS

Aquiclude

Solid, impermeable area underlying or overlying an aquifer. If the impermeable area overlies the aquifer, pressure could cause it to become a confined aquifer.

Baseline Environment

Pre-development environmental conditions. The prevailing environmental conditions (or status quo) prior to the start of an activity or project, including current / existing environmental damage / degradation.

Baseline Impacts (Existing Impacts)

The current level of environmental degradation associated with existing developments, including those currently under construction. Determination of the current level of degradation associated with existing developments is essential to understand and enable the assessment of cumulative impacts.

Represents the alternative / option that is preferred from a purely environmental viewpoint, with all environmental components integrated, but not giving consideration to technical, financial cost, timing and other developer (project proponent) objectives and constraints.

Individual Component Preferable Alternative / Option

Represents the alternative / option that is preferred based on single individual environmental component, not considering other environmental components. This is therefore not an integrated Environmentally Preferable Alternative / Option and it does not consider technical, financial cost, timing and other developer (project proponent) objectives and constraints.

Cumulative Impacts

Combined impacts of two or more activities, or the combined impacts of an activity with that of current activities. For this report, cumulative impacts are described as:

Existing Impacts + Incremental Impacts of the Project = Cumulative Impacts

Conveyor Flight

A section of the overland conveyor which runs in a relatively uniform direction between two points (these points can be transfer stations or a start and end point if no direction change is needed). When materials are conveyed over a long distance, the overland conveyor is divided into sections (or conveyor flights) due to mechanical and topographical limitations.

Conveyor Transfer Station

The structure where materials are transferred from the end of one conveyor flight onto the beginning of the next conveyor flight, in a series, usually as a result of the need to change direction. The transfer station houses a transfer chute to control the flow of coal between two conveyor flights. It also houses mechanical items including drives, pulleys and maintenance facilities.

Deluge Fire Protection System

A fire protection suppression system that has all sprinklers connected to the water piping system open at all times. The sprinklers are connected to a dry pipe that is connected to a main water supply. A fire detection device controls the main valve. When it is activated, the valve opens, allowing large amounts of water to flow through all of the sprinklers. The purpose of a deluge system is to quickly wet down an entire hazard area to prevent a fire from spreading.

Environment

Surroundings in which organisms operate, including air, water, land, natural resources, flora, fauna, humans and their inter-relations (includes bio-physical and socio-economic components) as defined in NEMA.

Environmental Impact Assessment (EIA)

An EIA is an assessment of the positive and negative environmental consequences of the proposed project. The primary objective of the EIA is to aid decision-making by providing factual information on the assessment of these impacts, and determining their significance, as well as making valued judgements in choosing one alternative over another. For this EIA a combination of checklists, overlays and mapping, scoping and professional experience will be used to identify the possible negative and positive impacts on the environmental components.

Environmental Gantry

Specially designed conveyor section spanning (bridging) across streams and wetlands raised higher than the 1:100 year floodline, with additional freeboard. The gantries will be supported on pillars located at intervals long the gantry. The gantries are provided with a roof, partial side screens for minimizing fugitive wind blown coal dust from conveyor, and an impervious floor for capturing coal spills, drip-off and wash- down water. During shut-off, spilled coal can be picked up from the gantry floor and put back onto the conveyor and, if required, water that collected in the gantry can be manually removed.

Ephemeral

Ephemeral water bodies (wetlands, springs, streams, rivers, ponds or lakes), are found in semi-arid to arid upland areas, that only flow (exist) for a brief period of time during and shortly after rain. The banks of these water bodies have scattered riparian vegetation including trees, shrubs, and grasses, but often with incomplete or discontinued tree canopy cover.

It is not the same as intermittent, seasonal or non-perennial water bodies, which exist for longer periods, but not all year round.

Fatal Flaw

A factor or situation, which prevents the development of an environmentally acceptable project, except at prohibitive cost. These are critical issues with the ability to stop a project's implementation.

Existing Impacts

See Baseline Impacts.

Incremental Impact

This is the impact of an activity looked at in isolation (impact of an individual activity), thus not considering the combined, cumulative or synergistic impacts of the activity, or the cumulative impacts of the activity with other activities or the current level of degradation. For this report, incremental impacts refer to impacts associated with the conveyor development only.

Interested and Affected Parties (I&APs)

These are individuals or groups concerned with, or affected by the environmental impacts and performance of a project. Interested groups include those exercising statutory environmental control over the project, local residents/communities (people living and/or working close to the project), the project's employees, customers, consumers, investors and insurers, environmental interest groups, the general public, etc.

Microgram

One millionth (1/1 000 000) of a gram, or equivalently one thousandth (1/1 000) of a milligram.

Micrometre / Micron

One millionth (1/1 000 000) of a metre, or equivalently one thousandth (1/1 000) of a millimetre.

Mineral (as defined in the MPRDA)

Any substance, whether in solid, liquid or gaseous form, occurring naturally in or on the earth or in or under water and which was formed by, or subjected to, a geological process, and includes sand, stone, rock, gravel, clay, soil and any material occurring in residue stockpiles or in residue deposits, but excludes: Water, other than water taken from land or sea for the extraction of any material from such water; Petroleum; or Peat.

Mining (as defined in the MPRDA)

Mining is the making of any excavation for the purpose of winning a mineral, and it includes any other associated activities and processes (MPRDA).

Mining Area (as defined in the MPRDA)

The area for which a mining authorisation/permission to mine has been granted. It includes:

- Any adjacent surface of land;
- any non-adjacent surface of land, if it is connected to such an area by means of any road, railway line, powerline, pipeline, cableway or conveyer belt; and
- any surface of land on which such road, railway line, power line, pipeline, cableway or conveyer belt is located, under the control of the holder of such permit or authorisation and which the holder is entitled to use in connection with the operations performed or to be performed under such permit or authorization (MPRDA).

Proposed Alternative / Option

Represents the alternative / option chosen by the developer to fulfil the objectives of the project, giving consideration to economic, environmental, technical, timing and other developer (project proponent) objectives and constraints.

The concept of the proposed alternative / option is different from the 'Environmentally Preferable Alternative / Option' although in some cases one alternative may be both. The proposed alternative / option is identified so that authorities and interested and affected parties can understand the developer's orientation and objectives.

The reasons for selection of the proposed development alternative and for eliminating certain alternatives should be carefully documented and provided in the EIA report, typically under the heading 'Development Alternatives'.

Pedocrete

An infertile and compact soil structure which formed through the concentration of minerals due to terrestrial weathering which enclosed, cemented or replaced the original soil.

PM10

Fine inhalable particles (smaller than 10 µm) found in the air. When inhaled, PM10s could cause damage to the lower airways and lungs.

Receptor

A receptor is the target or object on which the impact, stressor or hazard is expected to have an effect.

Sensitive Area

A sensitive area or environment can be described as an area or environment where a unique ecosystem, habitat for plant and animal life, wetlands or conservation activity exists. Sensitive areas are often associated with eco-tourism activities or have a high potential for future eco-tourism.

Significant Impact

An impact can be deemed significant if scientific environmental studies, consultation with the relevant authorities and other interested and affected parties, in the context and intensity of its effects, provide reasonable grounds for mitigating measures to be included in the environmental management report and environmental management programme. The onus will be on the proponent to include the relevant authorities and other interested and affected parties in the consultation process. Present and potential future, cumulative and synergistic effects, should all be taken into account.

S0403-PK-EIR-01 **February 2012**

ANGLO AMERICAN INYOSI COAL (PTY) LTD

Phola-Kusile Overland Coal Conveyor

ENVIRONMENTAL IMPACT ASSESSMENT REPORT (Final)

Executive Summary

Introduction and Project Description

Anglo American Inyosi Coal (Pty) Ltd (AAIC) is proposing to construct an overland conveyor system, the Phola-Kusile Overland Coal Conveyor, to transport coal from the Phola Coal Processing Plant (Phola CPP) to Eskom's Kusile Power Station (Kusile) in the Mpumalanga Province, to meet the demand for coal at the Kusile Power Station that is under construction.

The Kusile Power Station is a coal-fired power station currently under construction just south of the N4 highway between Bronkhorstspruit and Witbank (Emalahleni). It will consist of six units of 800 megawatts (MW) capacity each and a total capacity of 4800 MW. Kusile will require approximately 17 million tons of coal a year, depending on the quality of the coal.

The proposed Phola-Kusile Overland Coal Conveyor will fall within the Nkangala District Municipality, and the Victor Khanye (Delmas) and Emalahleni (Witbank) Local Municipalities. The towns in close proximity to the proposed conveyor are Wilge (~4 km east), Phola (~3 km southeast), Ogies (~5 km south-southeast) and Emalahleni (~25 km east).

The Phola Coal Processing Plant is an existing operation located approximately 20 kilometres south-east of Kusile, between the Kendal Power Station, Ogies and Phola. The plant is a 50/50 joint venture between BHP Billiton (BECSA) and AAIC and has been in operation since 2009. It has capacity to beneficiate (wash and sort) 16 million tonnes per annum and receives coal from Klipspruit (BECSA), and Zibulo (AAIC) mines. The primary coal products from the Phola Coal Processing Plant are exported and the secondary products (or middlings coal) are dispatched to various Eskom power stations.

The Phola-Kusile Overland Coal Conveyor will be designed to transport 8.4 to 11.5 million tonnes of coal per year from the Phola Coal Processing Plant to the Kusile Power Station. A 30 metre wide[1] servitude will be registered for the conveyor. The servitude will be fenced, and there will be a service road, a 22 kV power line and a storm water management system along the conveyor belt.

[1] The scoping report stated that the servitude will be 25 m wide. Please note the servitude width has been increased from 25 m to 30 m to accommodate the power line.

The construction phase of the project will be relatively labour intensive, resulting in the creation of a number of temporarily employment opportunities. At the time of the draft EIA report In October 2011, AAIC estimated that 200 to 300 people will be employed during construction. Due to the urgent and short time available for construction and in order to avoid delays in coal supplies to Kusile, AAIC is now proposing to use multiple construction teams. As a result, the construction employment figures have increased to an estimated 800 to 1400 people. Approximately 16 people will be employed during the operational phase.

Purpose of the Report

This report presents the results of the environmental impact assessment process undertaken for the project. It provides a description of the proposed Phola-Kusile Coal Conveyor and associated activities and the various alternative developments and conveyor route alternatives that were evaluated. It presents the conveyor route that is proposed by Anglo American Inyosi Coal (Pty) Ltd (AAIC), that was proposed based on an evaluation of environmental and technical considerations and the Environmental Assessment Practitioner' integration of the various specialists' studies into the report and it presents an assessment of all impacts and a draft environmental management programme for mitigation of impacts. The specialist studies that are were conducted as part the EIA process are appended to the main report.

The report is in four volumes:

- Volume 1: Main Report, Appendix A and B
- Volume 2: Appendix C (Public Participation Documentation)
- Volume 3: Appendix D to H (Specialist Reports)
- Volume 4: Appendix I to P (Specialist Reports)

Project Need and Desirability

The majority of South Africa's electricity is generated from coal. The Kusile Power Station forms part of the **South African National Government strategy** to supply much needed electricity to the South African national electricity grid. Eskom has made a multi-billion rand investment to construct the new Kusile Power Station.

The Ministry of Energy and Eskom maintain that:

> *"In the absence of Kusile there will not be enough power into the South African electricity grid"* (Ministry of the Energy spokesperson Bheki Khumalo[1]).
>
> *"Without the additional power from Kusile from 2014, there could be constraints on South Africa's economic growth"* (Eskom's Finance Director, Paul O'Flaherty[2]).

Eskom has identified the **middlings coal from the Phola Coal Processing Plant** to be an **important future source of coal to be fed to the Kusile Power Station**.

2 Media release compiled by the Government Communication and Information System, 26 Aug 2010. http://www.buanews.gov.za/rss/10/10082611151001

Development Alternatives

Alternative transportation options were considered (road, rail and overland conveyor) and **the conveyor was found to be the proposed transportation option**.

The purpose of the proposed overland conveyor is therefore to **ensure a timeous and secure supply of coal to Kusile** and therefore ultimately, electricity to the national electricity transmission grid. In order to prepare the Kusile Power Station for commercial operations, delivery of the first coal via the Phola-Kusile Coal Conveyor is planned for October 2013 (subject to all relevant approvals being obtained).

Should the Phola-Kusile Coal Conveyor not be approved, **coal will have to be supplied to the power station** via other means, such as road transport, which was found to have far more significant environmental and economic impacts as indicated in the discussion regarding project alternatives. There will also be a significant loss to Eskom, and the country, as the construction of Kusile was a strategic development to assist with the electricity shortages of South Africa and if coal cannot be supplied consistently, the power station will not be able to operate effectively.

Three alternative conveyor corridors were assessed during the scoping phase (Figure 1-3), of which two were eliminated at the end of scoping. Various route options along the preferred corridor were investigated during the EIA phase (
Figure 1-2). **The alternative routes were evaluated and a proposed route was identified and optimised, based on an integrated assessment of all environmental components**. The location of the proposed route for the Phola-Kusile Coal Conveyor is presented in Figure 1-1.

A project of this nature and scale will obviously impact on the environment. The EIA process as described in this report found that, with appropriate mitigation measures in place, all significant impacts can be mitigated to within acceptable levels (refer to Table 8-1, in Section 8 at the back of the report).

No-Go Development

The no-go development will have high negative impacts on the cost and timing of coal supply to Kusile Power Station, delivery of electricity to the national grid, and associated impacts on national economy and it is therefore assumed that if the proposed Phola-Kusile Coal Conveyor is not allowed to be developed, an alternative coal supply and transportation of that coal supply will have to be found.

The Environmental Assessment Practitioner is of the opinion that the transportation options (Section 4.1) and the alternative conveyor corridors investigated during scoping phase (Section 4.2) will have impacts equal to or more significant than those of an overland coal conveyor along the proposed route.

The two alternative conveyor corridors that were investigated during the scoping phase impacted on more extensive wetland areas and a larger number of stream crossings. There are no feasible routes for the conveyor between the Phola Coal Processing Plant and Kusile Power Station that would not cross a number of streams and wetlands.

Outstanding Issues

The Environmental Assessment Practitioner for this project is of the opinion there are no notable uncertainties and knowledge gaps that could affect decision making.

The following issues were outstanding in the draft EIA report but have been addressed as follows:

- A great deal of the properties affected by the conveyor belongs to AAIC. All other landowners, except Eskom, have signed consent letters approving the conveyor servitude on their property. AAIC provided Eskom with a servitude agreement and is awaiting feedback from Eskom in this regard. AAIC is also negotiating with Mr Truter, who owns a number of properties along the conveyor route. Outstanding servitude agreements should be in place at the time when construction commences.

- AAIC and Synergictsics endeavoured to contact all affected landowners on an individual basis to discuss the specific impacts on their properties. Consultation results is summarised in Table 7-1.

- The locations of the conveyor crossings have been finalised. The majority of the crossings are located on Mr Truter's properties and the remainder on AAIC properties. Mr Truter was taken to these locations by AAIC whereafter he gave verbal approval.

Conclusions, Key Findings and Recommendations

A project of the scale and nature of the proposed Phola-Kusile Coal Conveyor will obviously impact on the environment – one of the more significant impacts associated with this project, is the impact at stream and wetlands crossings. A study of the area between the Phola Coal Processing Plant and the Kusile Power Station, the area over which a route for the conveyor had to be found, revealed that the area is traversed by various streams and wetlands, as illustrated in Figure 3–1. Various conveyor route corridors were evaluated during the scoping phase and it was found that all potential routes would have to cross streams and wetlands. Selection of a route corridor also had to take in consideration existing infrastructure such as roads, pipelines, built-up areas, land owned by third-parties and not by AAIC, as well as existing and future mining areas.

The conveyor route corridor that was selected at the end of the scoping phase was the one that impacted on the smallest number of stream and wetland crossings – but it still requires three stream crossings associated with valley bottom wetlands as well as a number of hillslope seepage wetlands depicted on Figure 5–5. The design of the conveyor includes various measures to protect streams and wetlands and to avoid flooding of the conveyor, which could result in coal washing down the steams. Key mitigation measures incorporated into the design, to minimise the impacts on streams and wetlands, include:

- Stream crossings will be provided with environmental gantries – specially designed conveyor sections on pillars and bridging across streams and wetlands raised higher than the 1:100 year floodline and provided with a roof, partial side screens for minimizing fugitive wind blown coal dust from conveyor, and an impervious floor for capturing coal spills, coal fines, drip-off and wash-down water. During conveyor shut-down, spilled coal can be picked up from the gantry floor and put back onto the conveyor.

- The conveyor will be equipped with scrapers at transfer stations and there will be belt turn overs to avoid coal fines spilling and falling to the ground along the conveyor and into hillslope seepage wetlands that are not equipped with environmental gantries.

- The service road crossings to be engineered so that the flow of the water through the wetlands (hydrological continuity) is not significantly disrupted, that impacts on wetland function is minimised and erosion risks are minimised.

- Each transfer station will be equipped with a bunded area for capturing of coal spills, dirty water dripping from the conveyor due to dust control sprays, and dirty water when the area is washed down or during rain. The bunded areas will drain towards a silt trap and an evaporation dam. The bunded area, silt trap and evaporation dams will be lined to avoid seepage and equipped with a sump.

- The conveyor will have a metal cover (called 'doghouse sheeting'), which will prevent rainwater coming into contact with the coal on the conveyor and contamination of clean rain water, and reduce the amount of water washing down / dripping down at the transfer stations.

- The metal cover will be placed in accordance with the prevailing wind direction and will act as mitigation to reduce windblown coal dust from entering streams and wetlands along the conveyor route.

In addition to the impact on streams and wetlands, a wide spectrum of impacts were assessed by the various specialists and then integrated into the impact assessment section of this report (Section 7). The various specialists made suggestions and recommendations for mitigation measures, which were all considered and evaluated by the Environmental Assessment Practitioner and, where found appropriate to the project and the affected environment, incorporated into the EMP (Section 12).

The EIA process as described in this report found that, with appropriate mitigation measures as proposed on the EMP in place, potential significant impacts can be mitigated to be within acceptable levels.

The EIA report, EMP and the various specialist reports (appended) contains all information that is necessary for:

- MDEDET to make an informed decision about the environmental impacts of the Phola-Kusile Coal Conveyor and to issue an environmental authorisation for the project.

- DWA to make an informed decision about the impacts associated with water uses in terms of the NWA and waste activities in terms of the NEMWA. Read in conjunction with the following reports, the DWA would have sufficient information to evaluate and issue a decision on the water use license application for the project.
    - Phola-Kusile Overland Coal Conveyor: Integrated Water and Waste Management Plan (Final, February 2012).
    - Phola-Kusile Overland Coal Conveyor: Integrated Water Use Licence Application Report (Final, February 2012).

It is deemed that the environmental process followed to date meets the requirements of the applicable legislation and that this report (volume 1 to 4) presents all relevant information needed for the competent authorities to make an informed decision on the environmental acceptability of the project.

Environmental Assessment Practitioner Recommendations

It is recommended that the development be authorised along the route as proposed by AAIC, that management and mitigation measures identified in the EMP be implemented, and that the outstanding issues listed in Section 8.6 be addressed within the specified timeframes.

S0403/SR01 **February 2012**

ANGLO AMERICAN INYOSI COAL

Phola-Kusile Overland Coal Conveyor

ENVIRONMENTAL IMPACT ASSESSMENT REPORT (Final)

Preliminaries

Purpose of the Report

The purpose of this final EIA report for the Phola-Kusile Coal Conveyor is to present the results of the environmental impact assessment process undertaken for the project.

The report provides a description of the proposed Phola-Kusile Coal Conveyor and associated activities and the various conveyor route alternatives that were evaluated. It presents the conveyor route that is proposed by Anglo American Inyosi Coal (Pty) Ltd (AAIC), based on an evaluation of environmental and technical considerations and the Environmental Assessment Practitioner' integration of the various specialists' studies into the report. All the specialist studies are appended to the main report.

Report Volumes

The report is in four volumes:

- Volume 1: Main Report, Appendix A and B
- Volume 2: Appendix C (Public Participation Documentation)
- Volume 3: Appendix D to H (Specialist Reports)
- Volume 4: Appendix I to P (Specialist Reports)

List of Reports Completed for The Project to Date

The following reports have been completed to date:

- Phola-Kusile Overland Coal Conveyor: Background Information Document (Oct 2010).
- Phola-Kusile Overland Coal Conveyor: Draft Environmental Scoping Report (Dec 2010).
- Phola-Kusile Overland Coal Conveyor: Final Environmental Scoping Report (Jun 2011).
- Various specialist assessment reports, as appended to this report (refer List of Appendices).
- Phola-Kusile Overland Coal Conveyor: Integrated Water and Waste Management Plan October (draft, October 2011).

- Phola-Kusile Overland Coal Conveyor: Integrated Water Use Licence Application Report (draft, October 2011).
- Phola-Kusile Overland Coal Conveyor: Draft Environmental Impact Assessment Report (October 2011).
- Phola-Kusile Overland Coal Conveyor: Final Environmental Impact Assessment Report (February 2012, THIS REPORT).

Report Distribution List

The DEIR and IWWMP will be available on the websites and at the places listed in the table below. You are most welcome to request us to send you a CD of the report.

Contact	Location	Contact
Printed Copies		
Suzie Wolvaardt	El Toro Restaurant on the R545 near the Kendal Power Station.	Tel: 013 648 1688
Ms Ntombi Jela	Ogies Public Library, 61 Main Street, Ogies	Tel: 013 643 1150 or 643 1027
Cindy Smith	Anglo American Inyosi Coal Environmental Services offices, Witbank.	Tel: 013 691 5117
Lierieka Cuyler	Synergistics Environmental Services. 64 Wessels Street, Rivonia, Johannesburg.	Tel: 011 807 8225
Electronic Copies		
Lierieka Cuyler	www.synergistics.co.za (click on “Reports” and scroll down to Phola-Kusile Coal Conveyor EIA)	Tel: 011 807 8225
Andre Joubert	www.zitholele.co.za - Kusile conveyor	011 207 2077
Andre Joubert	Available on CD n request via email from Zitholele Consulting.	Phone 011 207 2077, or send email request to andrej@zitholele.co.za, or complete the enclosed form.

All registered I&APs (as listed below) will be notified about the availability of the review period of the final EIA report.

List of Registered I&APs

	NAME	DESIGNATION	ADDRESS
1	Addison, Graeme	South African River Residents Association	
2	Ah Shene Verdoorn, Carolyn	Birdlife South Africa	RANDBURG
3	Bakker, Andre	Corridor Gazette	NELSPRUIT
4	Batchelor, Garth	Department of Economic Development Environment and Tourism	NELSPRUIT
5	Beech, Candice	Kusile Power Station	MORELETA PARK
6	Beetge, Andre	Working for Wetlands: SANBI	KRANSPOORT
7	Boonzaaier, H J	Fraser Alexander Bulk Mech	JET PARK
8	Botha, Amanda	Witbank News	WITBANK
9	Botha, Hannes	Mpumalanga Tourism and Parks Agency	GROBLERSDAL
10	Botha, Ida	Kungwini Local Municipality	BRONKHORSTSPRUIT
11	Butcher, Ruth	Cabanga Concepts for Homelands	RANDPARK RIDGE
12	Campbell, Graeme	Streeknuus	BRONKHORSTSPRUIT
13	Cherry, André	Klipfontein 568	KENDAL
14	Chipu, Sonia	Department of Mineral Resources	WITBANK
15	Claassen, Koot	Mpumalanga Agricultural Union	DELMAS
16	Clark, Sharon	BHP Billiton Energy Coal South Africa Limited	MARSHALLTOWN

	NAME	DESIGNATION	ADDRESS
17	Cogho, Vik	Optimum Coal Holdings	PULLENS HOPE
18	Cuyler, Lierieka	Synergistics Environmental Services	RIVONIA
19	de Beer, Willie	Transnet	JOHANNESBURG
20	de Klerk, Jan	Eskom: Transmission Lands & Rights	JOHANNESBURG
21	de Lange, S.	Metsweding District Municipality	BRONKHORSTSPRUIT
22	Deysel, Rouxdene	Department of Agriculture, Conservation, Environment and Land Affairs	JOHANNESBURG
23	Dhlamini, Eddie	Anglo American Inyosi Coal	LERAATSFONTEIN
24	Dlamini, Mbali	Department of Water Affairs	NELSPRUIT
25	Doman, Barry	Klipfontein Ptn 568 & 34	VOLTAGO
26	Donaldson, Kevin	Anglo Coal	LERAATSFONTEIN
27	Dongwana, S X A	Department of Public Works	PRETORIA
28	du Plessis, Deon	Department of Mineral Resource	WITBANK
29	du Plessis, Jacob	Anglo American Thermal Coal	LERAATSFONTEIN
30	Du Toit, Burger	Shanduka Coal (Pty) Ltd	SANDTON
31	du Toit, Steve	Anglo Coal ACGS	LERAATSFONTEIN
32	Duvenage, Annamie	Bronkhorstspruit and Wilge River Conservancy	BRONKHORSTSPRUIT
33	Duvenage, Daan	Hoewe 32	KENDAL
34	Duvenage, Simon	Plot 13	KENDAL
35	Elliott, Michael	Kusile Mining	WITBANK
36	Engelbrecht, Adam	Emalahleni Local Municipality	WITBANK
37	Euripidou, Rico	GroundWork - Friends of the Earth South Africa	PIETERMARITZBURG
38	Fenyane, Priscilla	Emalahleni Local Municipality	WITBANK
39	Finger, G.	Tswelopele Womens Project	BRONKHORSTSPRUIT
40	Floyd, Brian	Witbank Chamber of Commerce	WITBANK
41	Frazer, Joe	Manco Aurecon JV (For SANRAL Properties)	CENTURION
42	Friedman, Yolanda	Endangered Wildlife Trust	PARKVIEW
43	Gobodo, Nomfundo	Legal Resources Centre	JOHANNESBURG
44	Gondo, Joe	National African Farmers Union (NAFU)	KORINGPUNT
45	Govender, Jayshree	South African National Roads Agency Limited (SANRAL)	LYNNWOOD RIDGE
46	Govender, Len	Petronet - Witbank and Kendal	WITBANK
47	Grobler, Japie	Agri SA	CENTURION
48	Groenewald, Mariet		KENDAL
49	Groenewold, Reinder	Topigs SA (Pty) Ltd	MENLO PARK
50	Grosvenor, Cathy	Springs Advertiser (Springs Chamber of Commer)	SPRINGS
51	Gwambe, Thabiso	Emalahleni Local Municipality	OGIES
52	Hanly, David		RIVONIA
53	Haven, Claude	Kusile Mining (PTY) LTD	
54	Herbst, Deidre	Eskom	JOHANNESBURG
55	Hertzog, Barry & Heleen	Witbank District Agricultural Union	BRONKHORSTSPRUIT
56	Hlahla	Mpumalanga Economic Empowerment Corporation	NELSPRUIT
57	Hlatshwayo, Bongani	Mpumalanga News	NELSPRUIT
58	Hlatshwayo, Petrus		KENDAL
59	Hlatswayo, John		KENDAL
60	Hoffman, Andre	Mpumalanga Tourism and Parks Agency	GROBLERSDAL
61	Höll, Tinkie	Eskom	JOHANNESBURG
62	Hudson, Carla	Wildlife and Environment Society of South Africa (WESSA)	FERNDALE
63	Jacobs, Johan	Ferret Coal	WITBANK
64	Jansen van Vuuren, Stefan	Anglo American Thermal Coal - Project Services	LERAATSFONTEIN
65	Jansen van Vuuren, Vere	Telkom South Africa	MIDDELBURG
66	Jela, Ntombi	Ogies Public Library	OGIES
67	Joubert, Arthur	Plot 52	KENDAL
68	Kabini, Robert	Kusile mining	LERAATSFONTEIN
69	Kadiaka, Mamogala	Department of Water Affairs (DWA)	NELSPRUIT
70	Keet, Marius	Department of Water Affairs (DWA)	PRETORIA
71	Kekana, Mpho	Kungwini Local Municipality	BRONKHORSTSPRUIT
72	Kekana, Seoketsa	Kungwini Local Municipality	BRONKHORSTSPRUIT
73	Kemp, Piet	Transvaal Agricultural Union of SA	ERMELO
74	Kgobe, Lesiba	Department of Water Affairs and Forestry	BRONKHORSTSPRUIT
75	Khan, Zaheeb	Middelburg Herald	MIDDELBURG
76	Khanyile, Siziwe	GroundWork	PIETERMARITZBURG
77	Khomo, Sello	National African Federated Chamber of Commerce and Industry (NAFCOC)	SCHOONGEZICHT
78	Khoza, Alfred	Metsweding District Municipality	BRONKHORSTSPRUIT
79	Kisten, Kuben	Ziwakuphi Trading t/a ZKT	BETHAL
80	Kleyn, David	Department of Agriculture, Forestry and Fisheries (DAFF)	PRETORIA
81	Koen, Marinus	Ruukki South Africa	CENTURION

	NAME	DESIGNATION	ADDRESS
82	Krüger, Henro	Witbank Chamber of Commerce and Industry	WITBANK
83	Labuschagne, LeBeau	Department of Mineral Resources	PRETORIA
84	Lamprecht, Lampies	Anglo American Thermal Coal	LERAATSFONTEIN
85	Lebelo, Shirley	Metsweding District Municipality	BRONKHORSTSPRUIT
86	Leegemaad, C.	Bronkhorstspruit District Agricultural Union	RAYTON
87	Lewis, Mary	Klipkop Land Owners Association	WELBEKEND
88	Liefferink, Mariette	Federation for a Sustainable Environment (FSE)	RIVONIA
89	Love, Janet	Legal Resources Centre	JOHANNESBURG
90	Mabuza, David	Mpumalanga Province Office of the Premier	NELSPRUIT
91	Macevele, Stanford	Department of Water Affairs (DWA)	NELSPRUIT
92	Makgalemele, Mokhine	Anglo American	MARSHALLTOWN
93	Makola, TC	Nkangala District Municipality	MIDDELBURG
94	Makula, Richard	Kungwini Local Municipality	BRONKHORSTSPRUIT
95	Malatjie, L M	Emakhazeni Local Municipality	WITBANK
96	Malesa, Jacob	Department of Water Affairs (DWA)	BRONKHORSTSPRUIT
97	Malinga, Meshack	Department of Agriculture, Rural Development and Land Administration	NELSPRUIT
98	Mans, Louis	Fraser Alexander Coal	WITBANK
99	Marothi, Simon	Waterfontein Boerdery	ROSSLYN
100	Martin, Leslie	Anglo American Thermal Coal	LERAATSFONTEIN
101	Marx, Karin	Wildlife and Environment Society of South Africa (WESSA)	FERNDALE
102	Maseko, Lorraine	Emalahleni Local Municipality	WITBANK
103	Maselela, Elias	Victor Khanye Local Municipality	DELMAS
104	Mashilo, Speedy	Nkangala District Municipality	MIDDELBURG
105	Matabane, Vincent	Spoornet	BRAAMFONTEIN
106	Mautjana, Lerato	Department of Water Affairs (DWA)	BRONKHORSTSPRUIT
107	Mavimbela, Mbali	Emalahleni Local Municipality	eMALAHLENI
108	Mazibuko, Mandla	Department of Economic Development, Environment and Tourism	NELSPRUIT
109	Mazibuko, Nomsa	Nonotsi-Vakasha JV Projects	eMALAHLENI
110	Medallie, Marline	Synergistics Environmental Services	RIVONIA
111	Meulenbeld, Paul	Department of Water Affairs	PRETORIA
112	Meyer, Bok	Plot 59	KENDAL
113	Meyer, Hendrik	Plot 59 Kendal	KENDAL
114	Mkhabela, Freddy Chris	Emalahleni Local Municipality	OGIES
115	Mkhwanazi, A D	Emalahleni Local Municipal Council	eMALAHLENI
116	Mlambo, Busisiwe	South African National Roads Agency Limited (SANRAL)	SCOTTSVILLE
117	Mlondobodzi, Agnes	Metsweding District Municipality	BRONKHORSTSPRUIT
118	Mnguni, TRC	Department of Water Affairs (DWA)	PRETORIA
119	Mntambo, Fanyana	Department of Water Affairs (DWA)	NELSPRUIT
120	Mochalibane, Lucky	Department of Public Works	PRETORIA
121	Mohlasedi, Kgopana	Department Public Works, Roads and Transport: Mpumalanga	NELSPRUIT
122	Moila, Agnes	Department of Labour	WITBANK
123	Mokoena, Norman	Economic Development, Environment and Tourism (Mpumalanga)	NELSPRUIT
124	Mokonyane, Nomvula	Gauteng Provincial Government	MARSHALLTOWN
125	Mondlane, Musa	Mpumalanga Department of Agriculture and Land Administration (MDALA)	WITBANK
126	Monyeke, George	Environmental Justice Networking Forum (EJNF)	BRAAMFONTEIN
127	Mthembu, Dumisani	Department of Environmental Affairs (DEA)	PRETORIA
128	Ndlovu, Mqondisi Sonnyboy	Victor Khanye Local Municipality	DELMAS
129	Ndobochani, Nonofho	South African Heritage Resources Agency (SAHRA)	CAPE TOWN
130	Nel, Yolandi	Streeknuus	SUNWARD PARK
131	Nesidoni, John	Department of Agriculture and Rural Development (GDARD)	JOHANNESBURG
132	Neveling, Lareze	Streeknuus	BRONKHORSTSPRUIT
133	Nieuwoudt, Henri	Anglo American	MARSHALLTOWN
134	Nkabinde, Erald	Emalahleni Local Municipality	WITBANK
135	Nkoana, Tom	Ikangala Water Board	BRONKHORSTSPRUIT
136	Nkonyana, Thuli	Department of Economic development, Environment and Tourism	WITBANK
137	Nkosi, Oscar	Emakhazeni Local Municipality	BELFAST
138	Nkosi, Vusi	Ekasi News Reporter	SECUNDA
139	Nkwane, Oupa	City of Tshwane Metropolitan Municipality	PRETORIA
140	Noormohamed, Nazeer	Laudium Sun	PRETORIA
141	Nthangeni, Thanyani	Anglo American Thermal Coal	
142	Ntuli, Goody	Eskom	JOHANNESBURG
143	Oliver, Jan	National Roads Agency Northern Section	LYNNWOOD RIDGE
144	Olivier, Jan	JJRC Famillie Trust	SASOLBURG
145	Owen, Philip	Gearsphere NGO (S A Water Caucus)	NELSPRUIT
146	Penyane, Priscilla	Emalahleni Loacal Municipality	WITBANK

	NAME	DESIGNATION	ADDRESS
147	Perreira, Michael	Nunos Agostinhos Ferreira	KENDAL
148	Peverelle, Sylvester	Authorised representative of INGWE Surface Holdings Ltd	MARSHALLTOWN
149	Phakathi, Kate		VOLTARGO
150	Phakathi, Lindiwe	Anglo American Thermal Coal	ACKERVILLE
151	Pieterse, Eben	Fraser Alexander Coal	WITBANK
152	Pillay, Nava	Metsweding District Municipality	BRONKHORSTSPRUIT
153	Pohl, Rita	Bullseye Magazine	BRONKHORSTSPRUIT
154	Potgieter, J L	Ogies Business Forum	OGIES
155	Pretorius, Annelien	Eskom	MENLO PARK
156	Pretorius, Koos	Federation for a Sustainable Environment (FSE)	BELFAST
157	Prinsloo, N P	Klipfontein 658 Ptn 36	LERAATSFONTEIN
158	Prinsloo, R A	Klipfontein 36	
159	Rajlal, Pavan	Anglo American Thermal Coal	LERAATSFONTEIN
160	Ramokgopa, Kgosientsho	City of Tshwane Metropolitan Municipality	PRETORIA
161	Rapatsa, Jack	Victor Khanye Local Municipality	DELMAS
162	Ratema, Magadi	Telkom Head Office	PRETORIA
163	Riba, Sonnyboy	Victor Khanye Local Municipality	DELMAS
164	Rossouw, Pierre	Nkangala District Municipality	MIDDELBURG
165	Rudd, Kevin	Manco-Aurecon JV for SANRAL	
166	Scheepers, Anton	Mpumalanga Economic Empowerment MEGA Growth Agency	NELSPRUIT
167	Scrooby, Jeff	Transnet Pipelines	DURBAN
168	Segami, Yolanda	Victor Khanye Local Municipality	DELMAS
169	Sekhukhune, Sidney	Anglo American	LERAATSFONTEIN
170	Shabane, Love	Department of Agriculture Forestry & Fisheries	NELSPRUIT
171	Sibanyoni, Agriba	South African National Roads Agency Limited	LYNNWOOD RIDGE
172	Sibayi, Dumisani	South African Heritage Resource Agency (SAHRA)	CAPE TOWN
173	Silver, Gavin	Homeland Mining & Energy SA	WITBANK
174	Sithole, Mabutho	Mpumalanga Province Office of the Premier	NELSPRUIT
175	Sithole, Nelisiwe	Department of Agriculture, Rural Development and Land Administration	NELSPRUIT
176	Sitole, Busi	Shanduka Coal (Pty) Ltd	SANDTON
177	Smit, Gert	Agri Mpumalanga	WITBANK
178	Smit, Hennie	Department of Water Affairs (DWA)	PRETORIA
179	Solomon, Jethro	Homeland Mining & Energy SA	EL JUDOR EXT 4
180	Stander, Jan	Telkom South Africa	MIDDELBURG
181	Stapelberg, Leon	Eskom	MIDDELBURG
182	Steele, Teresa	Anglo American Thermal Coal	MARSHALLTOWN
183	Steenkamp, Jan	Victor Khanye Local Municipality	DELMAS
184	Steyn, Andries	Transvaal Agricultural Union of SA	BRONKHORSTSPRUIT
185	Stoop, Janine	Telkom SA	MIDDELBURG
186	Struwig, Monty	Eskom	
187	Swart, Dan	Kendal Plot 37	KENDAL
188	Thabethe, Peter	Department of Agriculture, Forestry and Fisheries (DAFF)	NELSPRUIT
189	Thugwana, Master	O.P.TA	TASBET PARK
190	Tjaart, V N	Klipfontein 56 Ptn 33	BRAKPAN NOORD
191	Troskie, Ian	Cabanga Concepts	NORTH RIDING
192	Truter, Christie	Truter Boerdery Trust	OGIES
193	Tshabalala, E K	Nkangala District Municipality	MIDDELBURG
194	Tshabidi, Tefo	Department of Water Affairs (DWA)	BRONKHORSTSPRUIT
195	van Aswegen, Johann	Department of Water Affairs (DWA)	BRONKHORSTSPRUIT
196	van Bulderen, Robert	Transnet Pipelines	STANDERTON
197	Van Dam, Jenny & Anton	JJRC Famillie Trust	SASOLBURG
198	van den Berg, Tobie	Middelburg Observer/Daller	MIDDELBURG
199	Van Der Merwe, Eric	Transnet	NORKEM PARK
200	van Rooyen, A M	Balmoral Boerevereniging	BRONKHORSTSPRUIT
201	van Rooyen, Ken	Highveld Techno Park	RANDBURG
202	van Vuuren, Wilma	Ridge Times/The Echo	SECUNDA
203	Venter, Pieter	Bronlaw Properties/ Vlakfontein Plot 20	KENDAL
204	Vermaak, Stefan	Topigs SA (Pty) Ltd	MENLO PARK
205	Vertue, Mike	Anglo American Thermal Coal	LERAATSFONTEIN
206	Wentzel, Carol	Bronkhorstspruit and Wilge River Conservancy	ASTON MANOR
207	Wolmarans, Mari	Synergistics Environmental Services	HUMEWOOD
208	Wolvaardt, Suzie	El Toro Restaurant on the R545	
209	Worthington, Richard	WWF South Africa	BENMORE
210	Xaba, Sibusiso	Economic Development and Planning	MARSHALLTOWN
211	Yorke-Hart, Michael	South African National Roads Agency Limited (SANRAL)	LYNNWOOD RIDGE

	NAME	DESIGNATION	ADDRESS
212	Zitha, Langa	Department of Agriculture, Forestry and Fisheries (DAFF)	NELSPRUIT
213	Zulu, Zonke	Victor Khanye Local Municipality	DELMAS
214	Zwane, Ben	ANCYL	PHOLA LOCATION

1. Introduction to the Project

1.1 Project Motivation and Location

Anglo American Inyosi Coal (Pty) Ltd (AAIC) is proposing to construct an overland conveyor system, the Phola-Kusile Overland Coal Conveyor, to transport coal from the Phola Coal Processing Plant (Phola CPP) to Eskom's Kusile Power Station (Kusile) in the Mpumalanga Province, to meet the demand for coal at the Kusile Power Station that is under construction.

The Kusile Power Station is a coal-fired power station currently under construction just south of the N4 highway between Bronkhorstspruit and Witbank (Emalahleni). It will consist of six units of 800 megawatts (MW) capacity each and a total capacity of 4800 MW. Kusile will require approximately 17 million tons of coal a year, depending on the quality of the coal.

The proposed Phola-Kusile Overland Coal Conveyor will fall within the Nkangala District Municipality, and the Victor Khanye (Delmas) and Emalahleni (Witbank) Local Municipalities. The towns in close proximity to the proposed conveyor are Wilge (~4 km east), Phola (~3 km southeast), Ogies (~5 km south-southeast) and Emalahleni (~25 km east).

The Phola Coal Processing Plant is an existing operation located approximately 20 kilometres south-east of Kusile, between the Kendal Power Station, Ogies and Phola. The plant is a 50/50 joint venture between BHP Billiton (BECSA) and AAIC and has been in operation since 2009. It has capacity to beneficiate (wash and sort) 16 million tonnes per annum and receives coal from Klipspruit (BECSA), and Zibulo (AAIC) mines. The primary coal products from the Phola Coal Processing Plant are exported and the secondary products (or middlings coal) are dispatched to various Eskom power stations.

1.2 Project Need and Desirability

The majority of South Africa's electricity is generated from coal. The Kusile Power Station forms part of the **South African National Government strategy** to supply much needed electricity to the South African national electricity grid. Eskom has made a multi-billion rand investment to construct the new Kusile Power Station.

The Ministry of Energy and Eskom maintain that:

> *"In the absence of Kusile there will not be enough power into the South African electricity grid"* (Ministry of the Energy spokesperson Bheki Khumalo[1]).
>
> *"Without the additional power from Kusile from 2014, there could be constraints on South Africa's economic growth"* (Eskom's Finance Director, Paul O'Flaherty[3]).

Eskom has identified the **middlings coal from the Phola Coal Processing Plant** to be an **important future source of coal to be fed to the Kusile Power Station**.

3 Media release compiled by the Government Communication and Information System, 26 Aug 2010. http://www.buanews.gov.za/rss/10/10082611151001

Alternative transportation options were considered (road, rail and overland conveyor) and **the conveyor was found to be the proposed transportation option**.

The purpose of the proposed overland conveyor is therefore to **ensure a timeous and secure supply of coal to Kusile** and therefore ultimately, electricity to the national electricity transmission grid. In order to prepare the Kusile Power Station for commercial operations, delivery of the first coal via the Phola-Kusile Coal Conveyor is planned for October 2013 (subject to all relevant approvals being obtained).

Should the Phola-Kusile Coal Conveyor not be approved, **coal will have to be supplied to the power station** via other means, such as road transport, which was found to have far more significant environmental and economic impacts as indicated in the discussion regarding project alternatives. There will also be a significant loss to Eskom, and the country, as the construction of Kusile was a strategic development to assist with the electricity shortages of South Africa and if coal cannot be supplied consistently, the power station will not be able to operate effectively.

Three alternative conveyor corridors were assessed during the scoping phase (Figure 1-3), of which two were eliminated at the end of scoping. Various route options along the preferred corridor were investigated during the EIA phase (Figure 1–2). **The alternative routes were evaluated and a proposed route was identified and optimised, based on an integrated assessment of all environmental components**. The location of the proposed route for the Phola-Kusile Coal Conveyor is presented in Figure 1-1.

A project of this nature and scale will obviously impact on the environment. The EIA process as described in this report found that, with appropriate mitigation measures in place, all significant impacts can be mitigated to within acceptable levels (refer to Conclusions, Key Findings and Recommendation in Section 8.7 at the back of the report).

Plate 1-1: Kusile Power Station under construction (January 2010) (CONVEYOR DESTINATION)

Plate 1-2: Phola Coal Processing Plant (CONVEYOR START POINT)

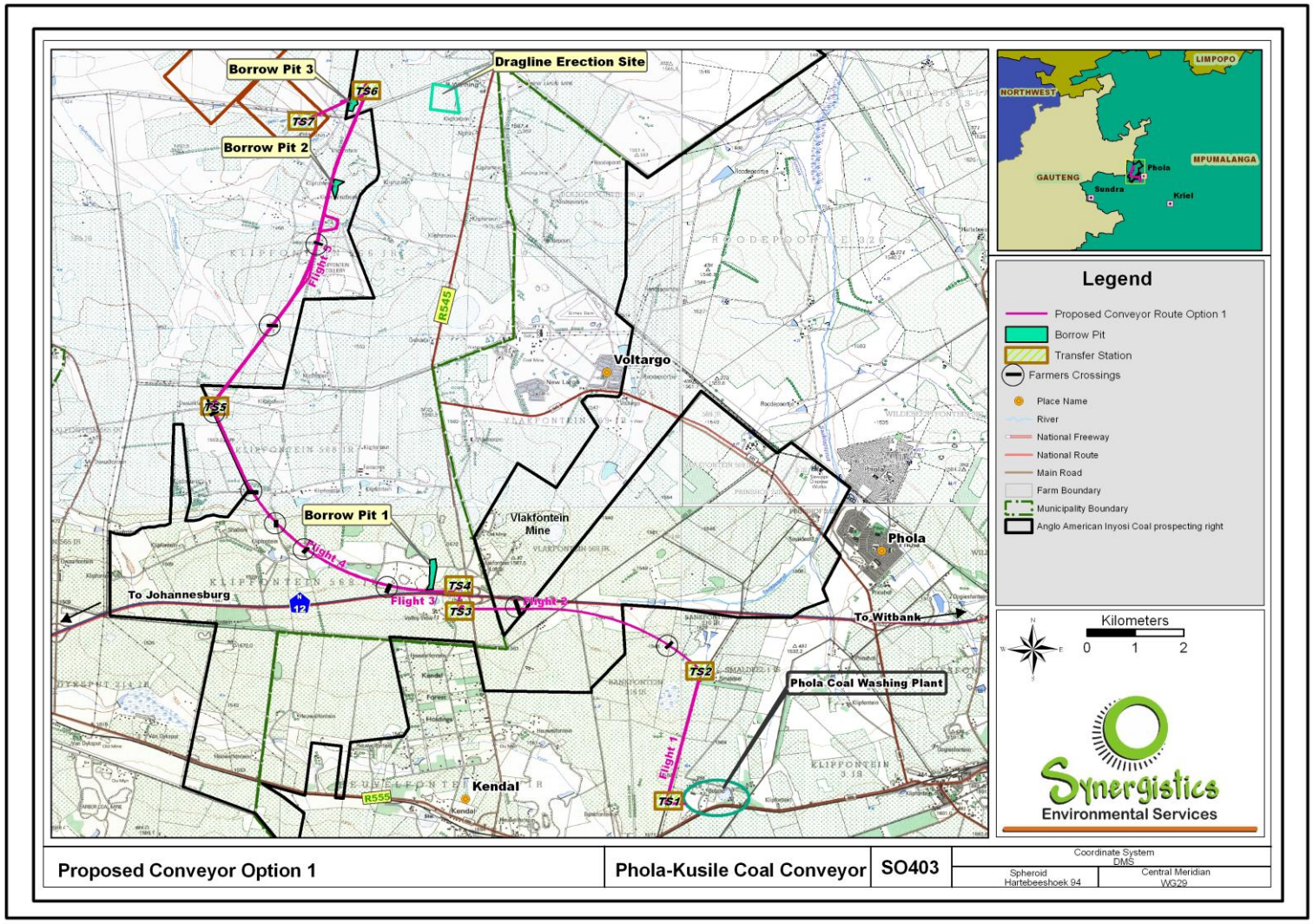

Figure 1-1: Locality of the Phola-Kusile Overland Coal Conveyor Route (AAIC Proposed Route Option), showing conveyor flights, transfer stations (TS1 to TS7) and borrow pit locations

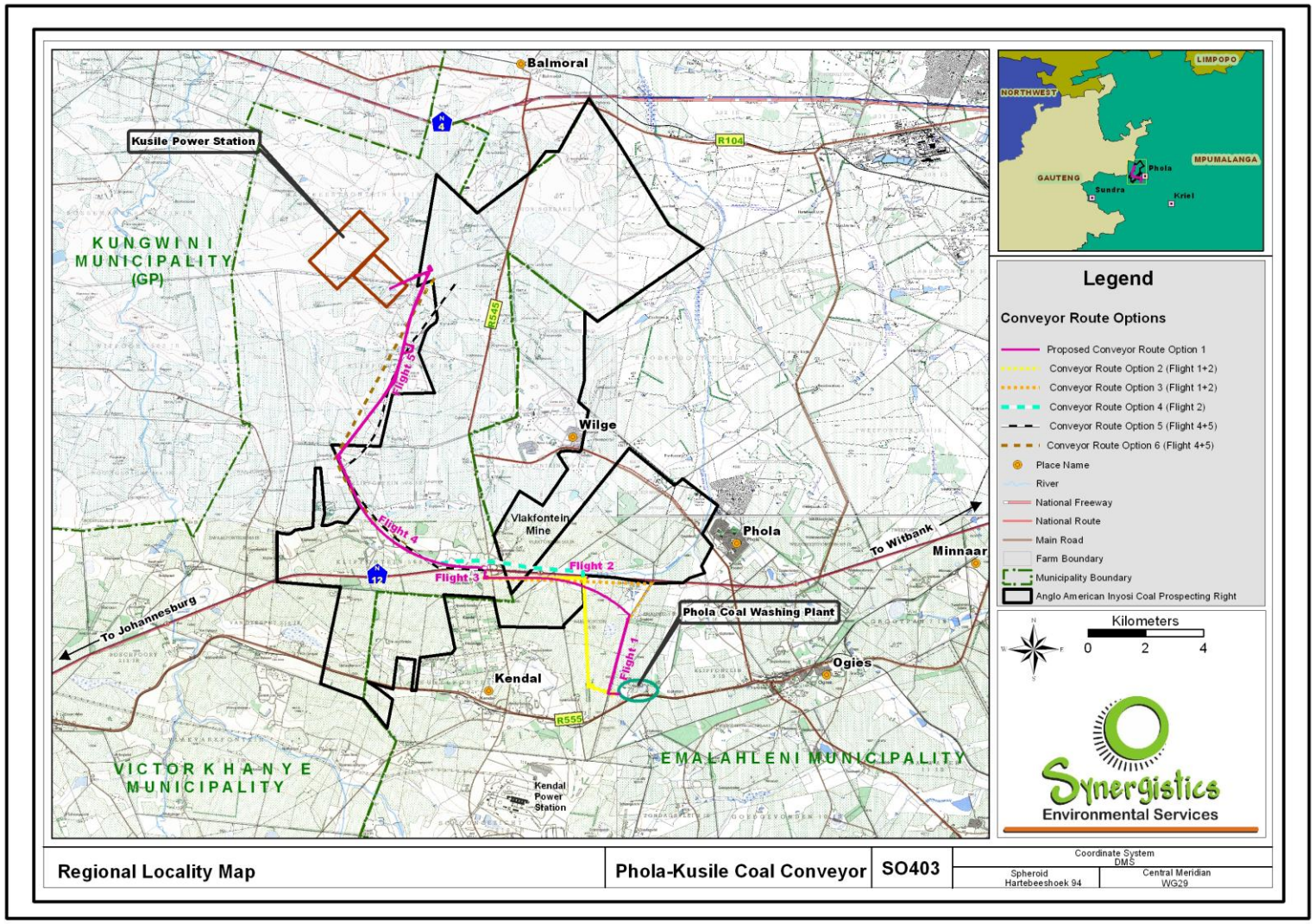

Figure 1-2: Locality of the Phola-Kusile Overland Coal Conveyor Route Corridor (AAIC Proposed Route Option and Alternative Route Options Investigated)

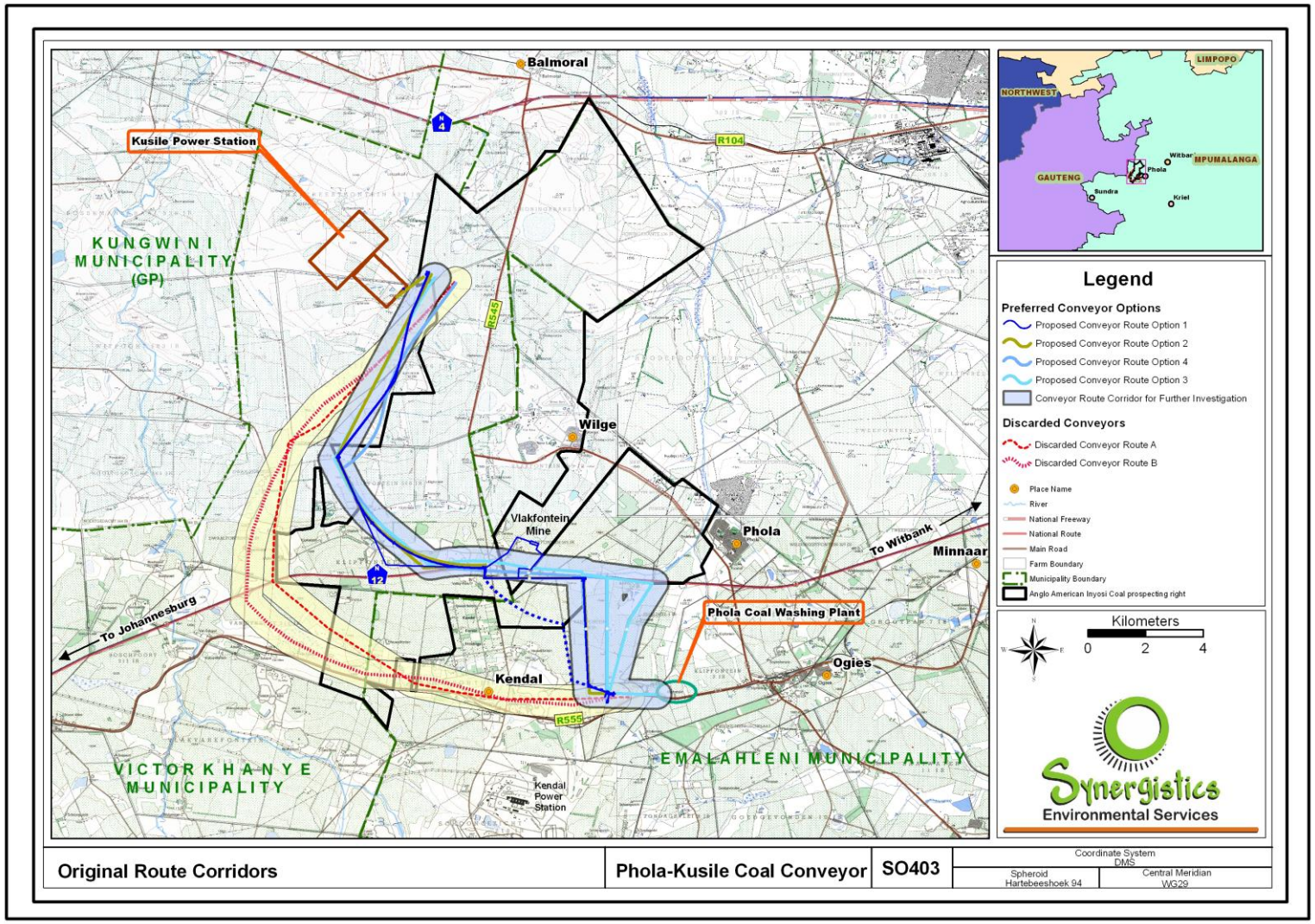

Figure 1-3: Locality of three Conveyor Corridors investigated during the Scoping Phase (the Blue Corridor represents the AAIC Proposed Corridor)

1.3 Environmental Legal Requirements

1.3.1 Environmental Impact Assessment and Environmental Management Programme in terms of the National Environmental Management Act (No 107 of 1998)

The proposed Phola-Kusile Coal Conveyor requires an environmental impact assessment (EIA), environmental management programme (EMP) and environmental authorisation in terms of the National Environmental Management Act (No 107 of 1998) (NEMA) before construction of the conveyor may commence. Activities listed in terms of the NEMA and which are triggered by the proposed Phola-Kusile Coal Conveyor are described in Table 1-1 below.

Table 1-1: GNR 544, 545 and 546 Listed Activities Applicable to the Phola-Kusile Coal Conveyor

Listed Activity		Applicability to the Project
Activities requiring a Basic Assessment in terms of GNR 544 (Listing 1)		
544-11	**The construction of:** (i) canals; (ii) channels; **(iii) bridges;** (iv) dams; (v) weirs; (vi) bulk storm water outlet structures; (vii) marinas; (viii) jetties exceeding 50 square meters in size; (ix) slipways exceeding 50 square meters in size; (x) buildings exceeding 50 square meters in size; or **(xi) infrastructure or structures covering 50 square meters or more** **where such construction occurs within a watercourse or within 32 meters of a watercourse, measured from the edge of a watercourse, excluding where such construction will occur behind the development setback line.**	The conveyor structure, service road and water supply pipeline will cross streams associated with wide valley bottoms, thus requiring bridges (culverts for the service road and bridges to carry the conveyor) to span the valleys. Structures at stream crossings would exceed 50 square metres.
544-13	**The construction of facilities or infrastructure for the storage, or for the storage and handling, of a dangerous good, where such storage occurs in containers with a combined capacity of 80 but not exceeding 500 cubic meters [80000 to 500000 litres];**	A typical diesel bowser / construction site diesel installation is 30 cubic metres [30000 litres]. If three bowsers are used during construction, this activity would be triggered. Should construction take place concurrently at different places along the length of the conveyor, it is likely that three or more bowsers would be used. Site construction vehicles will have to be refuelled close to the construction area (i.e. water bowser, graders, dozers, etc.).

Listed Activity		Applicability to the Project
544-18	**The infilling or depositing of any material of more than 5 cubic meters into, or the dredging, excavation, or removal or moving of soil, sand, shells, shell grit, pebbles or rock from** **(i) a watercourse;** (ii) the sea; (iii) the seashore; (iv) the littoral active zone, an estuary or a distance of 100 meters inland of the high-water mark of the sea or an estuary, whichever distance is the greater-but excluding where such infilling, depositing, dredging, excavation, removal or moving (i) is for maintenance purposes undertaken in accordance with a management plan agreed to by the relevant environmental authority; or occurs behind the development setback line.	The conveyor structure, service road and water supply pipeline will cross streams associated with wide valley bottoms, thus requiring bridges (culverts for the service road, and bridges to carry the conveyor) to span the valleys. Stream crossings would require earthworks (excavation / fill) of more than 5 cubic metres.
544-22	**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 meters,** or for which an environmental authorization was obtained for the route determination in terms of activity 5 in Government Notice 387 of 2006 or activity 18 in Notice 545 of 2010.	The servitude for the conveyor, including the service road is 25 m wide. Service road could disturb an area wider than 8 m during construction.
544-26	**Any process or activity identified in terms of section 53(2) of the National Environmental Management: Biodiversity at, 2004 (Act No. 10 of 2004) (NEMBA).**	There are currently no legally binding ecological / biodiversity sensitivity classification systems in Mpumalanga Province. The following are used as general guidelines: Mpumalanga Biodiversity Management Plan (MBCP): In terms of the MBCP, all the conveyor route alternatives will traverse habitats listed as IMPORTANT & NECESSARY. Vegetation Type Sensitivity: All three routes traverses the following THREATENED ECOSYSTEMS, based on information obtained from SANBI: • Eastern Highveld Grassland • Rand Highveld Grassland
Activities requiring a full Environmental Impact Assessment in terms of GNR 545 (Listing 2)		
545-5	**The construction of facilities or infrastructure for any 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:	Various water uses require licensing (listed in Table 1-4) and this activity is therefore triggered.

1.3.2 Waste Management License for the Development of a Mobile Waste Water Treatment Plant on the Farm Klipfontein 566 JR, Nkangala District, Mpumalanga, to treat water from old underground mine workings

Various alternative options to supply water to the Phola-Kusile Coal Conveyor during the operational phase of the conveyor were investigated in the EIA process for the Phola-Kusile Coal Conveyor (Section 4.4). The proposed option, which is also the environmentally preferred option, is to abstract and treat excess water from flooded old underground mine workings found in the area. This excess mine water currently decants to the surface and/or is pumped into the nearby pan.

Based on groundwater monitoring conducted between 2006 and 2011, it is estimated that ~1.5 Mℓ/day of water is generated in the old underground workings (pers. Comm. Jaco van den Berg, JMA groundwater specialist responsible for the ground water monitoring programme for AAIC). Limiting the abstraction and treatment to 1.5 Mℓ/day will avoid aggravating the risk of spontaneous combustion in the mine workings due to the lowering of the water table.

The water treatment plant triggers the need for a waste management license in terms of the National Environmental Management: Waste Act (No. 59 of 2008) (NEMWA). Although this proposed option to supply water to the Phola-Kusile Coal Conveyor was only identified subsequent to the submission of the final scoping report for review by I&APs and authorities, it should be noted that:

- The impacts of the mobile plant and associated wastes were assessed in this EIA for the Phola-Kusile Coal Conveyor and discussed in the scoping assessment for the New Largo Colliery. It was found that the mobile water treatment plant will have positive impacts on the quality of the excess water from the old underground mine workings that currently decants or is pumped to a nearby pan, and that it would have minimal impact on other environmental components due to its small footprint and strict engineering design controls for management of wastes associated with the treatment plant.
- I&APs, MDEDET, DWA and organs of state were consulted about the installation of a mobile water treatment plant as part of the scoping process for New Largo Colliery EIA process.
- At the water focus meeting and the authorities meeting that were held as part of the New Largo Colliery EIA process, there was general support for the installation of a mobile water treatment plant to treat water from the old underground mine workings.
- Registered I&APs for the Phola-Kusile Coal Conveyor EIA were notified about the proposed development of the mobile water treatment plant in a letter sent to them in October 2011 as part of the review of the draft EIA report.
- The public participation that will be conducted around this final EIA process (outlined in Section 2.4) will include matters related to the mobile water treatment plant.
- All the impacts of the mobile water treatment plant are assessed in this EIA report and management measures are documented in the EMP attached to this report.
- The designs and management measures for the package sewerage plant and mobile water treatment plant will, by default, be reviewed by the DWA as part of the water use license application process.

The National Department of Environmental Affairs (NDEA) is the competent authority to administrate and review the application for a waste management license in terms of the NEMWA. Waste management licenses revert to the national department if it involves waste regarded as hazardous, i.e. the brine which may be produced at the proposed mobile water treatment plant.

Based on discussions[4] with the NDEA (Appendix C), the waste management license process under the NEMWA will be a completely separate process. The waste management license will only be for the proposed mobile water treatment plant on Portion 1 of the Farm Klipfontein 566 JR, Nkangala District, Mpumalanga, to treat water from old underground mine workings, and not for the Phola-Kusile Coal Conveyor itself.

Should this mobile water treatment plant not be developed, or if there are delays with the approval of the waste management license, one of the alternative water supply options as discussed in Section 4.4 will have to used to supply water to the Phola-Kusile Coal Conveyor.

To avoid compromising the start-up of Kusile Power Station and the planned supply of power to the national electricity grid, construction of the conveyor is planned to start as soon as the MDEDET environmental authorisation and DWA approval of construction-related water uses are in place, and the installation of the mobile water treatment plant is planned to start as soon as the NDEA approval of the waste management license is in place.

The NEMWA waste activities associated with the operation of the proposed mobile water treatment plant are listed in below.

Table 1-2: List of NEMWA listed waste activities associated with the Development of a Mobile Waste Water Treatment Plant on Portion 1 of the Farm Klipfontein 566 JR, to treat water from old underground mine workings

Activity Number	Activity description	Applicability to the Project	Timing of Waste Activity and explanation of when Waste Management License is Required
Category A: Activities requiring a Basic Assessment as per the National Environmental Management Act (No 107 of 1998) process and Approval in terms of NEMWA (GNR 718)			
A3	A person who wishes to **commence, undertake or conduct an activity** listed under this Category, must conduct a basic assessment process, as stipulated in the environmental impact assessment regulations made under section 24(5) of the National Environmental Management Act, 1998 (Act No. 107 of 1998) as part of a waste management license application.		
Storage of Waste			
A3(2)	The storage including the temporary storage of hazardous waste at a facility that has the capacity to store in excess of 35 cubic metres (m³) (35 000 litres) of hazardous waste at any one time, excluding the storage of hazardous waste in lagoons.	Storage of 1.5 mega litres (Mℓ) (1 500 cubic metres) mine water prior to treatment. Temporary storage of gypsum waste prior to off-site disposal/storage at a licensed facility (characteristics of the gypsum is dependent on classification of the gypsum waste)	Installation of mobile water treatment plant.
Reuse, recycling and recovery			
	None		

[4] Meeting with NDEA on 30 September 2011 (in Appendix C).

Activity Number	Activity description	Applicability to the Project	Timing of Waste Activity and explanation of when Waste Management License is Required
Treatment of Waste			
A3(11)	The treatment of effluent, wastewater or sewage with an annual throughput capacity of more than 2 000 cubic metres but less than 15 000 cubic metres.	Maximum treatment of 4 Mℓ/day of mine water at the proposed water treatment plant (Activity B4(7) triggered)	Installation of mobile water treatment plant.
Disposal of Waste			
	None		
Storage, treatment and processing of animal waste			
	None		
Construction, expansion or decommissioning of facilities and associated structures and infrastructure			
A3(18)	The construction of facilities for activities listed in Category A of this Schedule (not in isolation to associated activity).	Basic Assessment triggered for the operation of the mobile water treatment plant	
Category B: Activities requiring Scoping and Full Environmental Impact Assessment as per the National Environmental Management Act (No 107 of 1998) process and Approval in terms of NEMWA			
B4	A person who wishes to commence, undertake or conduct an activity listed under this Category, must conduct an environmental impact assessment process, as stipulated in the environmental impact assessment regulations made under section 24(5) of the National Environmental Management Act, 1998 (Act No. 107 of 1998) as part of a waste management licence application.		
Storage of hazardous waste			
B4(1)	The storage including the temporary storage of hazardous waste in lagoons.	The disposal of brine in an engineered brine disposal facility, suitable for storage of hazardous waste in a lagoon. The production of brine is dependent on the water treatment technology.	Operation of mobile water treatment plant.
Reuse, recycling and recovery of waste			
B4(2)	None triggered		
Treatment of Waste			
B4(7)	The treatment of effluent, wastewater or sewage with an annual throughput capacity of 15 000 cubic metres or more *[15 Mℓ/annum]*.	The maximum treatment of 4 Mℓ/day of impacted mine water and average throughout of 1.5 Mℓ/day (average = 525 Mℓ/annum or 525 000 cubic metres/annum) (more than the threshold of 15 *Mℓ/annum or 15000* cubic metres/annum).	Operation of mobile water treatment plant.
Disposal of waste on land			
B4(9)	The disposal of any quantity of hazardous waste to land.	The disposal of brine in an engineered brine disposal facility, suitable for storage of hazardous waste in a lagoon (thus not to land). The production of brine is dependent on the water treatment technology.	Operation of mobile water treatment plant.
Construction of facilities and associated structures and infrastructure			
B4(11)	The construction of facilities for activities listed in Category B of this Schedule (not in isolation to associated activity).	Installation of mobile water treatment plant.	

1.3.3 General Authorisation and Water Use License in terms of the National Water Act

In addition to water uses falling under general authorisation, a water use license application for additional construction and operational water uses will be submitted to the Department of Water Affairs (DWA) for the anticipated water uses tabled below. A number of these water uses are solely associated with the recently introduced option to abstract and treat excess water from flooded old underground mine workings for supplying water to the conveyor's fire protection and dust suppression systems.

Table 1-3: List of water uses requiring General Authorisations or a Water Use License

Activity Number and Description	Applicability to the Phola-Kusile Coal Conveyor	Timing of Water Use and explanation of Water Use License is Required
General Authorisation		
Section 21(a): Taking water from a water resource:	- Approximately 160 m^3/day ground water will be abstracted from three boreholes for construction purposes.	Construction: - for general construction water supply.
Water Use License		
Section 21(a): Taking water from a water resource:	- Water abstracted from three farm dams.	Construction: - for general construction water supply.
	- Potable water during construction will be abstracted from a spring at maximum of 60 m^3/day. This water use will cease once the mobile water treatment plant is commissioned.	Construction: - for potable water supply. Operation: - for water supply prior to installation of the mobile water treatment plant, or for supply during operation if mobile water treatment plant is not developed.
	- Water will be abstracted from the old underground workings and treated to potable water standards. Abstraction will be via one of three boreholes.	Operation: - for water supply to fire protection and dust suppression systems.
Section 21(b): Storage of water:	- Each of the seven conveyor transfer stations will have 2 x 20 m^3 (therefore 40 m^3 total) elevated steel tanks to store clean water for dust- and fire suppression as well as wash down.	Operation: - Storage of water in elevated steel water tanks.
	- The proposed mobile water treatment plant, located adjacent to the pan on property Klipfontein 566 JR, portions 17/13, will have a 1 Mℓ treated water reservoir. The potable water will then be pumped to a 250 m^3 elevated water tank before it is distributed for end use at the transfer stations.	Operation: - Storage of water in reservoir and tanks.
	- The operation will have 4 x 420 m^3 deluge fire suppression tanks to store water of potable quality for fire suppression during an emergency.	Operation: - Use of storage tanks for fire protection system.

Activity Number and Description	Applicability to the Phola-Kusile Coal Conveyor	Timing of Water Use and explanation of Water Use License is Required
Section 21(c): Impeding or diverting the flow of water in a watercourse:	- The conveyor system and its associated service road, will cross three streams, as well as passing through, or close to, several wetlands	Construction and operation: - Construction and operation of conveyor sections crossings streams and wetlands.
Section 21(f): Discharging waste or water containing waste into a water resource through a pipe, canal, sewer, sea outfall or other conduit:	- Discharging the excess treated water from the mobile water treatment plant into the Klipfonteinspruit, a tributary of the Wilge River	Operation: - Operation of mobile water treatment plant.
Section 21(g): Disposing of waste in a manner which may detrimentally impact on a water resource:	- Each of the seven conveyor transfer stations will have a lined evaporation dam to collect dirty water runoff and silt (coal fines)	Operation: - Collection of coal spillages (dirty runoff) in evaporation dams at transfer stations.
	- The proposed mobile water treatment plant may have a brine disposal facility, if required (depending on the type of treatment plant used)	Operation: - Disposal of brine produced at mobile water treatment plant.
	- A gypsum collection pad will be used for the storage of gypsum prior to final, off-site disposal, at a licensed waste disposal/storage facility	Operation: - Storage of gypsum produced at mobile water treatment plant.
	- The mobile water treatment plant will have a total of 7.5 Mℓ pre-treatment water storage capacity, sufficient for one day storage to be treated for fire and potable water requirements	Operation: - Storage of pre-treated water at mobile water treatment plant.
	- Treated water will be used for dust suppression at the seven conveyor transfer stations and the associated service road as required.	Construction and operation: - Dust suppression due to construction and operation activities.
Section 21(i): Altering the bed, banks, course or characteristics of a watercourse:	- The conveyor system and its associated service road, will cross three streams, as well as passing through, or close to, several wetlands	Construction and operation: - Construction and operation of conveyor sections crossings streams and wetlands.
	- Excess treated water from the mobile water treatment plant will be discharged into the Klipfonteinspruit, a tributary of the Wilge River	Operation: - Release of treated water during the operation of mobile water treatment plant.

1.3.4 Structure of the Environmental Impact Assessment Report, the Environmental Management Programme and Specialist Studies

The environmental impact assessment, the environmental management programme and specialist studies were structured in accordance with GNR 543 regulation 31, 33 and 32 respectively and includes the consolidated results of the public participation and authority consultation processes conducted to date. The three tables below provide a summary of the requirements of GNR 543, with cross references to the report's sections where these requirements have been addressed.

Table 1-4: Environmental Impact Assessment Report Structure in terms of GNR 543 Section 31

Legal and Regulatory Requirement	Cross Reference to Report Section
GNR 543 Section 31	
Environmental impact assessment reports	
1. If a competent authority accepts a scoping report and advises the EAP in terms of regulation 30 (1) (a) to proceed with the tasks contemplated in the plan of study for environmental impact assessment, the EAP must proceed with those tasks, including the public participation process for environmental impact assessment referred to in regulation 28 (1) (h) (i)-(iv) and prepare an environmental impact assessment report in respect of the proposed activity. [Subreg. (1) amended by GN R1159/201]	This report.
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-	All sections of this report and Section 8.
(a) Details of- (i) the EAP who compiled the report; and (ii) the expertise of the EAP to carry out an environmental impact assessment;	Section 2.5.
(b) A detailed description of the proposed activity;	Section 1 and Section 3
(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;	Section 7.1
(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;	Section 5
(e) Details of the public participation process conducted in terms of sub-regulation (1), including- (i) steps undertaken in accordance with the plan of study;	Section 2.4
(ii) a list of persons, organisations and organs of state that were registered as interested and affected parties	Preliminaries (in front of report).
(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	Section 6
(iv) copies of any representations and comments received from registered interested and affected parties;	Appendix C
(f) A description of the need and desirability of the proposed activity;	Section 1.1
(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;	Section 4.
(h) An indication of the methodology used in determining the significance of potential environmental impacts;	Appendix A
(i) A description and comparative assessment of all alternatives identified during the environmental impact assessment process;	Section 4.
(j) A summary of the findings and recommendations of any specialist report or report on a specialized process;	Incorporated into Section 7 and Appendix B
(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;	Incorporated in Section 7 and Appendix A

Legal and Regulatory Requirement	Cross Reference to Report Section
(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;	Incorporated into Section 7 and Appendix A (Detailed Impact Assessment of Proposed Development Option)
(m) A description of any assumptions, uncertainties and gaps in knowledge;	Section 2.8 and Section 2.9
(n) A reasoned opinion as to whether the activity should or should not be authorized, and if the opinion is that it should be authorized, any conditions that should be made in respect of that authorization;	Section 8.8
(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;	Section 8
(p) A draft environmental management programme containing the aspects contemplated in regulation 33;	Section 12
(q) Copies of any specialist reports and reports on specialized processes complying with regulation 32;	Appendices to this report
(r) Any specific information that may be required by the competent authority; and	None identified by authorities
(s) Any other matters required in terms of sections 24 (4) (a) and (b) of the Act.	Not applicable
3. The EAP managing the application must provide the competent authority with detailed, written proof of an investigation as required by section 24 (4) (b) (i) of the Act and motivation if no reasonable or feasible alternatives, as contemplated in sub-regulation 31 (2) (g), exist.	Not applicable. Alternatives discussed and assessed in Section 4.

Table 1-5: Environmental Management Programme Structure in terms of GNR 543 Section 33

Legal and Regulatory Requirement	Cross Reference to Report Section
GNR 543 Section 33	
Content of draft environmental management programme	
A draft environmental management programme must comply with section 24N of the Act and include-	Section 12
(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;	Preliminaries and Section 2.5
(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-	EMP Table Column B.
(i) planning and design;	EMP Table Column Q (combined under "Pre-Construction")
(ii) pre-construction and	
construction activities;	EMP Column D
(iii) operation or undertaking of the activity;	Column E
(iv) rehabilitation of the environment; and	Combined under Column F and Column V

Legal and Regulatory Requirement	Cross Reference to Report Section
(v) closure, where relevant.	
(a) A detailed description of the aspects of the activity that are covered by the draft environmental management programme;	Provided under each main headings of the EMP table
(b) An identification of the persons who will be responsible for the implementation of the measures contemplated in paragraph (b);	EMP Table Column G to K
(c) Proposed mechanisms for monitoring compliance with and performance assessment against the environmental management programme and reporting thereon;	EMP Column O
(d) 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;	EMP Column V
(e) 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;	Various Sections of the EMP Table under Column B
(ii) remedy the cause of pollution or degradation and migration of pollutants;	Various Sections of the EMP Table under Column B
(iii) comply with any prescribed environmental management standards or practices;	Not applicable
(iv) comply with any applicable provisions of the Act regarding closure, where applicable;	Not applicable
(v) comply with any provisions of the Act regarding financial provisions for rehabilitation, where applicable;	Not applicable
(f) Time periods within which the measures contemplated in the environmental management programme must be implemented;	EMP Table Column C
(g) 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;	Various Sections of the EMP Table under Column B
(h) An environmental awareness plan describing the manner in which- (i) The 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;	EMP Table Section 2 (TRAINING, AWARENESS AND COMPETENCE)
(i) Where appropriate, closure plans, including closure objectives.	EMP Table Column F and Column V

Table 1-6: Structuring of the Specialist Studies in terms of GNR 543 Section 32

Legal and Regulatory Requirement	Cross Reference to Report Section
GNR 543 Section 32	
Specialist reports and reports on specialized processes	
1. An applicant or the EAP managing an application may appoint a person to carry out a specialist study or specialized process.	Appendices to the EIA report
2. The person referred to in sub-regulation (1) must comply with the requirements of regulation 17 [declaration of independence]	Declaration of independence signed by specialists provided at back of each specialist report
3. A specialist report or a report on a specialized process prepared in terms of these Regulations must contain-	See copy of this table attached to the back of

Legal and Regulatory Requirement	Cross Reference to Report Section
(a) Details of- (i) the person who prepared the report; and (ii) the expertise of that person to carry out the specialist study or specialized process;	each specialist report (Appendix D to Appendix P).
(b) A declaration that the person is independent in a form as may be specified by the competent authority;	
(c) An indication of the scope of, and the purpose for which, the report was prepared;	
(d) A description of the methodology adopted in preparing the report or carrying out the specialized process;	
(e) A description of any assumptions made and any uncertainties or gaps in knowledge;	
(f) A description of the findings and potential implications of such findings on the impact of the proposed activity, including identified alternatives, on the environment;	
(g) Recommendations in respect of any mitigation measures that should be considered by the applicant and the competent authority;	
(h) A description of any consultation process that was undertaken during the course of carrying out the study;	
(i) A summary and copies of any comments that were received during any consultation process; and	All issues received to date included in Section 6 of the EIA main report
(j) Any other information requested by the competent authority.	Not applicable

The environmental assessment process that was executed for this project to date is described in Section 2 (Study Approach and Methodology) of this report.

1.3.5 Responsible Authorities and Administration of the Approval Processes

1.3.5.1 Environmental Impact Assessment Process and Environmental Management Programme

MDEDET is the competent authority in terms of the NEMA and EIA Regulations. An application form for environmental authorisation was submitted to the Mpumalanga Department of Economic Development, Environment and Tourism (MDEDET) on 2 November 2010 and accepted by MDEDET on 16 November 2010. The MDEDET accepted the application and issued a reference number for the project (17/2/3 N-13).

This environmental impact assessment report (EIA report) will be submitted to MDEDET in terms of the NEMA and EIA Regulations.

1.3.5.2 Water Use License Application Process and Integrated Water and Waste Management Plan

The Department of Water Affairs (DWA) will administrate and review the application for an integrated water use license. The scoping report was submitted to the DWA as the first phase in the water use license application process. This EIA report will also be submitted to the DWA for comment and for consideration in their review of water use license documentation. In addition the following documents will also be submitted:

- Phola-Kusile Overland Coal Conveyor: Integrated Water and Waste Management Plan

- Phola-Kusile Overland Coal Conveyor: Integrated Water Use Licence Application Report

Table 1-3 indicates the timing of when the general authorisation and various components of the water use license have to be in place. Due to the time differences in processing the various components of the water uses license, it has been proposed that the approval by DWA be done in a phased approach.

1.3.5.3 Waste Management License for the Mobile Water Treatment Works on Portion 1 of the Farm Klipfontein 566 JR, Nkangala District, Mpumalanga

The National Department of Environmental Affairs (NDEA) is the competent authority to administrate and review the application for a waste management license for the proposed mobile water treatment plant on Portion 1 of the Farm Klipfontein 566 JR, Nkangala District, Mpumalanga, to treat water from old underground mine workings, one of the water supply options for the Phola-Kusile Coal Conveyor.

The waste management license is only required for the mobile water treatment plant and is to be dealt with as a separate legal process.

1.4 Other Legal Requirements

In addition to the abovementioned key legal requirements, the project will also have to comply with other relevant legislation.

Should graves require relocation, there will be a consultation process and permits will have to be obtained from the police, Department of Health as well as SAHRA in terms of the National Heritage Resources Act (No. 25 of 1999).

A great deal of the properties affected by the conveyor belongs to AAIC. All other landowners, except Eskom, have signed consent letters approving the conveyor servitude on their property. AAIC provided Eskom with a servitude agreement and is awaiting feedback from Eskom in this regard. AAIC is also negotiating with Mr Truter, who owns a number of properties along the conveyor route.

2. Study Approach and Methodology

2.1 Study Area

The study area can be roughly defined as the area of land between the Phola Coal Processing Plant and the Kusile Power Station, the area over which a route for the conveyor has to be found, as illustrated in Figure 1-1.

2.2 Scoping Phase

2.2.1 Scoping Process and Study Outcomes

A scoping study was conducted as the first phase in the EIA process. During the scoping phase:

- Project and baseline environmental information were collated. Baseline information for this scoping report was gathered through visual inspections of the project area and surroundings, desktop studies and review of existing reports.
- Landowners, adjacent landowners, local authorities, environmental authorities, as well as other stakeholders which may be affected by the project, or that may have an interest in the environmental impacts of the project were identified.
- Interested and affected parties (I&APs) were informed about the proposed project.
- Public meetings were arranged and I&AP issues and concerns were identified.
- Environmental authorities were consulted to confirm legal and administrative requirements.
- Environmental issues and impacts were identified and described.
- Development alternatives were identified and evaluated, and non-feasible development alternatives were eliminated.
- The nature and extent for further investigations and specialist input required in the EIA phase was identified.
- The draft and final scoping reports were submitted for review by authorities, relevant organs of state and I&APs.
- Key I&AP issues and concerns were collated into a issues and response report for consideration in the EIA phase.

The draft scoping report was submitted in December 2010 and the final scoping report was submitted in June 2011. The final scoping was accepted by MDEDET.

2.2.2 Consideration of Alternatives

Development alternatives identified and evaluated during scoping are discussed in Section 4.1 (Alternative Developments) and Section 4.2 (Alternative Conveyor Corridors), with a motivation as to why some of these were eliminated and the proposed corridor was selected. At the end of scoping, the Blue Conveyor Corridor (Figure 1-1 and Figure 1-3) was the proposed development option.

2.3 EIA Phase

2.3.1 EIA Process

The EIA component of the study includes:

- Specialist investigations were undertaken in accordance with the terms of reference established in the scoping assessment (plan of study for EIA appended to the scoping report). It should be noted that due to the small scale of impacts for some specialists' fields, the specialist studies' scope was adapted and limited accordingly to the nature and scale of the project impacts.
- An evaluation of development alternatives and identification of a proposed option.
- An assessment of existing impacts (no-go development option), environmental impacts that may be associated with the proposed project option, and cumulative impacts using the impact assessment methodology as described in Section 2.3.6 and Appendix A.
- Identification of mitigation measures to address these environmental impacts and development of actions required to achieve the mitigation required.
- Consultation with I&APs.
- Incorporation of public comment received during scoping and the draft EIA into the final EIA report.
- Issuing of the final EIA report for review.
- After the draft EIA report was reviewed, comments received were incorporated in the final EIA report and final EMP.

The EIA assessment process has been developed to ensure that it complies with GNR 543 Sections 26 to 33 and the associated guidelines (see Section 2) and appropriate review periods have been allowed for.

2.3.2 EIA Programme and Opportunities for I&AP and Authority Involvement

The EIA process and opportunities for I&AP and authority involvement are illustrated below, with specific reference to the opportunities for consultation and participation for I&APs, Competent Authorities, and relevant State Departments and Organs of State.

Completed activities are indicated in light yellow (☐), current activities in bright yellow (☐) and future activities in blue (☐).

Table 2-1: Simplified EIA Process with Explanation of Opportunities for Involvement

EIA Phase			Opportunities for Consultation and Participation		Schedule	
			Competent Authorities (MDEDET and DWA and NDEA	I&APs, State Departments and Organs of State		
Completed	Project Announcement and Application Phase	Specialist Baseline Studies	Initial telecommunication.	Project notification to affected landowners.	Oct-10	2010
				Advertisements and project notifications to potential interested and affected parties.	Oct-10 to Nov-10	
			Submit NEMA application form to MDEDET. MDEDET acceptance of application.		Nov-10	
			Initial consultation with authorities.		Nov-10 to Dec-10	
	Scoping Phase		Focused consultation with MDEDET and DWA.	Initial public meetings. Focused consultation with SANBI.	Nov-10 to Dec-10	
			Draft scoping report to MDEDET and DWA. Meetings with MDEDET and DWA during scoping. Final scoping report to MDEDET and DWA. Review and acceptance of final scoping report (COMPLETED)	Review of draft scoping report (40 days, ±6 weeks). Public meeting and authority meeting during scoping (14 days notice). Review of final scoping report (21 days, ±3 weeks). (COMPLETED)	Feb-11 to May-11	2011
Current	EIA Phase EMP Development	Specialist Assessments	Meetings with MDEDET and DWA to discuss specialist studies. Consult with NDEA to confirm administrative process for the WML in terms of the NEMWA. Submit draft EIA report to MDEDET and DWA. Submit draft IWWMP to DWA. Meetings with MDEDET and DWA during EIA.	Results of specialist assessments and recommendations made available for review Review of draft EIA report (40 days, ±6 weeks) Review of draft IWWMP (40 days, ±6 weeks) Public and authority meeting during EIA phase(14 days notice)	Aug-11 to Feb-12	2012
Future	Authority review and Authorisation Phase		Final EIA report to MDEDET and DWA. SUBMIT IWWMP with IWULA to DWA. MDEDET Acceptance of EIA report (60 days) Environmental Authorisation Granted / Refused (45 days) IWULA approved / rejected by DWA.	Review of final EIA report (21 days, ±3 weeks) Review of Final IWWMP (21 days, ±3 weeks) Notifications to I&APs regarding environmental authorisation (granted or refused).	Feb-12 to May-12	
	Appeal Phase / Pre-Construction Period		Consultation during processing of appeal.	Consultants to provide guidance regarding the appeal process as and when required.	variable	

Table 2-2: Simplified Project Implementation Programme with Explanation of Opportunities Continued Consultation and Participation

Project Phase	Opportunities for Participation by Competent Authorities, I&APs, State Departments and Organs of State	Schedule	
Planning Phase	EIA and Water Use License Public Participation Process and Authority Consultation Process	Current to July-13	2010 2011 2012
Construction Phase	EMP Implementation Monitoring	Aug-12 to Sep-13	2013
First Coal Delivered to Kusile	EMP Implementation Monitoring	Oct 2013	
Operation of the Phola-Kusile Coal Conveyor	EMP Implementation Monitoring	For the Life of Kusile Power Station	beyond 2070

Table 2-2 lists the start of the construction phase as August 2012. However, should the necessary approvals be in place at an earlier date, AAIC would start with construction as soon as possible in order to avoid any potential delays to the delivery of coal to Kusile and to maximise construction during the drier months of the year (i.e. May to August), which would minimise the impacts on affected streams and wetlands. It goes without saying that construction would only commence in accordance with approval conditions relating to, amongst other things, notification of commencement.

2.3.3 EIA Phase Alternatives Investigated

Development alternatives identified and evaluated during the EIA phase are discussed in Section 4.3 to Section 4.5, with a motivation as to why some of these were eliminated and why the proposed development is regarded as the preferred development alternative.

2.3.4 Identification and Description of Impacts

The identification and assessment of environmental impacts is a multi-faceted process, using a combination of quantitative and qualitative descriptions and evaluations. It involves applying scientific measurements and professional judgement to determine the significance of environmental impacts associated with the proposed project. The process involves consideration of, *inter alia*: the purpose and need for the project; views and concerns of interested and affected parties; social and political norms, and general public interest.

The methodology used for assessing impacts associated with the proposed project follows the philosophy of environmental impact assessments, as described in the booklet Impact Significance, Integrated Environmental Management Information Series 5 (DEAT, 2002b). The philosophy is summarised by the following extracts:

- "The impact magnitude [or intensity] and significance should as far as possible be determined by reference to legal requirements, accepted scientific standards or social acceptability. If no legislation or scientific standards are available, the EIA practitioner can evaluate impact magnitude based on clearly described criteria. Except for the exceeding of standards set by law or scientific knowledge, the description of significance is largely judgemental, subjective and variable. However, generic criteria can be used systematically to identify, predict, evaluate and determine the significance of impacts." (DEAT, 2002b).

- "Determining significance [of impacts] is ultimately a judgement call. Judgemental factors can be applied rigorously and consistently by displaying information related to an issue in a standard worksheet format." (Haug et al., 1984 taken from DEAT, 2002b).

For each environmental component (i.e. visual, air quality, health), impacts will be identified and described in terms of: detectability / visibility of the impact, exposure of receptors to the impact, compliance with legislation and standards, other applicable targets, limits or thresholds of concern, the level of change / intrusion imposed, and receptor sensitivity.

The perceived sensitivity of receptors (people and/or receiving environment) will be professionally judged based on available scientific data (fact) and feedback from public participation processes (views, opinions, attitudes, and concerns) as documented in the Public Consultation Documentation and the Impact Rating criteria described in Section 2.3.6. The following impacts will be described:

2.3.4.1 Existing Impacts (Impacts of Existing Developments within Project Impact Area)

The proposed coal conveyor is located in an area affected by various existing developments including mining, processing, agriculture, residential, major roads and highways and other linear infrastructure as well as the construction of the Kusile Power Station. The current level of environmental degradation (existing impacts) associated with existing developments, including those currently under construction, will be described in the environmental impact report. Defining the current level of degradation associated with existing developments is essential to understand and enable the assessment of cumulative impacts (see Section 2.3.4.4 below). The assessment of existing impacts is qualitative and limited to the area of impact for the individual environmental components.

2.3.4.2 Incremental Impacts (All Conveyor Route Alternatives)

Incremental impacts refers to the impacts of an activity looked at in isolation (impacts of an individual activity), thus not considering the combined, cumulative or synergistic impacts of the activity, or the cumulative impacts of the activity with other activities or the existing impacts. The environmental impact report will describe the incremental impacts of all three conveyor route alternatives.

2.3.4.3 No-go Development Impacts

The no-go development is considered as an alternative in the evaluation of development alternatives. In the environmental impact assessment the no-go development impacts would be similar to the existing impacts.

The no-go development will have high negative impacts on the cost and timing of coal supply to Kusile Power Station, delivery of electricity to the national grid, and associated impacts on national economy and it is therefore assumed that if the proposed Phola-Kusile Coal Conveyor is not allowed to be developed, an alternative coal supply and transportation of that coal supply will have to be found to supply Kusile.

2.3.4.4 Cumulative Impacts

For this project, cumulative impacts will be determined as:

Existing Impacts	**+**	***Incremental Impacts***	**=**	***Cumulative Impacts***
Existing impacts within the project area of impact for individual project components (current level of degradation) associated with existing developments		Impacts of the proposed Phola-Kusile Coal Conveyor		Existing impacts (current level of degradation) associated with existing developments and developments under construction combined with the impacts of the proposed Phola-Kusile Coal Conveyor

In the assessment above, existing impacts often also represent the impacts of the no-go development option.

Potential future projects such as the proposed New Largo Colliery Project and Eskom Ash Disposal Facility, for which the environmental impacts are currently undefined, cannot be included in the cumulative impact assessment and will have to be assessed in separate environmental impact assessment processes for these projects.

2.3.5 Mitigation Measures

The significance of environmental impacts are rated before and after the implementation of mitigation measures. The impact rating system considers the confidence level that can be placed on the successful implementation of the mitigation.

2.3.6 Rating the Significance of Environmental Impacts and Mitigation Measures

The system used for evaluating impact significance and mitigation failure risks is explained below in Table 2-3 and in Appendix A.

Table 2-3: Impact Rating System

Impact Rating Criteria (Symbol / Short Description)					Explanation of Rating Criteria
Nature of the Impact					Description of the direct and indirect effect of human actions and activities on the environment, and impacts of the environment on development.
Mitigation					Environmental Management Programme Framework. Measures designed to avoid, reduce or remedy adverse potential negative impacts, including compensation for residual impacts and measures designed to expand and augment the effect of potential positive impacts for consideration during development of the final environmental management programme.
Impact Status				Negative	Impacts with a potential negative / adverse effect.
				Neutral	Neutral, no impact.
				Positive	Impacts with a potential positive / beneficial effect.
Consequence (Severity + Scale)	**Severity** (Intensity + Duration + requency)	**Intensity** *(Negative Impacts)*	1	low	Slight change, disturbance or nuisance. Targets, limits and thresholds of concern never exceeded. Impacts are rapidly and easily reversible. Require no or only minor interventions or clean-up actions. No complaints expected when the impact takes place.
			2	moderate	Moderate change, disturbance or discomfort. Real but not substantial. Targets, limits and thresholds of concern may occasionally be exceeded. Impacts are reversible but may require some effort, cost and time. Sporadic complaints can be expected when the impact takes place.
			3	high	Prominent change, disturbance or degradation. Real and substantial. May result in illness or injury. Targets, limits and thresholds of concern regularly exceeded. Regular complaints can be expected when the impact takes place.
			4	very high	Severe change, disturbance or degradation. May result in illness, injury or death. Targets, limits and thresholds of concern continually exceeded. Interest group / community mobilisation against project can be expected when the impact takes place. May result in legal action if impact occurs.
		Intensity *(Positive Impacts)*	1	low	Slight change or improvement. Minor benefits.
			2	moderate	Moderate change or improvement. Real but not substantial benefits.
			3	high	Prominent change or improvement. Real and substantial benefits. General community support.
			4	very high	Considerable and large-scale change or improvement. Real and considerable benefit. Widespread support.
		Duration	Refers to the total length of time (i.e. number of years) that the impact source or risk will be present.		
			1	low	Short-term. May occur for weeks or a few months and are rapidly reversible.
			2	moderate	Medium-term. May occur for the first few years of the project, during construction, up to three years. Impacts reversible within a three year period.
			3	high	Long-term. May occur throughout the life of the mine, but will cease after operations ceases either because of natural processes or human intervention.
			4	very high	Permanent and irreversible. Residual impacts will remain after decommissioning and closure.
		Frequency	Refers to the time intervals and how often (i.e. number of days per year) the impact would manifest over the entire duration of the impact.		
			1	low	Seldom. Impact would be intermitted, limited to a few days a year (occurs 0-10 % of the time).
			2	moderate	Occasional. Impact would occur now and again, not more than seven days a month (occurs 10-25% of the time).
			3	high	Often. Impact would be present more than fourteen days a month (occurs >50% of the time).
			4	very high	Continuous. Impact would occur all the time (occurs 100% of the time).
	Scale / Extent		0	none	None. Impact will not occur anywhere.
			1	low	Site impact. Small area. No sensitive receptors outside property affected.
			2	moderate	Local. May affect immediate neighbours, never nearby townships. Small area or small number of sensitive receptors affected.
			3	high	Widespread impact. Affects nearby townships. Large area or large numbers of sensitive receptors affected.
			4	very high	National or international impact. Impacts over a vast area or over vast numbers of sensitive receptors.
Probability			0	none	Never (0 % likelihood).
			1	low	Conceivable. Will only happen in exceptional circumstances (<10 % likelihood).
			2	moderate	Plausible. Could happen and has occurred here or elsewhere (11-40 % likelihood).
			3	high	Probable (>40-80 % likelihood).
			4	very high	Expected. Highly likely to happen (>80 % likelihood).
Significance (Consequence + Probability)			Neg Very High		Widespread negative effect. Negative impact that is of the highest order. Potential fatal flaw.
			Neg High		Substantial negative impact.
			Neg Moderate		Negative impact that is real but not substantial.
			Neg Low		Low to negligible negative impact with little real effect.
			Non		No discernible impact.
			Pos Low		Low to insignificant positive impact.
			Pos Moderate		Positive impact that is real but not substantial.
			Pos High		Substantial positive impact.
			Pos Very High		Widespread / substantial beneficial effect. An alternative means to achieve the same benefits not possible.

Impact Rating Criteria (Symbol / Short Description)				Explanation of Rating Criteria
Impact Status		Negative		Impacts with a potential negative / adverse effect.
		Neutral		Neutral, no impact.
		Positive		Impacts with a potential positive / beneficial effect.
Project Phase		Planning		Activities, impacts and mitigation measures applicable to the planning (or pre-implementation) phase.
		Construction		Activities, impacts and mitigation measures applicable to the construction phase, including decommissioning of existing infrastructure.
		Operational		Activities, impacts and mitigation measures applicable to the operational phase.
		Decommissioning / Closure		Activities, impacts and mitigation measures applicable to decommissioning (closure, removal, rehabilitation). For this project, the impacts associated with the decommissioning very similar to that of the construction phase. Due to the long project life (60+ years), the impacts are not discussed separately.
Precautionary Weighting (Value Judgement)	***(Negative Impacts)***	Used when there is a potential understatement of the significance of an negative impact to increase the significance rating.		
		0	none	No weighting required. Significance rating is a true reflection of the potential effect of the impact.
		1	low	There may be a slight understatement of the significance of the impact. Impact significance adapted to be slightly higher.
		2	moderate	There may be a moderate understatement of the significance of the impact. Impact significance adapted to be higher.
		3	high	The impact significance rating is highly understated. Impact significance adapted to be higher.
		4	very high	The impact significance rating is severely understated. Impact significance adapted to be higher.
	(Positive Impacts)	Used when there is a potential overstatement of the significance of a positive impact to reduce the significance rating.		
		0	none	No weighting required. Significance rating is a true reflection of the potential effect of the impact.
		1	low	There may be a slight understatement of the significance of the impact. Impact significance adapted to be lower.
		2	moderate	There may be a moderate understatement of the significance of the impact. Impact significance adapted to be lower.
		3	high	The impact significance rating is highly understated. Impact significance adapted to be lower.
		4	very high	The impact significance rating is severely understated. Impact significance adapted to be lower.
Degree to which impacts can be mitigated		Calculated as the difference between the rating of Unmitigated Impacts and Mitigated Impacts, assuming mitigation will be implemented successfully and in full.		
		None / Not applicable		Not applicable - no impacts to be mitigated. None - impacts cannot be mitigated (no difference between the rating of 'Unmitigated Impacts' and 'Mitigated Impacts'.
		Low		The difference between the impact rating of 'Unmitigated Impacts' and 'Mitigated Impacts' is Low. Low potential to mitigate impacts even if mitigation is implemented successfully and in full.
		Moderate		The difference between the impact rating of 'Unmitigated Impacts' and 'Mitigated Impacts' is Moderate. Moderate potential to mitigate impacts if mitigation is implemented successfully and in full.
		High		The difference between the impact rating of 'Unmitigated Impacts' and 'Mitigated Impacts' is High. High potential to mitigate impacts if mitigation is implemented successfully and in full.
		Very High		The difference between the impact rating of 'Unmitigated Impacts' and 'Mitigated Impacts' is Very High. Very High potential to mitigate impacts, assuming mitigation is implemented successfully and in full.
Risk of Mitigation Failure		The likelihood of mitigation failure rated based on: - research and technology, - timing, and thus secondary potential of outside influences occurring over time (i.e. climate change, political instability, inter/national economic instability). - financial considerations, - skills and labour availability and potential for human error.		
		0	No / Very Low Risk	Less than 10% likelihood that mitigation measures could fail. Mitigation implemented quickly and easily to implement, proven technology used, no special labour skills required. More than 90% likelihood that impacts will be reversed.
		1	Low Risk	10-30% likelihood that mitigation measures could fail.
		2	Moderate Risk	30 to 60% likelihood that mitigation measures could fail.
		3	High Risk	60 to 80% likelihood that mitigation measures could fail.
		4	Very High Risk	>80% likelihood that mitigation measures could fail. May need research and new technologies to be developed, and/or may have to take place over many years after closure, and/or may involve exorbitant/prohibitive expenses to implement successfully, and/or may require highly skilled personnel with special training, and/or have a high risk of human error during the execution of the mitigation.
Impact Reversibility		The degree to which an impact can be reversed when impact source is removed.		
		Permanent Impact		Impact less than 10% reversible even if source of impact is removed.
		Low Reversibility		Impact 10-30% reversible. Difficult to reverse impact once source of impact is removed.
		Moderate Reversibility		Impact 30 to 60% reversible. Impact can be partially reversed once source of impact is remove.
		High Reversibility		Impact 60 to 80% reversible. Easy and possible to reserve most of the impacts once source of

Impact Rating Criteria (Symbol / Short Description)			Explanation of Rating Criteria
			impact is removed.
	Impact Reversible		Impact more than 90% reversible, in essence the impact is reversible once source of impact is removed.
Impact on Irreplaceable Resources	Positive / Reduction		Positive impact or reduction in the impact on irreplaceable resources.
	None		No impact on irreplaceable resources.
	Neg Low		Negative low impact on irreplaceable resources.
	Neg Moderate		Negative moderate impact on irreplaceable resources.
	Neg High		Negative high impact on irreplaceable resources.
	Neg Very High		Negative very high impact on irreplaceable resources.
Impact Rating Methodology	**Formula**	**Example**	**Rating Criteria**
	I	2.0	Intensity (I)
	D	2.0	Duration (D)
	F	2.0	Frequency (F)
	S=(I+D+F)/3	2.0	Severity (S) = (Intensity + Duration + Frequency) / 3
	E	2.0	Scale (Extent) (E)
	C=(S+E)/2	2.0	Consequence (C) = (Severity + Extent) / 2
	P	3.0	Probability (P)
	S1=(C+P)/2	2.3	Significance (S1) = (Consequence + Probability) / 2
	W	1.0	Precautionary Weighting (W)
	S2=(S+W/2)	2.8	Significance with Precautionary Weighting (S2) = (S1 + W)
Overall Risk / Benefit	Calculated based on the rating for Unmitigated Impacts and Mitigated Impacts, the degree to which the impacts can be mitigated and the likelihood for the mitigation measures failing.		
Impact Rating (and Risk / Benefit Rating)	**Formula**	**Level**	**Level**
	<=	-3.3	Neg Very High
	<=	-2.9	Neg High
	<=	-2.0	Neg Moderate
	<	0.0	Neg Low
		0.0	None
	>	0.0	Pos Low
	>=	2.0	Pos Moderate
	>=	2.9	Pos High
	>=	3.3	Pos Very High
Assessment Confidence	Complete		No information gaps exist. Decision-making can go ahead.
	Adequate		Minor information deficiencies exist but this does not affect decision-making. Decision-making can still go ahead.
	Incomplete		Not enough information for decision-making. Current data to be supplemented with further monitoring or research.
IAP Interest	Neg Very High		Widespread concern and/or concerns of very high importance. Concerns difficult to be addressed to satisfaction of authorities or concerned parties. Appeals against project anticipated if not addressed.
	Neg High		Several concerns and/or concerns of high importance. Real and substantial.
	Neg Moderate		Limited concerns. All concerns addressed. Real but not substantial.
	Neg Low		Very minor or minor concerns.
	Neutral / None		No interest.
	Not defined		Level of interest has not been tested.
	Pos Low		Very little support for project.
	Pos Moderate		Limited support for project.
	Pos High		General support. May be associated with high community expectations.
	Pos Very High		Widespread support. May be associated with extremely high community expectations.
	Diverse Low		Minor interest. Some support. Some concerns.
	Diverse Moderate		Limited interest. Some support. Some concerns.
	Diverse High		General interest. Some support. Some concerns.
	Diverse Very High		Widespread interest. Some support. Some concerns.

2.4 Public Participation and Authority Consultation Conducted to Date

2.4.1 Identification of Interested and Affected Parties

Potential I&APs were identified through networking and the use of the existing AAIC and Eskom I&AP databases that have been developed since 2006. The existing databases included landowners, neighbouring landowners and people who participated in previous EIA processes in the area. Press advertisements and site posters were used to identify new I&APs (Section 2.4.4).

A list of all parties that were consulted during the public participation and authority consultation process is provided in Appendix C2 as well as in the front of this report.

2.4.2 Notifications to Interested and Affected Parties

Potential I&APs were notified about the project and the public participation process by means of:

- Direct letters to affected landowners along all three conveyor corridor routes considered during the scoping phase (refer to lists in the scoping report).
- Press advertisements and site notices (Section 2.4.4) during both the project announcement phase and the scoping phase.
- Individual notifications to people who may be affected by the proposed conveyor development on the existing New Largo and Kusile Power Station I&AP databases (via telephone, email and/or fax (Appendix C 6) during both the project announcement phase and the scoping phase.
- Individual meetings with holders of mining or prospecting rights along the infrastructure routes (Section 2.4.8) during both the project announcement phase, scoping phase and EIA phase.
- Meetings with owners of land along and adjacent to the infrastructure routes (Section 2.4.7 and Section 2.4.8).
- Individual written notifications to all registered I&APs (by registered mail), in accordance with sub-regulation 54 2(b) of GNR 543.
- Individual written notifications to Victor Khanye Local Municipality, previously Delmas (Mayor and Councillor), Emalahleni Local Municipality, previously Witbank (Municipal Manager), and Nkangala District Municipality (Mayor and Municipal Manager).
- Notifications were sent to all registered I&APs about the review of the draft EIA report, the public feedback meetings, as well as the review of the final scoping report.
- Notifications will be sent to all registered I&APs about the review of this final EIA report and when the environmental authorisation has been issued to inform them of the decision and subsequent appeal process.

2.4.3 Notifications to Relevant Authorities

The following provincial government departments were notified about the project, invited to a general public announcement meeting and the review periods of the draft and final scoping reports:

- The Mpumalanga Department of Economic Development, Environment and Tourism (MDEDET).

- The Department of Environmental Affairs (DEA), part of the Department of Water and Environmental Affairs (DWEA).
- The Department of Agriculture, Forestry and Fisheries (DAFF).
- The Mpumalanga Department of Agriculture, Rural Development and Land Administration.
- The Mpumalanga Department of Public Works, Roads and Transport (DPWRT).
- The Department of Public Works.
- The Department of Mineral Resources.
- The Department of Water Affairs (DWA), part of the DWEA.
- The South African Heritage Resources Agency (SAHRA).
- Mpumalanga Tourism and Parks Agency.
- The Mpumalanga Department of Labour.
- South African National Botanical Institute (SANBI).
- The National Department of Environmental Affairs (waste licensing) was added to the list of relevant authorities due to the introduction of the proposed mobile water treatment plant and thus the need for a waste management license application.

All of these authorities will be notified of and given the opportunity to review the draft and final EIA report as well as the authority decisions on the NEMA EIA process, the water use license application process and waste management license application process.

2.4.4 Press Advertisements and Site Notices

Press advertisements were placed in the following newspapers in November 2010 and again in March 2011.

- Streeknuus;
- Corridor Gazette;
- Ekasi News;
- Witbank News;
- Mpumalanga News;
- Middelburg Herald;
- Middelburg Observer;
- Ridge Times;
- The Echo; and
- Springs Advertiser.

Site notices (posters) were placed at the following locations during the week of 15 to 19 November 2010:

- Turn-off to the Kusile Power Station on the R545.
- T-junction near Kendal Power Station.
- Road near Heuwelfontein, west of Kendal Power Station.
- Van Dykspruit, west of Kendal Power Station where the proposed alternative routes turn north.
- Turn-off to the N12 south of the Kusile Power Station.
- Road south of the Kusile Power Station.
- Northern alternative route at the turnoff to the N12.
- Road east of Kendal Power Station.
- Entrance to Phola Coal Processing Plant.

Copies of the advertisements and site notices (with photographs of site notice as proof) are included in Appendix C3.

2.4.5 Registration of Interested and Affected Parties

People and/or organisations were registered as I&APs for the project if they:

- Attended one of the consultation meetings.
- Responded to notification letters and documentation, press advertisements or site posters.
- Own land along and adjacent to the proposed infrastructure routes.
- Hold mining or prospecting rights along the infrastructure route.
- Own, operate or administrate infrastructure affected by the project.
- Contacted Zitholele and/or Synergistics telephonically, or via fax, e-mail or post.

2.4.6 Background Information Document

A background information document (Appendix C4) was circulated to all landowners either personally or via registered mail, while all the identified I&APs received an electronic copy via E-mail. The document included a response sheet and a request for written comments by 8 December 2010.

2.4.7 General Public Meetings

General public announcement meetings were held on 24 and 25 November 2010 at the El Toro Conference Facilities, situated next to the Kendal/Balmoral road.

Two more meetings were held at Ons Huisie Conference Facilities on 22 and 23 March 2011. Minutes of the meetings are included in Appendix C6.

Two further public meetings were held on 1 November 2011 during the review period of the draft EIA report at the El Toro Conference Facilities, situated next to the Kendal/Balmoral road.

2.4.8 Consultation with Landowners and Mining / Prospecting Right Holders

Properties affected by the proposed conveyor route are listed in Table 7-1 and Table 7-2. AAIC has been in discussion with the owners of the affected properties. Details of the progress of those discussions are presented in Table 7-1.

The proposed conveyor routes crosses a section of **Vlakfontein Colliery** where African Exploration Mining and Finance Corporation (AEMFC) holds the mining right. **AEMFC** was registered as an I&AP and has received the relevant public participation notifications and documentation issued to date. Representatives from AAIC and Synergistics met with Mr Mpho Tlala (**AEMFC**) on 14 January 2010, to discuss the implications of the conveyor route across its mining right area. Minutes of the meeting are attached in Appendix C10. Subsequent to the meeting, AAIC relocated the route to minimise impacts on AEMFC and AAIC is investigating a compensation for the remaining impacts on the AEMFC coal resources. Compensation is likely to be in the form of a coal reserve swap between AAIC and AEMFC.

Some of earlier conveyor routes investigated (Section 4.2) affected coal mineral rights held by **Homelands** and **Shanduka**. Representatives from AAIC met with representatives from **Homelands** and **Shanduka** mining to discuss the conveyor route running across their properties and mining areas. A site visit with the respective parties was held on 31 March 2011. AAIC has undertaken to meet again with representatives from **Shanduka** and **Homelands** to address their queries. The proposed conveyor route no longer affect **Homelands** and **Shanduka**.

Mr Cherry, an adjacent landowner and farmer suggested (at a public meeting, see Appendix C6 for meeting details) that the one of the transfer stations be moved to avoid the overland coal conveyor fragmenting a piece of land owned by **Truter Boerdery Trust** that is used for maize cropping. AAIC undertook to investigate this further and to provide feedback. According to AAIC, they are unable to move the transfer point, as Mr Cherry requested, as this would either require the installation of an additional transfer station and supporting infrastructure at an extra cost (around R 52 million) or else, sterilise approximately 1.2 million tonnes of minable coal.

AAIC discussed the conveyor alignment options with **Mr Truter (from Truter Boerdery Trust)**, a directly affected landowner. AAIC has reported that Mr Truter gave his consent to the conveyor crossing his property, subject to AAIC providing compensation to **Truter Boerdery Trust**. At the time of writing this report, details of the compensation measures were being discussed between AAIC and Mr Truter.

BECSA (BHP Billiton) objected to the initial conveyor alignment options for flight 1 due to sterilisation of its coal resources. However, BECSA has given verbal consent for the conveyor along the final proposed route alignment, which follows the Eskom 132 kV power line, on condition that AAIC provides a crossing for BECSA mining equipment (haul road crossing) as compensation. Details of the compensation measures were being discussed at the time of writing this report.

Eskom has given consent for the conveyor along the final proposed alignment. AAIC is in discussion with Eskom regarding finalisation of servitude agreements.

SANRAL agreed to the installation of the conveyor in the existing culvert underneath the N12 – Ref: N11/1/3-12/20-9. Consent was signed on 17/09/2011.

AAIC and Synergictsics endeavoured to contact all affected landowners on an individual basis to discuss the specific impacts on their properties. Consultation is summarised in Table 7-1.

2.4.9 Focused Authority Meetings

A meeting was held with Mr Garth Batchelor of the MDEDET on 17 November 2010. The purpose of the meeting was to:

- Inform MDEDET about the planned Phola-Kusile Overland Coal Conveyor.
- Obtain clarification on the environmental legal requirements for the conveyor and the environmental authorisation, and the EIA process to be followed.

MDEDET official, Ms Thuli Nkonyana and the Deputy Director Ms Dineo Tswai, visited the project site on the 8th of December 2010. They were afforded the opportunity to visit and view the project site and to discuss the scope of the project and development alternatives with the AAIC project management team, and discuss the EIA process with Synergistics.

A meeting was held with the Department of Water Affairs (DWA) in Bronkhorstpruit on 25 November 2010. The purpose of the meeting was to:

- Inform DWA about the planned Phola-Kusile Overland Coal Conveyor.
- Obtain clarification on the environmental legal requirements for the conveyor and the water use license process to be followed.

Records of meetings are provided in Appendix C10.

2.4.10 Consultation about the proposed Mobile Water Treatment Plant and the Waste Management License Application Process

The need for a waste management license was only identified after submission of the final scoping report for the Phola-Kusile Overland Coal Conveyor. However, I&APs and authorities were consulted about the proposed mobile water treatment plant during the public participation process conducted during the scoping phase of the New Largo Colliery EIA, since the same mobile water treatment plant is proposed as part of the New Largo Colliery project. In essence, the inclusion of the mobile water treatment plant into the Phola-Kusile Coal Overland Conveyor project presents an opportunity to start with the treatment of excess water form old underground workings earlier than anticipated, if the mobile water treatment plant is to be developed as part of the New Largo Colliery project. A separate EIA is being undertaken for the New Largo Colliery.

2.4.11 Review of the Draft and Final EIA Report

The draft EIA report was made available for public and authority review in October 2011 for 6 weeks (40 calendar days). All registered I&APs was notified in writing of the availability of the document for review and will be requested to submit comments.

The final EIA report will be made available for 3 weeks (21 calendar days). Electronic versions of the reports will be published on www.synergistics.co.za and www.zitholele.co.za and they will be circulated to all landowners and registered I&APs who provided an email address. Hard copies will be made available at AAIC offices near Witbank, at the venue of the public meetings for the project, and at the Synergistics offices in Johannesburg. Additional copies can be made available on request.

2.4.12 Review of the Integrated Water and Waste Management Plan

The integrated water and waste management plan will be made available for public and authority review in October 2011 for 6 weeks (40 calendar days). All registered I&APs will be notified in writing of the availability of the document for review, and they will be requested to submit comments.

Electronic versions of the reports will be published on www.synergistics.co.za and www.zitholele.co.za and will be circulated to all landowners and registered I&APs who provided an email address. Hard copies will be made available at AAIC offices near Witbank, at the venue of the public meetings for the project, and at the Synergistics offices in Johannesburg. Additional copies can be made available on request.

2.4.13 Public Feedback Meeting during the EIA phase

During the EIA phase of the study, public meetings were arranged (1 November 2011) to present the results of the specialist studies and the results of the route selection process, the EMP and the integrated water and waste management plan. Registered I&APs were directly invited to attend the meeting. Minutes of the meeting is provided in Appendix C).

2.4.14 Consultation with Competent Authority, State Departments and Organs of State

2.4.14.1 Authorities Meetings

As mentioned in Section 2.4.9, individual meetings were held with MDEDET and DWA to discuss the proposed project. The authorities were again contacted after distribution of the draft scoping report to arrange additional meetings. The authorities indicated that they will contact the EAP's office if they have any information requirements or further questions. A combined meeting with the competent and commenting authorities is planned once the final EIA report is available.

During the authority meeting for the New Largo Colliery on 26 July 2011, the proposed introduction of the mobile water treatment works was discussed (see New Largo Colliery Final Scoping Report on www.synergistics.co.za or www.zitholele.co.za).

2.4.14.2 Review of the EIA Report

In terms of the requirements of regulation GNR 543, organs of state and state departments were allowed six weeks (forty calendar days) for the review of the draft scoping report and was given the same amount of time for the review of the draft EIA report. The review period for the final EIA report will be three weeks (21 calendar days). Review periods for the competent authority are in accordance with GNR 543 for the scoping and EIA reports.

Where the DWA must approve designs of waste management facilities, 60 calendar days will be provided for review as per GNR 543 clause 56(8). However, it should be noted that the DWA will be reviewing the design and management measures for all NEMWA waste activities as part of their review of the water use license application process.

2.5 Study Team

Synergistics Environmental Services (Pty) Ltd (Synergistics) has been appointed by AAIC as the independent environmental consultant to undertake the EIA for the Phola-Kusile Overland Coal Conveyor.

Mari Wolmarans, the project leader, is an Environmental Assessment Practitioner (EAP) certified by the interim certification board of South Africa and was responsible for the environmental impact assessment and development of the environmental management programme. Her qualifications and experience include:

- BL Arch, UP, 1991.
- Environmental Assessment Practitioner (EAP) Certified by the Interim Certification Board (EAPSA).
- Professional member South African Institute of Ecologists & Environmental Scientists (SAIE&ES).
- 20 years' environmental management and assessment experience, specifically in the mining, processing and infrastructure development sectors.
- Environmental Impact Assessment: Project Management.

The environmental study team members and specialists that will be involved in the environmental impact assessment are listed in Table 2-4. Their roles and responsibilities on the project and their qualifications are provided.

Table 2-4: Study Team

Name and Affiliation	Qualification	Role
Environmental Study Team		
Mari Wolmarans Independent Environmental Assessment Practitioner	BL Arch, MSAIEE EAPSA	- Project Leader - EIA report and EMP
Marline Medallie Synergistics Environmental Services	B.Sc Biological Sciences B.Sc (Hons) Botany M.Sc Botany	- Project Coordinator - EIA report and EMP
Bheki Khumalo Synergistics Environmental Services	B.Sc Geology and Applied Geology B.Sc (Hons) Environmental Modelling and Monitoring	- GIS and Mapping
Clifford Hallatt Synergistics Environmental Services	BSc (Hons) Geography	- EIA report and EMP

Name and Affiliation	Qualification	Role
Claire Jarvis Synergistics Environmental Services	B.Sc Environmental Management	- EIA report and EMP
Anelle Lötter Zitholele Consulting	National Diploma in Journalism	- Public Consultation
Marius van Zyl Jones and Wagener	B.Sc Environment Analysis and Management B.Sc (Hons) Biochemistry B.Sc(Hons) Biochemistry and Environmental Management Pr.Sci.Nat	- Hydrological Baseline and Impacts Assessment - Integrated Water Use License Application - Integrated Water and Waste Management Plan
Jaco van den Berg JMA	B.Sc Geology/Geochemistry B.Sc (Hons) Geochemistry M.Sc Geohydrology	- Hydrogeological Impact Assessment
Ian Jones Earth Science Solutions	B.Sc (Geol) Pr.Sci.Nat EAPSA	- Soil Impact Assessment
Tony Rorke BME Blasting Technology	B.Sc Engineering (Mining Geology) M.Sc Geology (Seismology)	- Vibrations and Blasting Specialist Input
Renee von Gruenewaldt Airshed Planning Professionals	BSc Atmospheric Sciences: Meteorology BSc (Hons) Environmental Management and Impact Assessment MSc Meteorology Pri.Sci.Nat	- Air Quality Impact Assessment
Willem de Frey EkoInfo	M.Sc Wildlife Management Pr.Sci.Nat (Botanical & Ecological Science)	- Terrestrial Vegetation Survey - Ecological Impact Assessment
Dewald Kamffer Ecocheck	M.Sc Grassland Conservation Biology	- Faunal Survey - Ecological Impact Assessment
Samuel Laurence Luke Verburgt Enviro-Insight	M.Sc Zoology	- Nocturnal Mammals - Herpetofauna
Gina Walsh Michiel Jonker Ecotone	M.Sc Zoology MSc Aquatic Health	- Aquatic Survey - Ecological Impact Assessment
Allan Batchelor Wetland Consulting Services	M.Sc Zoology Pr.Sci.Nat (Botanical and Ecological Science)	- Wetland Survey - Ecological Impact Assessment

Name and Affiliation	Qualification	Role
Johnny van Schalkwyk McGregor Museum	BA (Hons) Archaeology BA (Hons) Anthropology Post Graduate Diploma in Museum Science MA Anthropology D Litt et Phil (Anthropology)	- Heritage Survey
Graham Young Newtown Landscape Architects	PrLArch	- Visual Impact Assessment
Ben van Zyl Freelance Consultant	PhD (PrEng)	- Noise Survey - Noise Impact Assessment
Rod Strong WSP SA Civil and Structural Engineers	MSc (Transportation Planning and Engineering) B.Eng (Civil) Senior Engineer	- Traffic Impact Assessment
Hein du Toit Demacon	BTRP MSc Real Estate Certificate in Shopping Centre Management	- Economic Impact Assessment
Ilse Aucamp Ptersa	BA Social Work MSc Environmental Management	- Social Impact Assessment
Teresa Steele Anglo American Inyosi Coal	B.Sc (Hons) Geology	- Sustainable Development Manager – Projects - Applicant Environmental Representative
Cindy Smith Anglo American Inyosi Coal	B Tech Environmental Management	- Applicant Environmental Representative
Technical Study Team		
Dimitri Simigiannis LSL	BSc Engineering MSc Civil Engineering	- Technical Design and Layout
Lampies Lamprecht Anglo American Inyosi Coal	Pr.Cert. Eng Pr. CPM	- Project Manager - Technical Design and Layout - Applicant Technical Representative

2.6 Review and Utilisation of the results of Specialist Studies undertaken prior to the acceptance of the Scoping Report and Plan of Study for EIA

It is common practice for proposed development projects to initiate the collection of baseline environmental information well before the official start date of the legal environmental authorisation processes, in order to ensure a rigorous assessment of seasonal baseline conditions over more than one year, and, to define definitive environmental trends applicable to the study area.

AAIC has commissioned various specialist baseline studies and public consultation meetings in the broader study area since 2006, as part of the environmental studies for the proposed New Largo Colliery, and, have proceeded with additional surface and ground water sampling and analysis as well as seasonal ecological surveys in 2010 and early 2011.

Since the environmental impact assessment study areas for the New Largo Colliery and the Phola-Kusile Coal Conveyor overlap, AAIC intends to apply for exemption from part of Section 31(1) of GNR 543. The exemption application will seek permission from the competent authority to allow for the utilisation of the results of specialist studies, conducted prior to the acceptance of the scoping report and plan of study for environmental impact assessment, and the inclusion of these results in the final EIA report. These studies include:

General

- Anglo Coal South Africa. 2007. Baseline Report for the Proposed New Largo Open Cast Coal Mine, Mpumalanga Province. Oryx Environmental.
- Anglo Coal South Africa. 2007. Public Consultation Report: Scoping Phase for the New Largo open cast coal mine between Kendal and Balmoral, Mpumalanga Province. Golder Associates.

Surface Water and Groundwater

- Surface water sampling and analysis by Jones and Wagener undertaken during 2010 to 2011.
- Ground water baseline studies (hydro-census, borehole testing, water quality analysis) by JMA during 2010 to 2011.
- Ground water sampling and analysis undertaken by AAIC during 2006 to 2011.
- Jones and Wagener. 2007. Surface Water Inputs to the EMPR For New Largo Opencast Mine.

Ecology and Biodiversity

- De Frey, W.H. 2010. Specialist Report: Ecological Assessment (Flora, Fauna, Aquatic) for the New Largo Coal Development - Mpumalanga EkoInfo.
- De Frey, W.H. 2008. Flora Specialist Report: Vegetation Assessment on New Largo Update Area Northwest of Ogies, Mpumalanga. EkoInfo CC Environmental & Wildlife Management Consultancy.
- Kamffer, D. T. Mostert. 2007. New Largo Faunal Study. Faunal Species Incorporated.
- Batchelor, A. 2007. Wetland Baseline and Impact Assessment: New Largo. Wetland Consulting Services (Pty) Ltd.
- Palmer, R. 2006. New Largo Project – Baseline Assessment – Aquatic Ecology, Nepid Consultants.

Soils

- Vermaak, P.S; Jones, I.P.C. 2006. New Largo Project Baseline Soils and Land Capability Survey. Earth Science Solutions.

Air Quality

- Annegarn, H.J. 2007. New Largo Annual Air Quality Monitoring Report for the Period November 2006 to October 2007.
- Von Gruenewaldt, R.G.; H. Liebenberg-Enslin. 2010. Air Quality Baseline Assessment For The Proposed New Largo Opencast Coal Mine In The Kendal Area. Airshed Planning Professionals.
- Von Gruenewaldt, R.G.; Liebenberg-Enslin, H. 2010. Air Quality Baseline Assessment For The Proposed New Largo Opencast Coal Mine In The Kendal Area. Airshed Planning Professionals.
- Thomas, R.G.; Liebenberg-Enslin, H. 2006. Air Quality Baseline Assessment For The Proposed New Largo Opencast Coal Mine In The Kendal Area. Airshed Planning Professionals.

Heritage Resources

- Van Schalkwyk, J., 2006. Heritage Impact Scoping Assessment for the Proposed New Largo Mining Development, Witbank Area, Mpumalanga. National Cultural History Museum.

Visual Resources

- Young, G. 2007. Visual Assessment for New Largo Open Cast Coal Mine in the Kendal/Balmoral Area. Newtown Landscape Architects.

2.7 Specialist Studies

The various specialist studies conducted as part of the Phola-Kusile Coal Conveyor EIA process are listed below, and are appended to the final EIA report. The scope of work of the individual studies is explained in each specialist report. Where relevant, specialist reports were structured in terms of GNR 543 Section 32 and the specialists have each signed a declaration of independence.

- Ecology and Biodiversity (including Natural Vegetation and Animal Life)
- Wetland Delineation
- Soils
- Air Quality
- Traffic (specialist opinion)
- Noise
- Heritage Resources
- Surface Water and Water Use License
- Groundwater
- Visual Aspects
- Social and Economic
- Agricultural and Land Use Potential

2.8 Assumptions, Exclusions and Limitations

- The conveyor will be in operation for ~60 years. For this project, the impacts as well as the mitigation measures associated decommissioning phase is very similar to that of the construction phase. None of the specialist studies identified any notable impacts that are notably different or more severe during the decommissioning phase than the construction phase or any decommissioning issues that would in any way affect decision making about the environmental acceptability of the project. The EIA and EMP therefore focus on the construction and operation phases. Eventual decommissioning of the conveyor will be dealt with in a future EIA and EMP amendment. Impacts described as applicable to the construction phase will eventually apply to the deconditioning phase.

- The last section of conveyor flight 7 (known as CVY015 on the engineering design drawings) at Kusile Power Station will be owned by Eskom. This section will be constructed by AAIC and during construction, AAIC will manage environmental impacts in terms of the EMP measures in this report. However, the operation of this will be managed by Eskom in terms of their own operational EMP and management procedures. AAIC will not assume responsibility for Eskom-owned infrastructure beyond the construction phase.

- Various options for water supply to the Phola-Kusile Coal Conveyor were investigated (Section 4.4), but the proposed option, which is also the environmentally preferred option, is to abstract and treat excess water from old underground mine workings at a mobile water treatment plant. This specific option was only identified after the submission of the scoping report and requires a waste management license. As explained in Section 1.3.2, the impacts of water treatment plant is seen as a positive development. Sufficient information about the impacts of the mobile water treatment plant has been incorporated into this EIA report for MDEDET to authorise the water treatment plant in terms of NEMA. The issuing of the waste management license for the mobile water treatment plant by NDEA is seen as a separate approval process. As such, there is no reason for the MDEDET review and authorisation process to be delayed or compromised by the waste management license application process for the mobile water treatment plant.

- A specialist Air Blasting and Ground Vibration study was not undertaken as part of the Phola-Kusile Coal Conveyor EIA as blasting is not envisaged for the project. Should blasting be required due to unforeseen geotechnical conditioned encountered during construction, blasting operations will be strictly managed in consultation with the owners of the infrastructure and building owners, and specialist advice will be sourced where required, on a case by case basis.

- The various specialists (Appendix D to Appendix P) have made suggestions and recommendations for mitigating impacts as applicable to their various fields of expertise. However, some of the suggestions were not always appropriate and feasible when viewed in an integrated way in that what is suggested by one specialist on one environmental component may conflict with the requirements of another environmental component. The mitigation measures adopted in the EMP (Section 12 and Appendix B) reflects an integration of mitigation measures appropriate to the project, based on the professional judgement of the EAP and constraints associated with the specific project and the environment in which the project is situated.

2.9 Uncertainties and Knowledge Gaps

- The Environmental Assessment Practitioner for this project is of the opinion there are no notable uncertainties and knowledge gaps that could affect decision making and that the information presented in this EIA report, EMP and the various specialist reports (appended) is sufficient for:

    - MDEDET to make an informed decision about the environmental impacts of the Phola-Kusile Coal Conveyor and to issue an environmental authorisation for the project.

    - DWA to make an informed decision about the impacts associated with water uses in terms of the NWA and waste activities in terms of the NEMWA. Read in conjunction with the following reports, the DWA would have sufficient information to evaluate and issue a decision on the water use license application for the project.
        - Phola-Kusile Overland Coal Conveyor: Integrated Water and Waste Management Plan (Final, February 2012).
        - Phola-Kusile Overland Coal Conveyor: Integrated Water Use Licence Application Report (Final, February 2012).

    - Providing the NDEA with an understanding of the impacts and mitigation measures for the proposed mobile water treatment plant, in support of the separate application for a waste management license application process for the mobile water treatment plant. A separate EIA report will be submitted to the NDEA for the mobile water treatment plant. The report will utilise the assessment of the mobile water treatment plant impacts in this report.

- A great deal of the properties affected by the conveyor belongs to AAIC. All other landowners, except Eskom, have signed consent letters approving the conveyor servitude on their property. AAIC provided Eskom with a servitude agreementand is awaiting feedback from Eskom in this regard. AAIC is also negotiating with Mr Truter, who owns a number of properties along the conveyor route.

- AAIC and Synergictsics endeavoured to contact all affected landowners on an individual basis to discuss the specific impacts on their properties. Consultation is summarised in Table 7-1.

- The locations of the conveyor crossings have been finalised. The majority of the crossings are located on Mr Truter's properties and the remainder on AAIC properties. Mr Truter was taken to these locations by AAIC whereafter he gave verbal approval.

3. Project Description

3.1 Project Design and Proposed Route

The Phola-Kusile Overland Coal Conveyor will be designed to transport 8.4 to 11.5 million tonnes of coal per year from the Phola Coal Processing Plant to the Kusile Power. The conveyor will start at the Phola Coal Processing Plant and it will end at the coal stockyard of the Kusile Power Station. Various alternatives conveyor routes were evaluated but the AAIC proposed route is approximately 23 km in length.

There will be seven[5] conveyor flights and seven transfer stations (TS1 to TS7). There will be five conveyor flights between TS1 at Phola Coal Processing Plant and TS6 at a point outside of Kusile, and a further two conveyor flights (called CVY 614 and CVY 615 in engineering design terms) between TS6 and TS7 at Kusile. The last flight (CVY 615) will be owned by Eskom. CVY 605 will be constructed by AAIC and will be handed over to Eskom during the operational phase (see EMP for responsibilities and environmental management arrangements for Eskom-owned infrastructure, Section 12 and Appendix B).

The Phola Coal Processing Plant is an existing beneficiation plant located approximately 20 kilometres south-east of Kusile Power Station, between Kendal Power Station, Ogies and Phola. The plant is a joint venture between BHP Billiton (BECSA) and Anglo American Inyosi Coal. It has the capacity to beneficiate 16 million tonnes per annum, and it receives coal from Klipspruit (BECSA), and Zibulo (Anglo) mines. The primary products from the Phola Coal Processing Plant are exported. Eskom anticipates that the secondary products (or middlings coal) from the Phola Coal Processing Plant will be supplied to Kusile Power station via the Phola-Kusile Coal Conveyor over the life of the Kusile Power Station (thus 60+ years).

Together with the middlings coal from the Phola Coal Processing Plant, a minimum of 1.6 million tonnes of coal from the Vlakfontein Colliery (owned by African Exploration Mining and Finance Corporation (AEMFC)), will be loaded onto the conveyor belt for transportation to Kusile each year. The loading point for AEMFC onto flight 4 of the overland conveyor will be at a point, mutually agreed on between AAIC and AEMFC, and within the conveyor servitude. Other loading points may be developed along the conveyor route to load coal onto the conveyor in future. Environmental authorisations required for infrastructure developed by Vlakfontein will be separate to the EIA for Phola-Kusile Coal Conveyor.

The conveyor will be a maximum of 1.35 metres wide and will run at an average speed of approximately 4.5 metres per second. It will have a metal cover (called ‘doghouse sheeting’), which is open on one side to allow servicing. The conveyor belt will be equipped with on-line quality and mass monitoring equipment.

Preliminary GPS Coordinates for the proposed route are tabled below (please note that there may be minor changes to these points as the alignment is refined and optimised).

[5] The scoping report stated that there area five flights but this excluded the last two flights into Kusile Power Station (called CVY 614 and CVY 615 in engineering design terms).

Table 3-1: GPS Coordinates for the Proposed Phola-Kusile Coal Conveyor Route (Figure 1-1)

Corner / Bend Point	Southern Coordinate	Eastern Coordinate
1	28° 55.731' E	25° 55.758' S
2	28° 56.475' E	25° 55.445' S
3	28° 56.303' E	25° 55.844' S
4	28° 55.715' E	25° 57.623' S
5	28° 54.754' E	25° 58.902' S
6	28° 55.474' E	26° 0.208' S
7	28° 57.528' E	26° 0.987' S
8	28° 57.506' E	26° 1.175' S
9	28° 58.798' E	26° 1.207' S
10	29° 0.203' E	26° 1.925' S
11	28° 59.838' E	26° 3.246' S
12	28° 59.672' E	26° 3.194' S
13	28° 59.949' E	26° 3.338' S

Affected properties are listed in Table 3-2 and illustrated on Figure 1-1 and Figure 5–20.

Table 3-2 :Properties along the Proposed Conveyor Route

Property description		Landowner	Contact Person
Farm	Portion		
Smaldeel 1 IS	5	Ingwe Surface Holdings	Johan Muller/ Vikesh Dhanooklal
Bankfontein 216 IR	R/E	Ingwe Surface Holdings	As above.
Bankfontein 216 IR	7	Truter Boerdery Trust	Christy Truter.
Bankfontein 216 IR	11	Truter Boerdery / Ingwe Surface Holdings (to be verified - based on information received from Mr Truter, this portion is owned by Truter Boerdery)	As above.
Bankfontein 216 IR	10	Truter Boerdery Trust	As above.
Heuwelfontein 215 IR	11	Truter Boerdery Trust	As above.
Vlakfontein 569 JR	22	Truter Boerdery Trust / SANRAL (to be verified - based on AAIC records this property is owned by SANRAL).	Christy Truter (Truter Boerdery Trust) / Ockert Stevens and Kevin Rudd (SANRAL).
Vlakfontein 569 JR	11	Truter Boerdery Trust	As above.
Vlakfontein 569 JR	3	Anglo American Inyosi Coal (AAIC), previously Anglo Operations Limited (AOL).	Henry Niewoudt
Klipfontiein 568 JR	14	AAIC, previously AOL	As above.
Klipfontiein 568 JR	59	SANRAL	Hermans and Roman Property Solutions
Klipfontiein 568 JR	13	AAIC, previously AOL	As above.
Klipfontiein 568 JR	12	AAIC, previously AOL	As above.
Klipfontein 568 JR	15	AAIC, previously AOL	As above.
Klipfontein 568 JR	16	AAIC, previously AOL	As above.
Klipfontein 568 JR	1	AAIC, previously AOL	As above.
Klipfontein 568 JR	29	AAIC, previously AOL	As above.

Property description		Landowner	Contact Person
Farm	Portion		
Klipfontein 568 JR	36	AAIC, previously AOL	As above.
Klipfontein 568 JR	35	AAIC, previously AOL	As above.
Klipfontein 568 JR	34	AAIC, previously AOL	As above.
Klipfontein 568 JR	33	AAIC, previously AOL	As above.
Klipfontein 568 JR	32	Truter Boerdery Trust	As above.
Klipfontein 566 JR	9	Eskom Holdings Ltd	Jan De Klerk, Tinkie Holl
Klipfontein 566 JR	66	AAIC, previously AOL	As above.
Klipfontein 566 JR	53	Eskom Holdings Ltd	As above.
Klipfontein 566 JR	54	Eskom Holdings Ltd	As above.
Klipfontein 566 JR	52	Eskom Holdings Ltd	As above.
Klipfontein 566 JR	50	Eskom Holdings Ltd	As above.
Klipfontein 566 JR	48	Eskom Holdings Ltd	As above.
Klipfontein 566 JR	31	AAIC, previously AOL	As above.
Klipfontein 566 JR	17	AAIC, previously AOL	As above.
Hartbeesfontein 537 JR	7	Eskom Holdings Ltd	As above.
Hartbeesfontein 537 JR	6	Eskom Holdings Ltd	As above.
Hartbeesfontein 537 JR	RE	AAIC, previously AOL	As above.

The following photographs of conveyor structures provide an indication of the design of the Phola-Kusile Overland Coal Conveyor. These photographs are for information purposes only – the design of the Phola-Kusile Overland Coal Conveyor will be similar to the conveyors in these photographs but minor design differences and changes are anticipated.

Plate 3-1: Example of typical coal conveyor from the side

Plate 3-2: Example of typical wetland crossing (conveyor suspended on pillars, covered and with solid floor for collection of coal spills)

Plate 3-3: Example of a typical stream crossing with impermeable floor

Plate 3-4: Example of a typical metal cover for conveyor belt

Plate 3-5: Example of a typical farm road crossing over conveyor

3.2 Servitude

A 30 metre wide[6] servitude will be registered for the conveyor. The servitude will be fenced, and there will be a service road and a storm water management system along the conveyor belt.

Plate 3-6: Typical example of a fenced servitude with conveyor belt and service road

3.3 Pedestrian and Vehicle/Livestock Crossings

Pedestrian and vehicle / livestock crossings will be provided where required. AAIC's proposed positions are indicated on Figure 1-1. The positions of the crossings were determined in consultation between AAIC and the landowner on a case by case basis and will be finalised as part of the detailed design of the project.

6 The scoping report stated that the servitude will be 25 m wide. Please note the servitude width has been increased from 25 m to 30 m to accommodate the power line.

3.4 Power Supply

Power will be supplied via an overhead 22 kV power line.

3.5 Ablutions and Sewerage Treatment

A packaged sewage treatment plant is proposed to treat domestic sewage (Lilliput unit). The plant has been sized to treat domestic effluent for 80 people at 70ℓ per person per day, a total of 5.6 cubic metres per day (maximum 1960 cubic metres per annum).

The treated waste water will be used for dust suppression un-surfaced roads. The plant will treat the water to comply with GNR 399 of 26 March 2004, section 2.7(c) (i) quality limits set for irrigation with sewage water, as tables below.

Table 3-3: Sewerage effluent water quality standards

Parameter	GN 399 Limits
Faecal Coliforms (per 100 ml)	< 1000
Chemical Oxygen Demand (mg/l)	< 75
pH	5.5-9.5
NH_4 as N (mg/l)	3
NO_3 as N (mg/l)	15
Cl (mg/l)	0.25
SS (mg/l)	25
EC (mS/m)	< 70 above intake to maximum of 150
Ortho-phosphates as P (mg/l)	10
Soap, oil and grease (mg/l)	2.5

The packaged sewerage treatment plant will be used during construction and operation phase of the project. Chemical toilets will also be used until the packaged sewerage treatment plant as been installed. Contractors will use chemical toilets along the conveyor route. At the administrative areas a conservancy tank will be used. The conservancy tank and chemical toilets will not be located near streams and wetlands and will be regularly emptied by a 'honey sucker' collection system and the sewage will be taken to an appropriate sewerage treatment facility.

3.6 Borrow Pits

A large portion of the useable borrow material in the area has already been utilised over the years for construction of the various roads (i.e. the N4, N12, and R545) as well more recently for construction of Kusile as well new road associated with Kusile (location of roads and Kusile illustrated on Figure 3-2). In additional, borrow material within the footprint of the sand mines found in the area has also been already removed. Due to this, there is general shortage of borrow material. Three borrow pits have been identified to supply borrow materials for construction of the Phola-Kusile Coal Conveyor and according to the AAIC engineers that identified these, alternative options are not available within the area around the conveyor route. The three borrow pits are illustrated on Figure 1-1 and in more detail on Figure 3-3 to Figure 3-7. The positions and sizes of these borrow pits are preliminary and will be finalised based on the outcome of a geotechnical investigation.

3.7 Storm Water Management and Pollution Control along Conveyor Route and at Transfer Stations

Clean storm water runoff will be allowed to drain freely underneath the conveyor. The conveyor will be covered by a metal cover, the 'doghouse sheeting'. The sheeting will prevent rain from coming into contact with the coal.

Potentially dirty runoff areas at transfer stations, where coal spillages could occur, will be bunded, and runoff directed to a silt trap and suitably lined evaporation dam. The evaporation dams will be designed in accordance to the principles of GN 704 and GNR 77 to accommodate the 1:50 year event as a minimum (i.e. 2% risk of spillage) with 800 mm freeboard. Each evaporation dam will be equipped with a spillway. Clean runoff will be diverted around the transfer stations. The evaporation dams will be lined and equipped with sumps, which will be monitored on a regular basis to detect any possible contamination of soil and groundwater.

Borrow pits will also be managed with suitable storm water management measures in place, including the diversion of clean runoff and the containment of dirty runoff, with special attention to silt control measures.

3.8 Water Supply

3.8.1 Construction Phase

Potable water demand during construction is estimated at 60 m^3/day. The water abstracted for potable purposes will be boreholes and from a spring on the property Hartbeestfontein 537 JR. This particular spring has very good quality water, suitable for human consumption.

General construction water demand is estimated at 160 m^3/day and this water will be abstracted from nearby farm dams and boreholes.

These water uses will only be required for a limited time until the mobile water treatment plant is commissioned. However, these water uses will continue until such time as the waste management licence is approved.

3.8.2 Operation Phase

Various water supply options were evaluated (refer Section 4.4), but AAIC's proposed option is to abstract and treat excess water from flooded old underground mine workings found nearby. This option is widely considered as a measure that would notably improve the current quality of water decanting and pumped from the old underground mine workings. This excess water currently decants to surface and/or is pumped into the pan on the property Klipfontein 566 JR. A portion of the water treated will be used for consumption, fire protection and dust suppression and the balance released to the catchment. The abstracted mine water will be treated at a proposed mobile water treatment plant to comply with SANS 241 drinking water standards or with relevant regional water quality objectives as set by the DWA. Therefore there should be no concerns regarding the quality of the released water. On the contrary it will most likely have a positive impact on the system and improve the water quality in the Wilge River (refer Appendix F: Hydrological Specialist Report and Appendix G: Geohydrological Specialist Opinion).

Although the Olifants River catchment is stressed and abstractions are strictly controlled, the quality of the water to be abstracted has been impacted on by historical mining, as shown in water quality monitoring results, and will be treated to potable standards. The overall impact will be positive as a portion of the treated water will be released back to the catchment, improving the water quality of the Wilge River system. Less water will decant from the mine workings as well, thereby further reducing the current negative impact.

3.9 Pre-Treatment Storage Facility

The water that is to be treated by the mobile water treatment plant will be pumped from the old underground workings and stored in a 7.5 Mℓ pre-treatment storage facility. From here, the water will be pumped to the mobile water treatment plant to be treated to potable standards.

3.10 Mobile Water Treatment Plant

The mobile water treatment plant will treat the water abstracted from old underground mine workings. It will have a capacity to treat a maximum of 4 Mℓ/day, and an average of 1.5 Mℓ/day, since the volume of excess water is estimated to be ~1.5 Mℓ/day (pers. Comm. Jaco van den Berg, JMA groundwater specialist). Limiting the abstraction to 1.5 Mℓ/day will avoid aggravating the risk of spontaneous combustion in the mine workings due to the lowering of the water table.

According to a study for water management options[7], the water quality of the water abstracted from the old underground mine workings, before treatment, will be as given in tabled below.

[7] Golder Associates Africa, 2011. Pre-Feasibility Study Mine Water Management New Largo Project. Report No.: 13054-10360-1.

Table 3-4: Quality of Water Abstracted from Underground Mine Workings

Parameter	Unit	Regional Water Quality Objectives (RWQO)	Current quality
pH		6.5-8.5	7.7
EC	mS/m	40	290
Sulphate (SO_4)	mg/ℓ	60	2130
Iron (Fe)	mg/ℓ	1.0	0.13
Aluminium (Al)	mg/ℓ	0.02	0.0
Manganese (Mn)	mg/ℓ	0.18	2.4
Sodium (Na)	mg/ℓ	20	32
Magnesium (Mg)	mg/ℓ	20	196
Fluoride (F)	mg/ℓ	0.5	0.8
Chloride (Cl)	mg/ℓ	20	3.7
Total Dissolved Solids (TDS)	mg/ℓ	280	3309
Potassium (K)	mg/ℓ	10	0.0
Calcium (Ca)	mg/ℓ	25	568
Ammonia	mg/ℓ as N	0.007	0.06

Note: The values highlighted in red do not comply with regional water quality objectives as set by the DWA, while those in blue do.

3.11 Treated Water Release

A portion of the water treated at the mobile water treatment plant will be used along the conveyor system for the deluge fire protection system and the sprinkler dust suppression system, and a small portion for potable purposes. The remainder of the treated water will be discharged to the catchment. The release point of water from the mobile treatment water plant will be designed to ensure adequate energy dissipation / attenuation of water to reduce water velocities and the potential for erosion and to minimise impact on streams. The volumes of water released will not exceed a maximum of 4 mega litres (4000 cubic metres) a day as per the water use license application.

The water will be discharged to the Klipfonteinspruit, a tributary of the Wilge River.

The volumes of water released will be very small and are not expected to exceed 0.046 m^3/s, which is likely to be less than the 1:2 or 1:5 year flood event (the 1:20 year event is 43 m^3/s). There is a minimal risk of erosion, but a concrete lined canal will be used to prevent erosion of the stream bank where the water is released and a flow attenuation structure will be provided at the release point to avoid erosion.

3.12 Water Reticulation and Storage

There will be a water pipeline, with a system of water tanks and storage reservoirs, from the water supply point (proposed mobile water treatment plant) to all the transfer stations along the length of the conveyor route. Each transfer station will be provided with elevated steel tanks for potable water storage. The water from these tanks will be used for dust suppression, fire suppression and wash-down.

3.13 Deluge Fire Protection

The conveyor system will have deluge systems for fire protection at the Phola Processing Plant surge bin and conveyor 501 point and at the transfer point at the New Largo distribution bin. Each deluge system will have two 420 m^3 tanks to store potable water for fire suppression during an emergency. A deluge system has all sprinklers connected to the water piping system open at all times. The sprinklers are connected to a dry pipe that is connected to a main water supply. A fire detection device controls the main valve. When it is activated, the valve opens, allowing large amounts of water to flow through all of the sprinklers. The purpose of a deluge system is to quickly wet down an entire hazard area to prevent a fire from spreading. The system requires potable (clean) water to prevent clogging of the sprinkler nozzles.

3.14 Dust Suppression and Control

The conveyor system will have sprinkler dust suppression systems at all transfer stations to suppress dust at the transfer station. It will also dampen the coal that is transported along the conveyor flights. There are seven transfer stations along the conveyor routes where the coal will be dampened. The sprinkler system requires potable (clean) water to prevent clogging of the nozzles.

The doghouse sheeting will be placed in accordance to the prevailing wind direction and will act as mitigation to reduce windblown dust along the length of the conveyor.

Treated waste water from the package sewerage plant will be used for dust suppression on the haul roads during construction and potentially on the service road during operation, however, due to the limited number of vehicles expected to be used on along the service road during normal operations, this is likely to be only required in the case of extensive maintenance operations.

3.15 Mobile Water Treatment Plant Waste Management

A water treatment plant will generally produce two waste streams, namely brine and gypsum.

3.15.1 Brine Disposal Facility

With the technology available and the quality of the water to be treated, it is anticipated that no brine will be produced. However, in the interest of responsible business, AAIC will construct a brine pond to store any brine that may be produced as a result of water quality fluctuations or design changes. The brine pond will be designed according to hazardous waste lagoon standards (for more detail please refer to the DWA's second edition 'Minimum Requirements for waste disposal by landfill', DWA).

The detailed designs for the liners, drains and leakage detection systems are provided in the water use licence application documentation for submission to the DWA.

3.15.2 Gypsum Disposal Facility

Due to the quantities of water being treated, very little gypsum waste is expected. For this reason, AAIC will ensure that it is the responsibility of the mobile water treatment plant contractor to dispose of this waste. It will be stipulated that the gypsum be disposed of at a licensed waste facility capable of handling gypsum waste.

The temporary gypsum waste storage facility that will be located within the footprint of the treatment plant, will act as a storage pad from where the contractor can collect and remove the waste. The storage pad will be designed to contain impacted water generated on it. The storage pad will also be designed to prevent the ingress of clean surface water from the catchment area. The design will cater for at least the 1:100 rainfall event and must prevent the seepage of impacted water into the environment.

3.16 Hazardous Waste Management

Hazardous waste produced may include hydrocarbon waste from workshops and servicing areas, used petroleum products, used cleaning materials and other materials used in the maintenance of the conveyor system, light bulbs (including fluorescent tubes which is regarded as hazardous) and electronic waste, which will be removed off site by an appropriate licensed waste company for disposal. The qualities of hazardous wastes will be fairly small and will not trigger the need for a waste management license.

3.17 General Waste Management

General waste will include general office waste such as paper and other degradable materials which will be disposed of offsite at a licensed facility. The qualities of general wastes will be fairly small and will not trigger the need for a waste management license.

3.18 River and Wetland Crossings

The conveyor system will cross streams and wetlands along its route from the Phola Coal Processing Plant to the Kusile Power Station. At each of the stream crossings, the conveyor system will be fully enclosed with environmental gantries – specially designed conveyor sections bridging streams and wetlands raised higher than the 1:100 year floodline and provided with a roof, partial side screens for minimizing fugitive wind blown coal dust from conveyor, and an impervious floor for capturing coal spills, drip-off and wash-down water. During shut-off, spilled coal can be picked up from the gantry floor and put back onto the conveyor. Since the environmental gantries are covered, water collecting in the gantries is should be minimal. Any water collecting in the gantries will evaporate or can be manually removed.

For the Phola-Kusile Coal Conveyor, the gantries will be elevated to above the level of the 1:200 year floodline so as to not encroach into the wetlands and the riparian zone. The elevated conveyor system will be supported by concrete pillars. These pillars will be protected from scour with clean dump rock and riprap (unpolluted by carbonaceous material). Belt turn overs will be provided between transfer points in order to ensure that the dirty belt runs on top of the return idlers in order to eliminate coal spills dropping onto the ground.

The area where the conveyor or road crosses a watercourse will have erosion protection measures in place in the form of 300 mm riprap as well as gabion mattresses on either end of the service road and drifts. All facilities need to accommodate at least the 1:50 year event in accordance with principals of GNR 704 and GNR 77.

The service road crossings of these streams will be in the form of drifts (low water bridge where the road surface follows the contours of the river bed), thereby minimising restrictions on water flow. Sub-surface drains are provided to ensure hydrological continuity.

3.19 Area Lighting

Energy efficient lighting will be provided in and around at the transfer points. In addition, start-up safety lights will be provided along the conveyor at 100 metre intervals. The function of these area lights is to provide a visual warning to people working in close proximity to the conveyor each time the conveyor starts up (i.e. after the conveyor was stopped for maintenance purposes). Energy efficient lights will be used to specifically light up the area directly adjacent to the conveyor, while minimizing light pollution, glare and eliminating sky glow. This is also to improve visibility at transfer stations where work needs to be conducted.

3.20 Start-up Sirens / Alarms

Start-up sirens will be provided at regular 100 metre intervals along the conveyor to provide an audible warning to all people operating/working inside the conveyor servitude if the conveyor is stopped or started up for any reason, for example maintenance, inspections etc. The alarms will have a certain tone and intensity level (not more than 85 dB) in order to comply with nuisance and health and safety laws and regulations.

3.21 Service / Maintenance Road

A service road will be provided in the servitude to provide access for maintenance and emergency purposes as well as to act as a fire break.

3.22 Diesel Storage

Temporary diesel tanks will be provided during construction along the conveyor servitude. These tanks will be provided with impervious spill containment (bunding). The storage tanks used for this project will be self-contained tanks, which incorporates overspill bunds integrated into the design of the tanks.

3.23 Construction Laydown Areas

During construction, the contractor will require areas to use as laydown areas for construction equipment and project components and as administration areas. These laydown areas will be positioned at strategic locations along the conveyor routes. The footprint of the proposed mobile water treatment plant will also be utilised as a laydown area as the installation of the treatment plant will only occur towards the end of the construction phase; this will limit the footprint area affected.

3.24 Rail, Public Roads, Pipelines, Power Lines and Other Infrastructure

The road network around the study area is illustrated in Figure 3-2. The R545 provincial tar road currently provides a north-south link between the N4 and the N12 highways. Approximately 12 km to the south of the N4 interchange the R545 diverts to the east, towards Wilge Village. The D686 continues to the south to form the north-south link between the R545 (from the point of diversion) to the N12 interchange, and Kendal further south (the D686 is often referred to as the southern extension of the R545). A new road, known as the Kusile road, is currently under construction to the west of the Kusile Power Station. The road will provide future access to the Kusile Power Station.

Two major public roads with high traffic demands, the N12 and the D686 (R545 southern extension south of the N12), will be crossed. For the road crossing at the N12, an existing unused railway line culvert under the N12 highway will be used. Transnet has given consent for construction of the conveyor through the culvert (Appendix C). At the D686 (R545 southern extension) crossing, the conveyor will bridge across the road.

There are a number of pipelines, including petroleum pipelines, and power lines in the vicinity of the Phola-Kusile Coal Conveyor routes.

AAIC is in ongoing discussions with the various infrastructure owners to discuss and finalise arrangements for protection of the infrastructure during the construction and operation of the conveyor and the avoid service interruptions.

The locations of the conveyor crossings have been finalised. The majority of the crossings are located on Mr Truter's properties and the remainder on AAIC properties. Mr Truter was taken to these locations by AAIC whereafter he gave a verbal approval. No written approval was signed by Mr Truter. The conveyor route will no longer cross AEMFC properties.

3.25 Employment

The construction phase of the project will be relatively labour intensive, resulting in the creation of a number of temporarily employment opportunities. At the time of the draft EIA report In October 2011, AAIC estimated that 200 to 300 people will be employed during construction. Due to the urgent and short time available for construction and in order to avoid delays in coal supplies to Kusile, AAIC is now proposing to use multiple construction teams. As a result, the construction employment figures have increased to an estimated 800 to 1400 people. Approximately 16 people will be employed during the operational phase.

3.26 Project Cost

At the time of the draft EIA report (October 2011), the estimated capital cost to develop the Phola-Kusile Coal Conveyor was R1.4 billion.

Since the draft EIA report, AAIC refined the capital costs of the project as part of their feasibility study for the project. The latest figures available indicates a capital investment of R2.6 billion. This is due to the urgent and short time available for construction (in order to avoid delays to coal supplies to Kusile), AAIC is now proposing to use multiple construction teams.

3.27 Project Implementation Schedule

The preliminary implementation schedule for the Phola-Kusile Overland Coal Conveyor is tabled below.

Table 3-5: Simplified Project Implementation Programme

<table>
<tr><th>Project Phase</th><th colspan="2">Schedule</th></tr>
<tr><td rowspan="2">Planning Phase</td><td rowspan="2">2010 to July-2012</td><td>2010</td></tr>
<tr><td>2011</td></tr>
<tr><td>Construction Phase</td><td>Aug-2012 to Sep-2013</td><td rowspan="2">2012</td></tr>
<tr><td>First Coal Delivered to Kusile</td><td>Oct 2013</td><td rowspan="2">2013</td></tr>
<tr><td>Operation of the Phola-Kusile Coal Conveyor</td><td>For the Life of Kusile Power Station</td><td>beyond 2070</td></tr>
</table>

The table above lists the start of the construction phase as August 2012. However, should the necessary approvals be in place at an earlier date, AAIC would start with construction as soon as possible in order to avoid any potential delays to the delivery of coal to Kusile and to maximise construction during the drier months of the year (i.e. May to August), which would minimise the impacts on affected streams and wetlands during the wet season.

Table 2-1 on page 27 and Table 2-2 on page 28 provide more detail on the EIA process and future opportunities for consultation and participation over the life of the project.

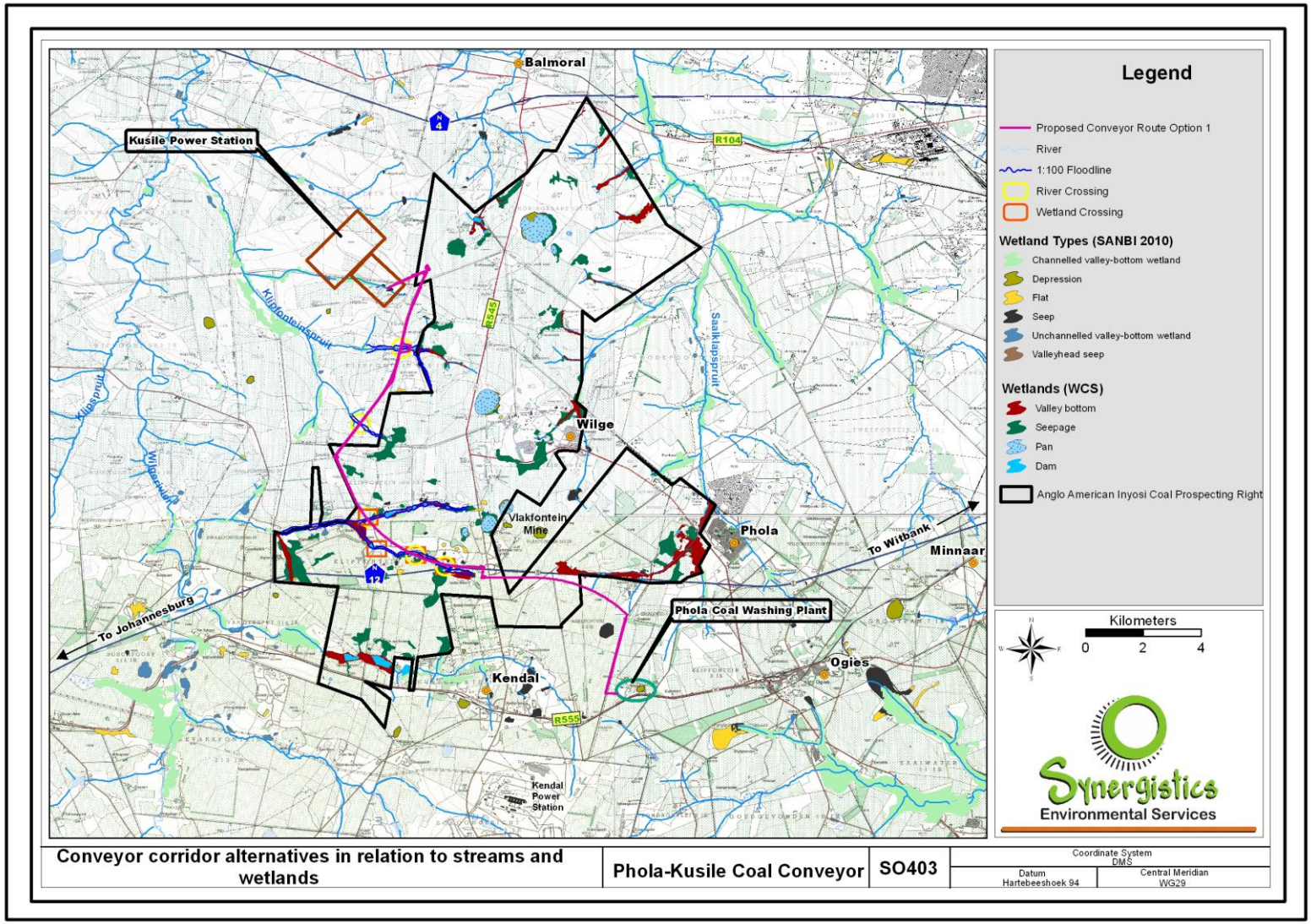

Figure 3-1: AAIC Proposed Conveyor Route in relation to streams and wetlands, showing locations of proposed environmental gantries

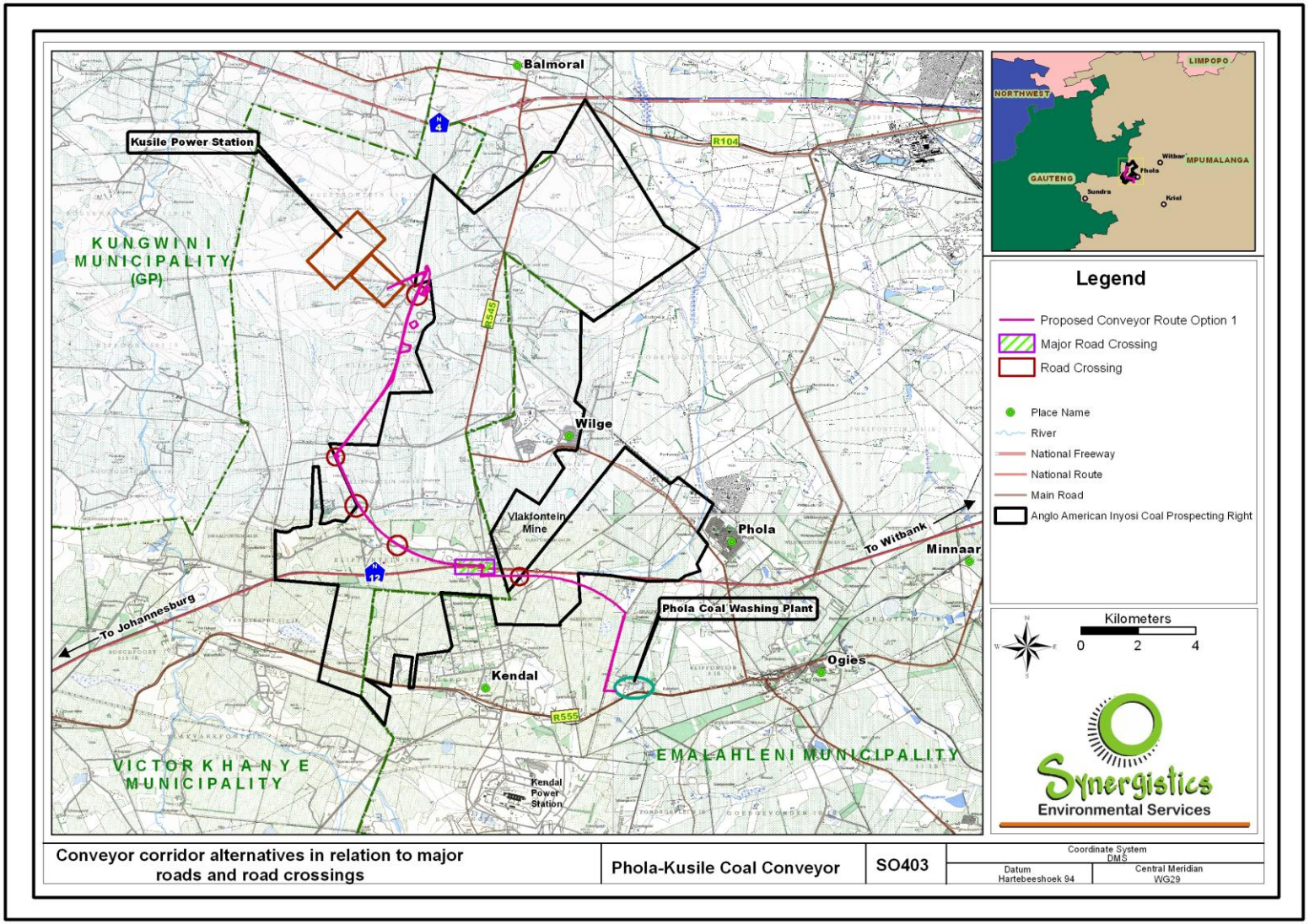

Figure 3-2: AAIC Proposed Conveyor Route in relation to major roads and road crossings

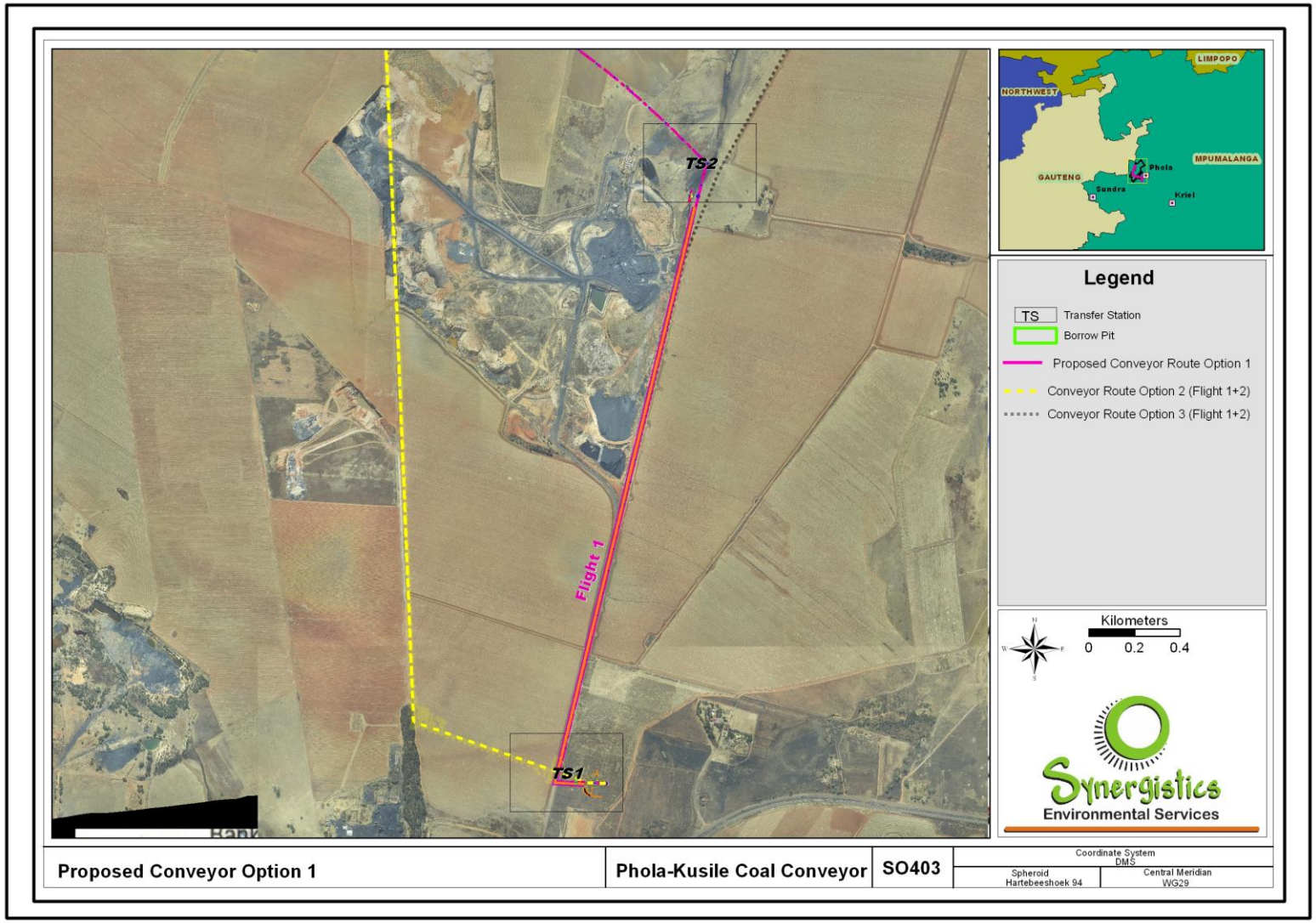

Figure 3-3: Details of Conveyor Flight 1 (the first flight from Phola Coal Washing Plant)

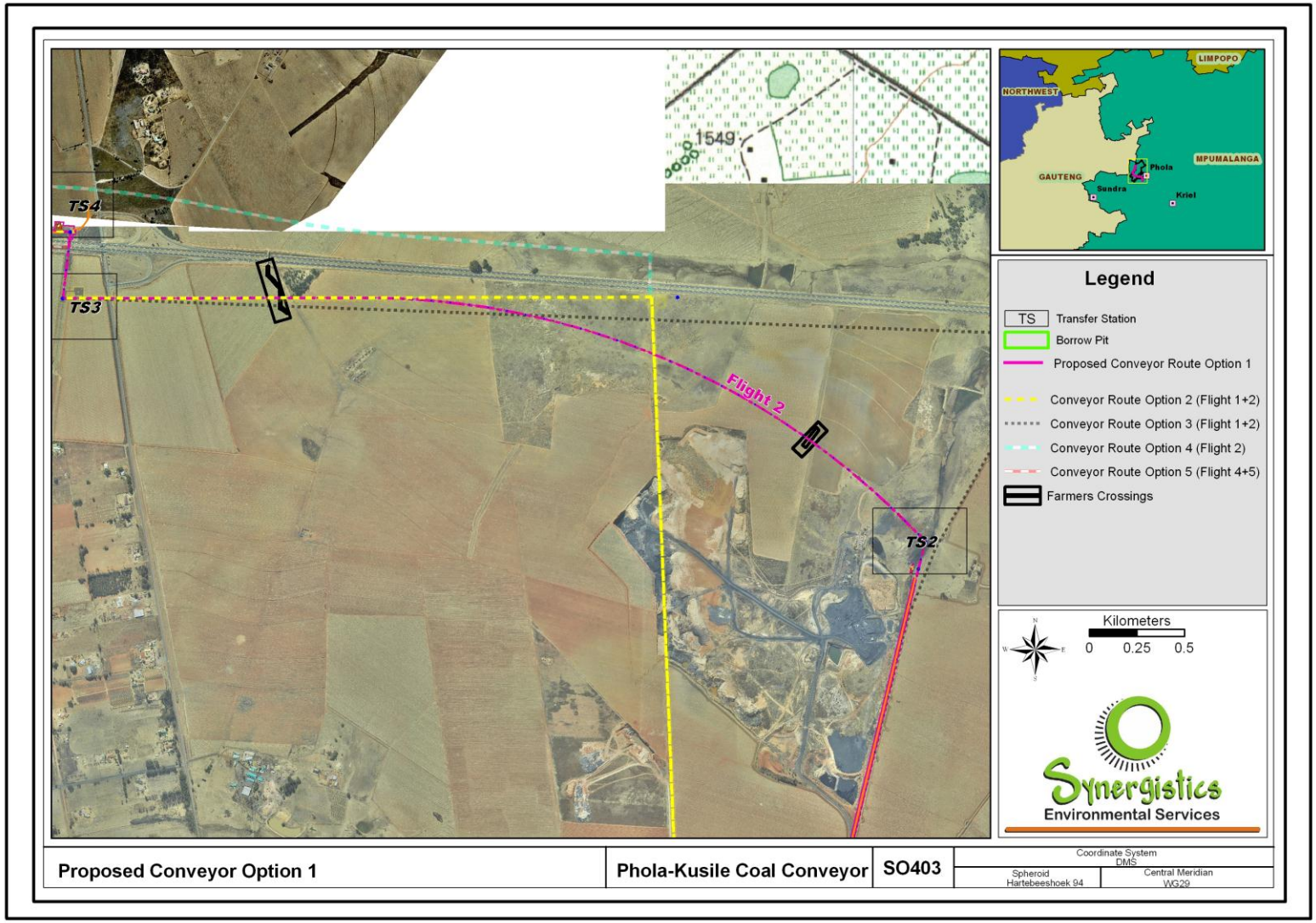

Figure 3-4: Details of Conveyor Flight 2

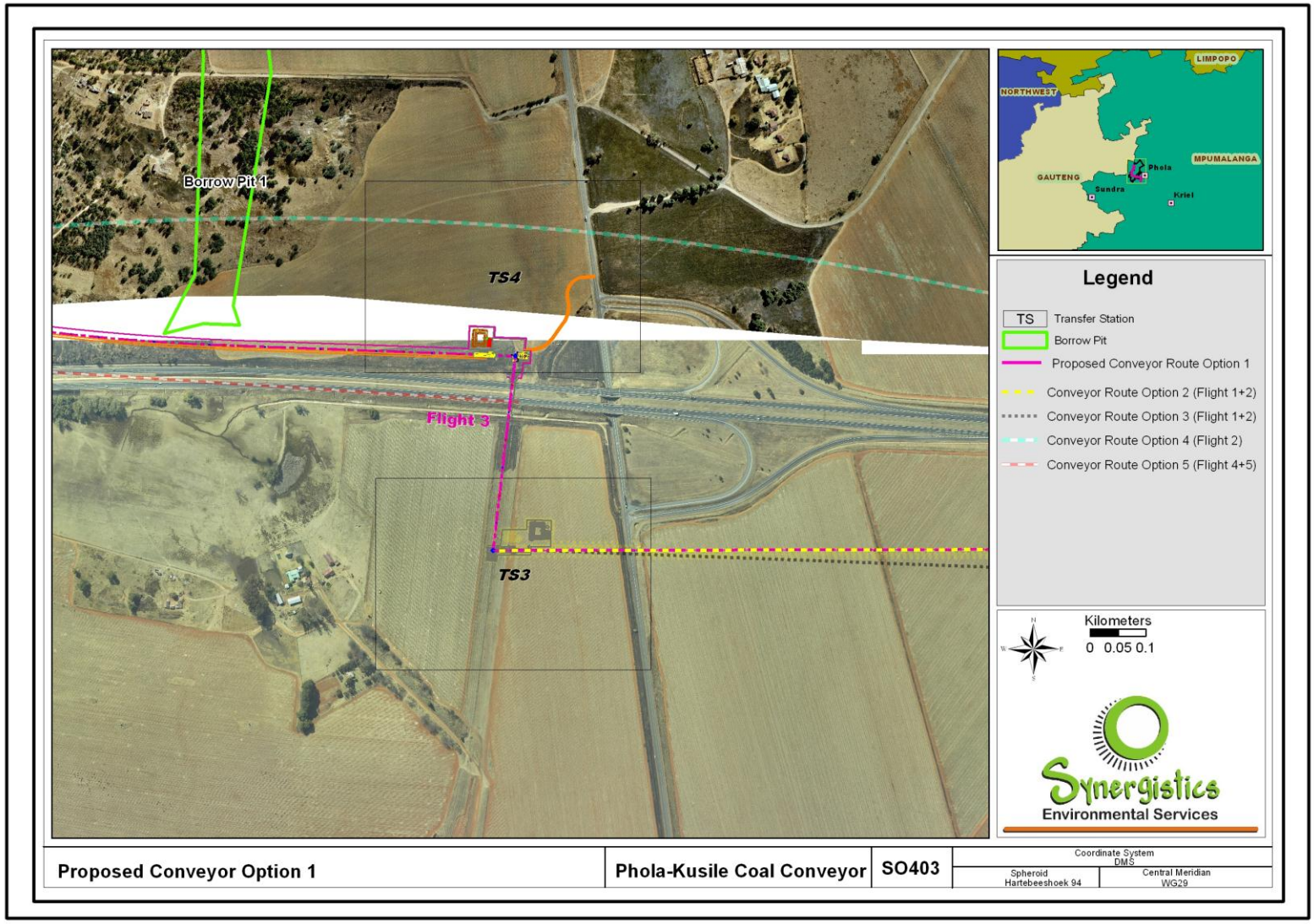

Figure 3-5: Details of Conveyor Flight 3

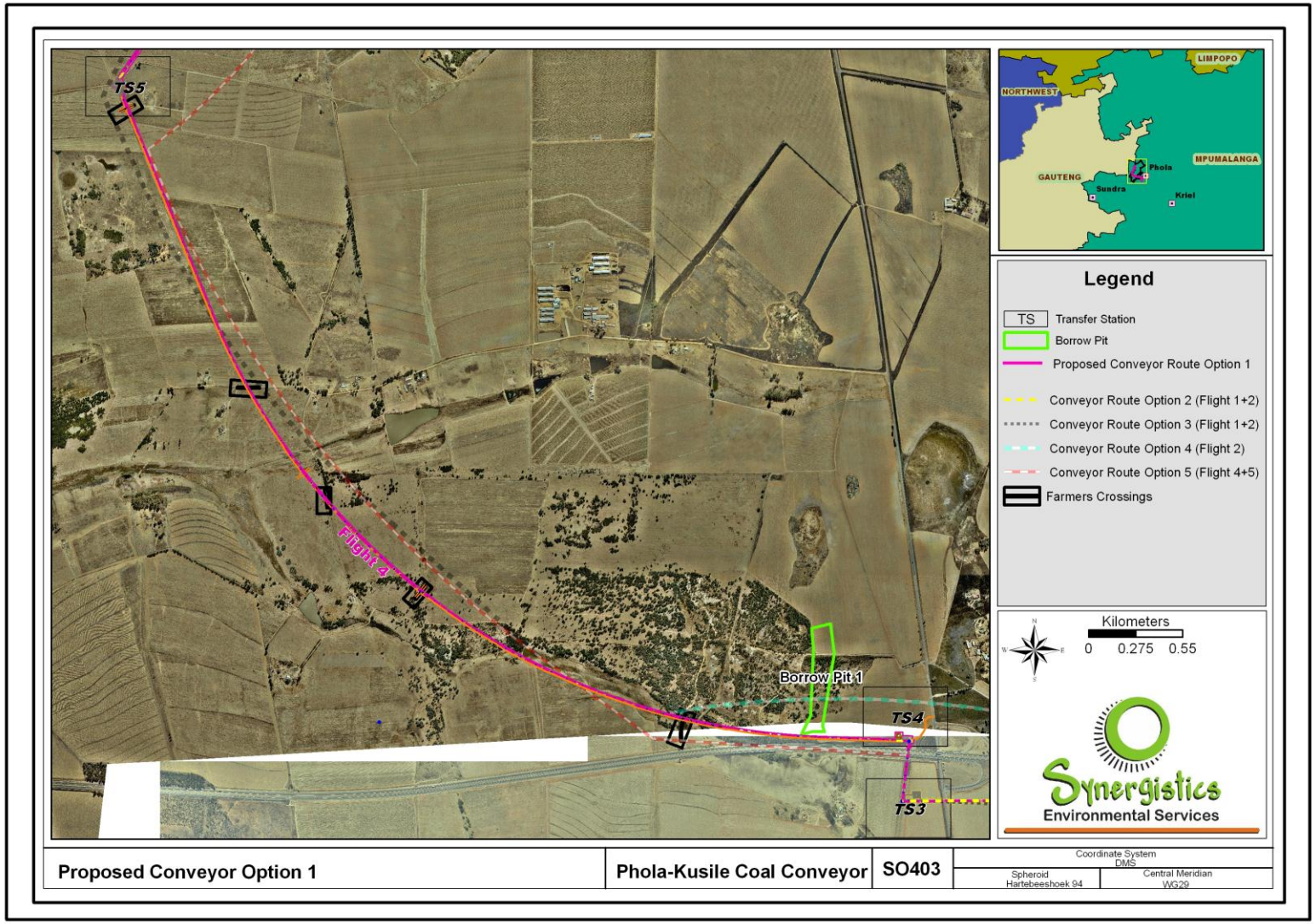

Figure 3-6: Details of Conveyor Flight 4

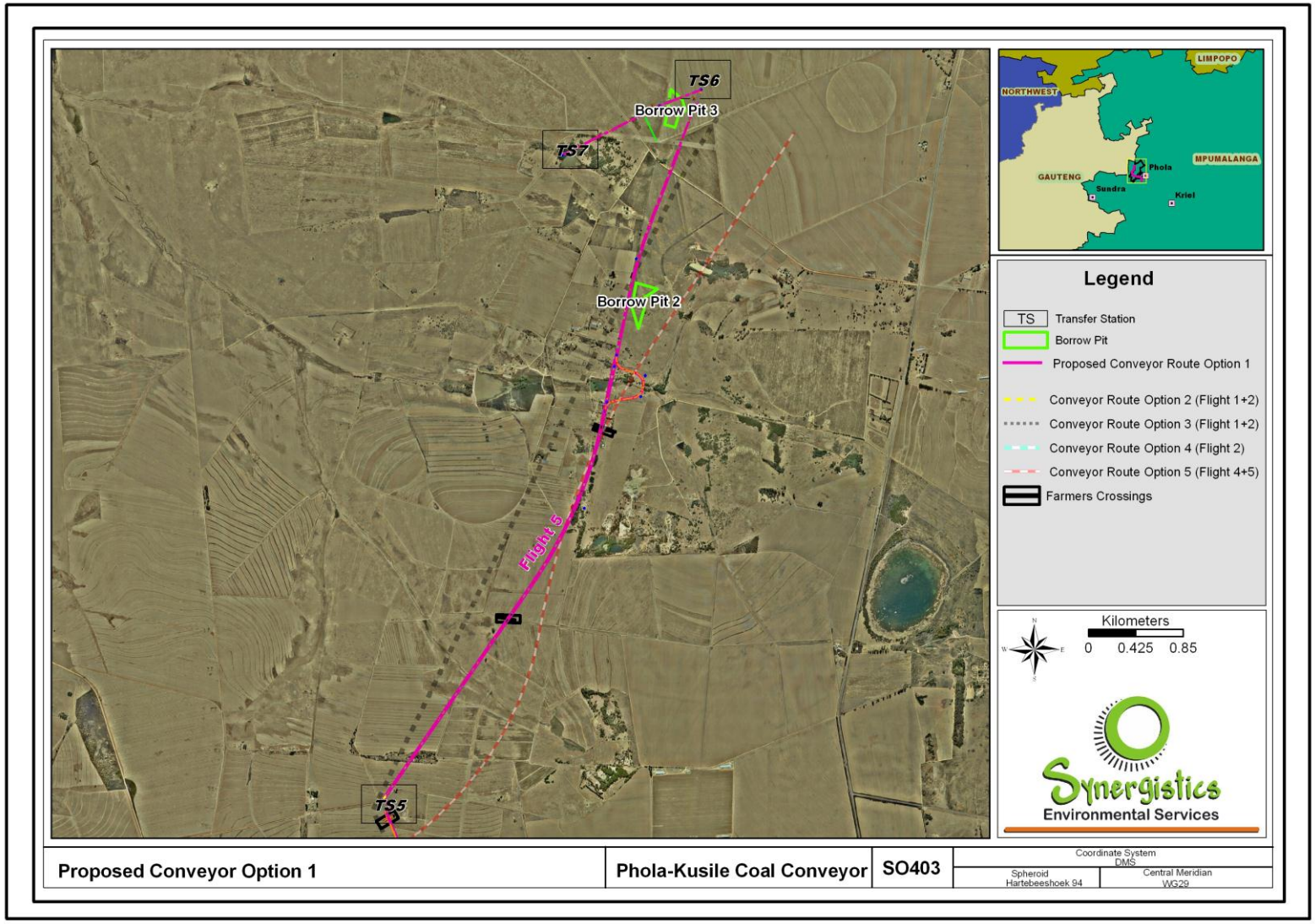

Figure 3-7: Details of Conveyor Flight 5 and Flight 6 and 7 (lasts flight into Kusile Power Station)

4. Development Alternatives

4.1 Alternative Developments

The AAIC project team has investigated road and rail transport options as alternatives to the overland conveyor option to transport coal from the Phola CPP to the Kusile Power Station, but none of the other transport options were regarded as feasible and will therefore not be taken further into the EIA phase of the project.

4.1.1 Railway Transport Alternative

Three railway options were investigated (see Figure 4–1) namely:

- The new Arbour private siding of 18.3 km in length from the south. Kusile chose to bring in lime from the north of the power station and therefore did not build the southern section of the line which would have been required for this option.
- The new Balmoral private siding of 12.9 km in length. A total rail distance longer than 50 km would be required in order to link with the railway line via Witbank and back to Kusile.
- An independent system would need to cross over the proposed New Largo Colliery and therefore sterilise coal reserves.

AAIC does not regard rail transport a feasible option for further investigation due to prohibitively high costs and the incompatibility with Eskom's requirements and the Kusile load-out facilities as no provision for coal trains has been incorporated into the design of the power station.

4.1.2 Road Transport Alternative

AAIC investigated various road transport options (see Figure 4–2) but road transport was not regarded as a feasible option for further investigation due to the high coal tonnages to be transported over long distances and the high frequency of trucks that will be required. The impacts on the road network, air quality impacts, as well as the technical and safety constraints due to the high frequency of trucks are regarded as fatal flaws to this option.

4.1.3 Conveyor Transport Alternative

AAIC regards an overland conveyor system as a feasible and the most suitable solution for transportation of coal from the Phola Coal Processing Plant to the Kusile Power Station. This decision took into account the fact that the overland conveyor option will:

- Have significantly less dust impacts than the road transport option.
- Have significantly less disruption on existing roads and road traffic than the road transport option.
- Be economically feasible and cost effective (capital and operating costs).
- Be easier to implement than the other transport options.

In addition, there were general agreements from I&APs that the conveyor transport alternative was in fact the best option for transporting coal to Kusile (refer Section 6). They did however stress that local impact on affected properties should not be ignored.

4.1.4 No-Go Development Alternative

AAIC maintains that the no-go development alternative:

- Will jeopardise the supply of a timeous and secure supply of coal to Kusile, especially since other options for transporting coal to Kusile (road and rail) were not found to be feasible.
- Prevent Kusile from being able to provide power to the national electricity grid on schedule.
- Create power shortages in the national grids since there are no short to medium term options to replace Kusile's energy generation capacity on a national level.
- Will have negative impacts on national economic growth and development.

4.1.5 Synthesis and Ranking of Alternative Developments, including the No-Go Development Option

Development Alternatives	Conveyor Transport of coal to Kusile	Rail Transport of coal to Kusile	Road Transport of coal to Kusile	No-Go Development (coal not taken to Kusile)
	Alterative Development 1 **PROPOSED DEVELOPMENT**	Alterative Development 2	Alterative Development 1	No-Go Development
Ranking of Options	1	2	3	4

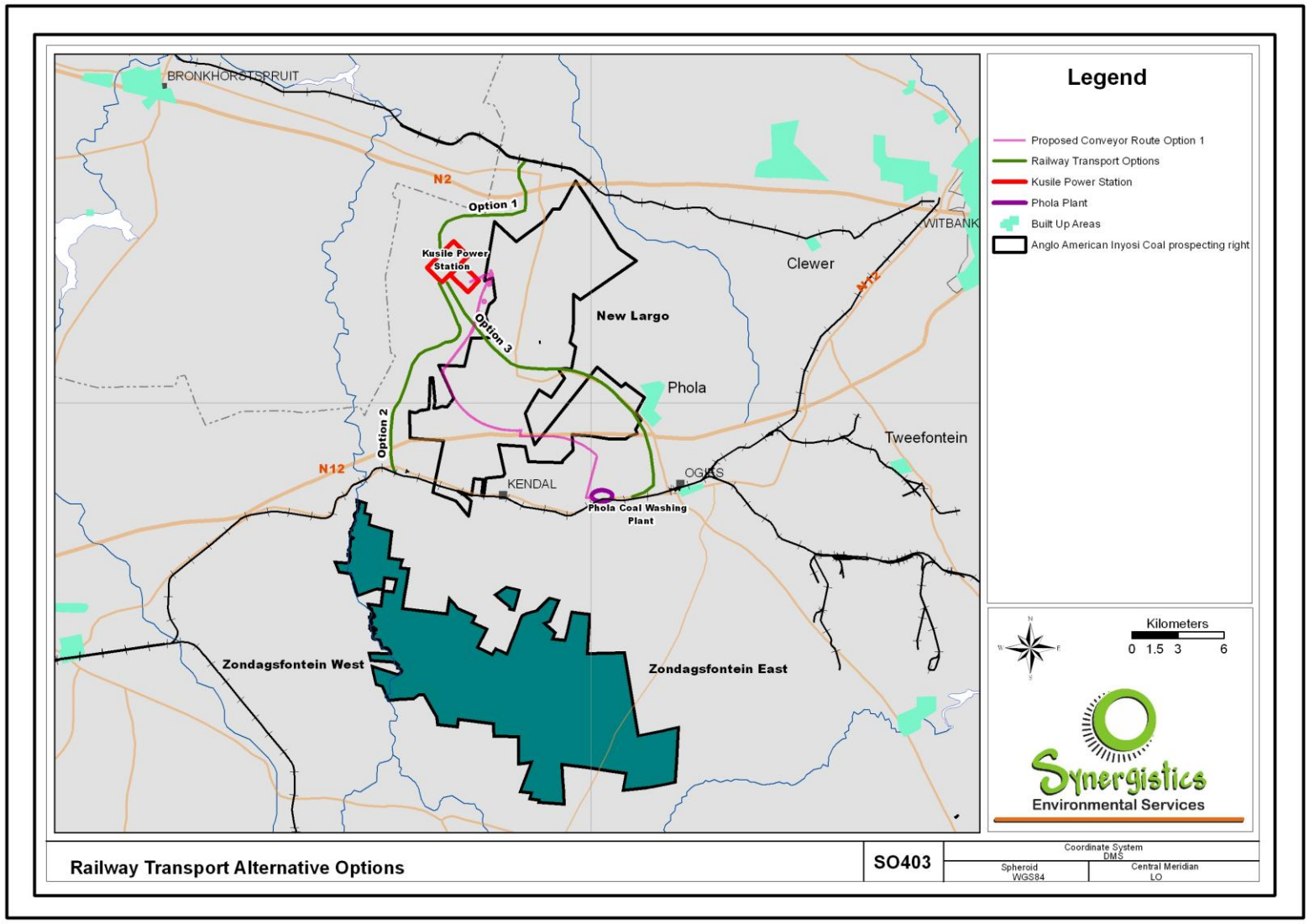

Figure 4-1: Railway transport alternative options

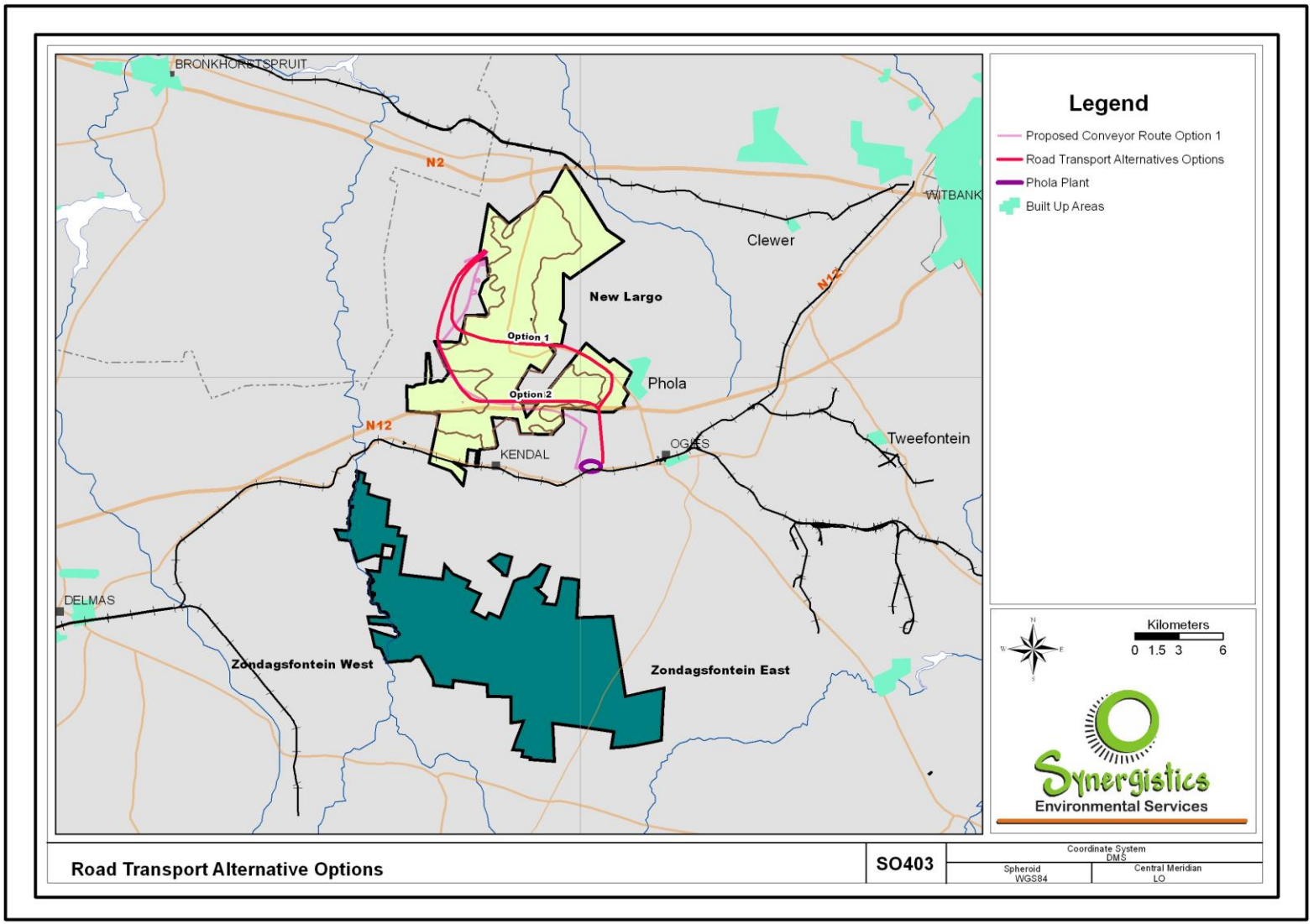

Figure 4-2: Road transport alternative options

4.2 Alternative Conveyor Corridors

Three alternative corridor routes for the conveyor were originally identified. The corridor routes are illustrated in Figure 1-3.

4.2.1 Proposed Corridor (Corridor 1 - Blue Route)

The proposed corridor takes the Phola-Kusile Coal Conveyor across the southern section of the AAIC New Largo prospecting right area along the N12 highway – thus along an area where coal resources are already sterilised by other east-west running linear infrastructure.

The route starts at the Phola Coal Processing Plant in the south, running in a northerly direction towards the N12, where-after it will turn west to run parallel to the N12. The initial alignment was to the north of the N12 but due to the implications of the conveyor route crossing and thus sterilising the mineral resource area of AEMFC, an alternative alignment along the south of the N12 was identified.

After the route crosses the N12, the route will turn northwest until it reaches the western perimeter of the AAIC prospecting area. From here it will run in a north-easterly direction until it reaches the stockyard near the Kusile Power Station.

This route crosses land owned by Anglo Operations Limited, Ingwe Surface Holdings, Truter Boerdery, Bronlaw Properties, South African National Roads Agency Limited (SANRAL), Waterfontein Boerdery, Frazer Alexander Coal, Eskom Holdings Ltd and privately owned farms. From south to north it runs across the farms Smaldeel IS, Bankfontein 216 IR, Vlakfontein 569 and Klipfontein 568 JR.

4.2.2 Alternative Corridor (Corridor 2 - Red Route)

Corridor 2 takes the Phola-Kusile Coal Conveyor around the southern and western perimeter of the AAIC New Largo prospecting rights area, thus avoiding this area completely. It starts at the Phola Coal Processing Plant in the south, running westwards parallel to the R555 where-after it will follow the existing powerline servitude northwards. After the route crosses the N12, it will turn in a north-easterly direction until it reaches the coal stockyard near the Kusile Power Station.

This route runs over land owned by Anglo Operations Limited, Truter Boerdery, Ferret Coal, Homeland Mining and Energy SA, Shanduka Coal (Pty) Ltd, SANRAL, Eskom Holdings Ltd and privately owned farms. From south to north it runs across the farms Bankfontein 216 IR, Heuvelfontein 215 IR, Van Dyksput 214 IR, Dwaalfontein 565 JR and Klipfontein 566 JR.

4.2.3 Alternative Corridor (Corridor 3 - Purple Route)

The first section of this corridor is similar to corridor 2, thus taking Phola-Kusile Coal Conveyor around the southern and western perimeter of the AAIC New Largo prospecting rights area. It starts at the Phola Coal Processing Plant in the south, running westwards parallel to the R555. After the route crosses the N12, the route will turn in a north-easterly direction until it reaches the coal stockyard near Kusile.

The route runs over land owned by Anglo Operations Limited, Truter Boerdery, Ferret Coal, Homeland Mining and Energy SA, Shanduka Coal (Pty) Ltd, SANRAL, Eskom Holdings Ltd and privately owned farms. From south to north it runs across the farms Bankfontein 216 IR, Heuvelfontein 215 IR, Van Dyksput 214 IR, Dwaalfontein 565 JR and Klipfontein 566 JR.

4.2.4 Synthesis and Ranking of Alternative Conveyor Corridors

Development Alternatives	Corridor 1 (Blue Route) **PROPOSED CORRIDOR**	Corridor 2 (Red Route)	Corridor 3 (Purple Route)
Ranking of Options	1	Discarded. Not Feasible.	Discarded. Not Feasible.

The blue route corridor was identified as the preferred route from an environmental viewpoint. The costs of the three route corridors are not significantly different and therefore are not the main decision-making factor. The decision to adopt the blue route corridor as the proposed option was therefore mainly based on environmental grounds such as:

- Minimising the sterilisation of prospecting and mining rights held by external parties and not by AAIC.
- Minimising alignments over previously mined areas.
- Minimising alignments over critical biodiversity areas.
- Minimising stream and wetland crossings.
- Minimising alignments over private land and disruption to landowners (veldt fires, theft, security, movement, agricultural practices).
- Minimising impacts on human settlements.

At the public meetings on 22 and 23 March 2011, the public agreed that the Blue Route Corridor be adopted and that the Red and Purple Route Corridors be discarded (Appendix C6) and list of issues and responses in Section 6.2.

4.3 Alternative Conveyor Alignments Along the Proposed Conveyor Corridor

Once the Blue Conveyor Corridor was identified as the proposed conveyor corridor (as described in Section 4.2.4), various conveyor route alternatives were investigated along the proposed conveyor corridor. These are discussed in a series of tables below.

Table 4-1: Evaluation of Alternative Route Options for Conveyor Flights 1 and 2

PHYSICAL PROPERTIES	PROPOSED ROUTE (OPTION 1)	ROUTE OPTION 2	ROUTE OPTION 3	ROUTE OPTION 4
Refer Figure 1-2	Pink Route (Curved Route Flight 1 & 2) *Refer Figure 3-3 and Figure 3-4*	Yellow Route (Western Route Flight 1 & 2) *Refer Figure 3-3 and Figure 3-4*	Orange Route (Eastern Route Flight 1 & 2) *Refer Figure 3-3 and Figure 3-4*	Green Route (Northern Route) *Refer Figure 3-3 and Figure 3-4*
General description.	Start at Phola Coal Processing Plant. From TS1 it follows the Eskom power line servitude north to a point ~1.3 km south of the N12 at TS2. From here the second flight curves north-westwards towards the N12 highway and runs parallel to the highway in a western direction until it reaches TS3 at an existing culvert underneath the N12 just west of the intersection of the N12 and R545 road.	Start at Phola Coal Processing Plant. From TS1 it runs northwards along the boundary of Ferret Coal and Ingwe to TS3 just south of the N12 highway. From here the second flight runs west and remains parallel to the N12 highway until it reaches TS3 at an existing culvert underneath the N12 just west of the intersection of the N12 and R545 road.	Start at Phola Coal Processing Plant. From TS1 it follows the Eskom power line servitude north to just south of the N12 at TS2. From here the second flight runs west and remains parallel to the N12 highway until it reaches TS3 at an existing culvert underneath the N12 just west of the intersection of the N12 and R545 road.	This option involves a route running northwards (from Option 2) to cross the N12 highway, then turning westwards.
Delays to delivery of coal to Kusile.	No known factors to delay project.	Some of the mining areas (Homelands, West Coal, and Shanduka) along this route has not been rehabilitated and won't be rehabilitated for a number of years. This route is therefore unfeasible to supply coal to Kusile at the dates expected by Eskom.	No known factors to delay project.	Requires a new crossing under the N12. Complications with the jacking under road surface could result in construction time delays, which could compromise timeous delivery of coal to Kusile.

PHYSICAL PROPERTIES	PROPOSED ROUTE (OPTION 1)	ROUTE OPTION 2	ROUTE OPTION 3	ROUTE OPTION 4
Landowner consent.	Southern Section Subsequent to an initial objection raised by BECSA about sterilisation of their coal resources, an agreement has been put in place between AAIC and BECSA in which BECSA agreed in principle to a route for the conveyor closely following the existing Eskom 132 kV power line, and on condition that AAIC provides a crossing for BECSA mining equipment.	Unfeasible due to mining areas that have not yet been rehabilitated (Homelands, West Coal, and Shanduka).	Southern Section Subsequent to an initial objection raised by BECSA about sterilisation of their coal resources, an agreement has been put in place between AAIC and BECSA in which BECSA agreed in principle to a route for the conveyor closely following the existing Eskom 132 kV powerline, and on condition that AAIC provides a crossing for BECSA mining equipment.	A route north of the N12 would impact significantly on AEMFC (Vlakfontein) mining areas and was regarded as unfeasible by AEMFC. AEMFC requested the route be moved to the south of the N12 – see Option 1 to 3.
	Northern Section Discussions underway with Truter Boerdery Trust regarding compensation for impact on agricultural use of the land. Compensation is likely to be in the form of a land swap.		Northern Section Discussions underway with Truter Boerdery Trust regarding compensation for impact on agricultural use of the land. Compensation is likely to be in the form of a land swap.	
Total footprint area of impact.	Smallest footprint area affected, shortest route.	Second largest footprint area.	Largest footprint area.	Similar to Option 2.
Impact on dams, wetlands and streams. (see Figure 5-5 and Figure 3–1)	Biggest impact on wetlands (HGM-1) of the four options.	Does not impact on streams and wetland (HGM—1) affected by Option 1.		
	This route was identified as an alternative to Option 3 in order to avoid streams and large wetland (HGM-2) areas further north and along the N12 (Figure 5-5).	Does not impact on streams and wetlands to the east affected by Option 3.	Not recommended as this route impacts on a number of streams and wetlands (HGM-2) in the area to the south of the N12, in the area east of Option 1 and 2 (Figure 5-5).	Does not impact on streams and wetlands to the east affected by Option 3.
	Smallest impact on hydro-geomorphic unit 3 (HGM) of the four options, as the line is located further south and along the edge of the wetland.	Bigger impact on HGM-3 than Option 1, as these routes run through the centre of the wetland and for a longer distance.		Biggest impact on HGM-3 of the four options, as the line runs through the centre of the wetland and for a much longer distance than options 2 and 3 (Figure 5-5).
Ecological sensitivity.	No notable difference between the impacts along the different route options.			Not assessed as route was regarded as unfeasible.

PHYSICAL PROPERTIES	PROPOSED ROUTE (OPTION 1)	ROUTE OPTION 2	ROUTE OPTION 3	ROUTE OPTION 4
Impact on cultural and heritage resources.	No impacts on known heritage sites or graves.			
Alignments along existing linear infrastructure and disturbed areas.	No notable difference between the occurrences of infrastructure crossings along the different route options.			Impact on existing infrastructure located to the north of the N12.
Cost of construction.	Lowest cost.	Second highest cost.	Highest cost.	Similar to Option 2.
Economic impact on affected properties:	No notable difference between the impacts along the different route options.			Not assessed as route was regarded as unfeasible.
Visual impacts.	Second lowest impact significance. This is due to the route option following a longer distance in an existing utilities corridor than route Options 2 and 4.	High impact significance. This is due to the route option running through green fields and following a shorter distance in an existing utilities corridors than route options 1 and 3.	Lowest impact significance. This is due to the route option following the longest distance in an existing utilities corridor of all the route options.	Similar to Option 2.
Sterilisation of coal reserves and avoid future opencast mining areas.	Affects mining activities of BESCA. Impact minimised by keeping the route as close as possible to the Eskom 132kV power line. A short section of the conveyor runs across AEMFC (Vlakfontein) and will affect a small section of their coal reserve. AAIC and AEMFC is in the process to discuss compensation in the form of a like for like coal reserve swap. AAIC has completed geological drilling on a potential area for the swap.	Affects mining areas controlled by three mining houses (Homelands, West Coal, and Shanduka) and is regarded as unfeasible. Affects the same section of AEMFC (Vlakfontein) as for option 1.	Affects mining activities of BESCA. Impact minimised by keeping the route as close as possible to the Eskom 132kV power line. A short section of the conveyor runs across AEMFC (Vlakfontein) and will affect a small section of their coal reserve. AAIC and AEMFC is in the process to discuss compensation the form of a like for like coal reserve swap. AAIC has completed geological drilling on a potential area for the swap.	A route north of the N12 would impact significantly on AEMFC (Vlakfontein) mining areas and was regarded as unfeasible by AEMFC. AEMFC requested the route be moved to the south of the N12 – see Options 1 to 3.

PHYSICAL PROPERTIES	PROPOSED ROUTE (OPTION 1)	ROUTE OPTION 2	ROUTE OPTION 3	ROUTE OPTION 4
RANKING AND ENVIRONMENTALLY PREFERRED ROUTE OPTION	From an environmental point of view, Option 1 is preferred, mainly due to the following: • It presents the smallest total footprint area of impact. • It has the least impact on streams and large wetland areas near the N12. • The route option follows a longer distance in an existing utilities corridor (the N12 and 132 kV power line), and thus has a lower visual impact significance and the least impact on sterilisation of coal reserves.			
	1	**3**	**2**	**3**
	Environmentally Preferred Route.			
AAIC PROPOSED OPTION	**AAIC Proposed Route**	**Unfeasible**	**Not preferred**	**Unfeasible**

Table 4-2: Evaluation of Alternative Route Options for Conveyor to cross N12 Highway

PHYSICAL PROPERTIES	PROPOSED ROUTE (OPTION 1)	JACKING UNDER N12 (OPTION 4)
Figure 1-2 and Figure 3-5	Pink Route (Figure 3-5) (Old Transnet cutting under N12 highway – Flight 3)	Green Route (Figure 3-5) (Alternative crossing of N12 along Option 4)
General description.	The third flight from TS3 to TS4 is a short section passing perpendicular south to north under the N12 through an existing, unused railway culvert, directly west of the intersection between the N12 and the R545 road.	After this route option crosses the N12 highway perpendicular south to north, it curves westwards around the intersection of the N12 highway and the R545 road, running parallel to the highway until it reaches flight 4.
Financial and technical.	The Phola-Kusile Coal Conveyor has to cross the N12 highway. This option makes use of an old unused Transnet railway. Costs reductions due to use of existing unused crossing. Technically this option is preferred as it avoids jacking of a new crossing underneath the N12.	More expensive due to new crossing needed underneath the N12. Jacking underneath the N12 technically difficult.
Delays to delivery of coal to Kusile.	No known factors to delay project.	Requires a new crossing underneath the N12. Complications with the jacking under road surface could result in construction time delays, which could compromise timeous delivery of coal to Kusile.
Alignments along existing linear infrastructure	Uses existing railway culvert and minimises potential impacts on the N12.	Risks to N12 during jacking process.

PHYSICAL PROPERTIES	PROPOSED ROUTE (OPTION 1)	JACKING UNDER N12 (OPTION 4)
and disturbed areas.		
Discussion of potential environmental impacts.	Does not impact on streams and wetlands that are affected by Option 4.	High impact on wetland HGM 3, as the line runs through the centre of the wetland and for a long distance (Figure 5-5).
Ecological sensitivity.	Moderate sensitivity areas along the route option.	Very high sensitivity areas along the route option.
Economic impact on affected properties:	Medium impact on affected property and farming activity.	Not assessed as route was regarded as unfeasible.
Visual impacts.	Low impact significance. This is due to the route option following its entire distance in an existing utilities corridor.	High impact significance. This is due to the route option running through green fields and following a shorter distance in an existing utilities corridors.
RANKING AND ENVIRONMENTALLY PREFERRED ROUTE OPTION	From an environmental point of view, Route Option 1 is preferred due to the following: • No impacts on dams, wetlands and/ or streams due to no crossings occurring along the route; and • Less ecological sensitive areas along the route option. • Medium economic impact on affected property and farming activity. • Route option follows its entire distance in an existing utilities corridor, therefore lower visual impact significance and minimised impact on sterilisation of coal reserves.	
	1	**2**
	Environmentally Preferred Route	
AAIC PROPOSED OPTION	**AAIC Proposed Route**	**Unfeasible**

Table 4-3: Evaluation of Alternative Route Options for Conveyor Flights 4 and 5

PHYSICAL PROPERTIES	PROPOSED ROUTE (OPTION 1)	ROUTE OPTION 5	ROUTE OPTION 6
Refer Figure 1-2, Figure 3-6 and Figure 3-7	Pink Route (Figure 3-6 and Figure 3-7)	Black Dashed Route (Figure 3-6 and Figure 3-7)	Brown Dashed Route (Figure 3-6 and Figure 3-7)
General description.	The fourth flight from TS4 to TS5 curves away from the N12 highway in a north-western direction in such a way as to avoid the western side of the coal reserve. From here the fifth flight s-curves in a north-eastern direction towards the New Largo distribution bin until it reaches TS6.	The fourth flight from TS4 to TS5 curves away from the N12 highway in a north-western direction in such a way as to avoid the western side of the coal reserve. From here the fifth flight s-curves in a north-eastern direction towards the New Largo distribution bin until it reaches TS6.	The fourth flight from TS4 to TS5 curves away from the N12 highway in a north-western direction in such a way as to avoid the western side of the coal reserve. From here the fifth flight heads straight in a north-eastern direction towards the New Largo distribution bin until it reaches TS6.

PHYSICAL PROPERTIES	PROPOSED ROUTE (OPTION 1)	ROUTE OPTION 5	ROUTE OPTION 6
Technical design considerations.	Two flights between TS4 and TS6.	Three flights between TS4 and TS6.	Two flights between TS4 and TS6.
	S-curved shape which is a complex design and therefore less desirable, due to more pronounced elevation changes (higher density of contours in regions along route).		Straight lined shape, which is a simpler design and therefore more desirable, due to less pronounced elevation changes (lower density of contours in regions along route).
	Additional gantries of ~ 150 m required for steep gradients along horizontal curves.		Construction of shorter bridges.
Delays to delivery of coal to Kusile.	Longer construction time.		Shorter construction.
Landowner consent.	<u>Southern Section</u> No notable difference between land ownership along the different route options.		
	<u>Northern Section</u> No intersection of Eskom farm and dwellings, runs along the servitude between Eskom and privately owned land. Least general encroachment upon Eskom or private property.		<u>Northern Section</u> Intersection of Eskom farm and dwellings and ~ 80% lies on land owned by Eskom.
Total footprint area of impact.	No notable difference between the total footprint area along the different route options.		
Impact on dams, wetlands and streams. (see Figure 5-5 and Figure 3–1)	No notable difference between the impacts on HGM-4 to HGM-6 and HGM-8 to HGM-13, as all three routes run through these wetlands and intersects dams.		
Ecological sensitivity.	No notable difference between the impacts along the different route options.		
Impact on cultural and heritage resources.	No notable difference between the impacts on known heritage sites or graves.		
Alignments along existing linear infrastructure and disturbed areas.	No notable difference between the occurrences of infrastructure crossings along the different route options.		
Cost of construction.	High cost.		Lowest cost.
Economic impact on affected properties.	No notable difference between the impacts along the different route options.		
Visual impacts.	No notable difference between the impacts along the different route options.		
Sterilisation of coal reserves and avoid future opencast mining areas.	No notable difference in coal sterilisation by the different route options.		
RANKING AND ENVIRONMENTALLY PREFERRED ROUTE OPTION	From an environmental point of view, Route Option 1 is preferred due to the following: • No intersection of Eskom farm and dwellings, runs along the servitude between Eskom and privately owned land. Least general encroachment upon Eskom or private property.		
	1	**2**	**3**
	Environmentally Preferred Route		
AAIC PROPOSED OPTION	**AAIC Proposed Route**		

4.4 Alternative Water Supply Options

The following water supply options to supply the Phola-Kusile Coal Conveyor were investigated:

Option 1: Water supplied by Eskom's Kusile Power Station.

Option 2: Water supplied by the Phola Coal Washing Plant.

Option 3: Water supply from municipality.

Option 4: Water abstracted from existing farm dams, springs and boreholes in the area.

Option 5: Treatment of excess water from flooded old underground mine workings that currently decants to surface or is pumped to a nearby pan on farm Klipfontein 566 JR.

AAIC's proposed option, which is also the environmentally preferred option, is Option 5 – to treat excess water from flooded old underground mine workings found in the area. This excess mine water currently decants to the surface and/or is pumped into the nearby pan.

Based on groundwater monitoring conducted between 2006 and 2011, it is estimated that ~1.5 Mℓ/day of water is generated in the old underground workings (pers. Comm. Jaco van den Berg, JMA groundwater specialist responsible for the ground water monitoring programme for AAIC). Limiting the abstraction and treatment to 1.5 Mℓ/day will avoid aggravating the risk of spontaneous combustion in the mine workings due to the lowering of the water table.

At the water focus meeting and the authorities meeting that were held as part of the New Largo Colliery EIA process, there was general support for the installation of a mobile water treatment plant to treat water from the old underground mine workings. As part of the proposed New Largo Colliery project, a further water treatment plant is being planned to eventually treat the remainder of the underground mine water and water generated at the proposed new mine.

The impacts of the mobile plant and associated wastes were assessed in this EIA for the Phola-Kusile Coal Conveyor and discussed in the scoping assessment for the New Largo Colliery. It was found that the mobile water treatment plant will have positive impacts on the quality of the excess water from the old underground mine workings that currently decants or is pumped to a nearby pan, and that it would have minimal impact on other environmental components due to its small footprint and strict engineering design controls for management of wastes associated with the treatment plant.

Environmentally Preferred Route	**Option 5**	**Treatment of excess contaminated water from flooded old underground mine workings that currently decants to surface or is pumped to a nearby pan on farm Klipfontein 566 JR.**
AAIC Proposed Route	**Option 5**	**Treatment of excess contaminated water from flooded old underground mine workings that currently decants to surface or is pumped to a nearby pan on farm Klipfontein 566 JR.**

4.5 Route Alternatives Suggested by Specialists

4.5.1 Economic Specialist Study Route Realignment Suggestion

The economic specialist report suggested an alignment, as presented in Appendix O, to minimise fragmentation of properties. This route follows property boundaries but would result in numerous additional transfer stations. There will be significant additional costs involved, the construction period would be much longer and all the impacts associated with a transfer station would be repeated at each new transfer station, including dust, noise, risk coal spills and thus the need for pollution control structures and evaporation dams, which it itself increases the footprint of impacts. The Environmental Assessment Practitioner is thus of he opinion that, although this suggested conveyor alignment would avoid fragmentation of farm portions, form an integrated environmental approach, this route suggestion is not desirable.

4.5.2 Wetland Specialist Study Route Realignment Suggestion

4.5.2.1 First Section of Flight 4 Moved Northwards

The wetland specialist (Appendix E) suggested that the first section of flight 4 be moved northwards out of the streambeds along the N12, where the conveyor effectively follows the streambed for more than a kilometre. The engineering design in this area involved to long environmental gantries to span across the streambeds. Moving the conveyor northwards would sterilise coal with the New Largo mining right area. AAIC maintains that this move if thus not feasible.

4.5.2.2 Re-Alignment of the Service Road at two Wetland Areas

The wetland specialist found that the biggest impact on wetlands is in fact due to the service road. If the service round can be moved northwards, the majority of the direct impacts on the streambeds and wetlands can be avoided. In preliminary discussions between the engineering team, the wetland specialist and the Environmental Assessment Practitioner, the re-alignment of the service along the start of flight 4 (near wetland HGM-5 as depicted on Figure 1-3, Figure 5–5 and Figure 3-6) as well as well as long the last section of flight 2 (near wetland HGM-3 as depicted on Figure 1-3, Figure 5–5 and Figure 3-4) seemed to be feasible to minimise the impact on these two wetland areas.

The final details will be determined during follow-up discussions and the outcome of these discussions will be reported on in the final EIA. The commitments to involve the wetland specialist in the designs of stream and wetland crossings have been incorporated into the EMP Section on Wetlands and Watercourses.

4.5.3 Ecological Specialist Study Route Realignment Suggestions

Two suggestions were made two suggestions for conveyor route alignments.

4.5.3.1 First Section of Flight 4 Moved Northwards

The ecological team (see Appendix D) also suggested that the first section of flight 4 be moved northwards out of the streambeds along the N12 – this is similar to the suggested re-alignment made by the wetland specialist (as above for details).

4.5.3.2 Re-Alignment of Flight 5

The ecological team (see Appendix D) also suggested that flight 5 be diverted around the east of wetlands HGM-10 and HGM-11 as depicted on Figure 1-3, Figure 5–5 and Figure 3-4. This diversion will require an additional transfer station and AAIC therefore maintains that this option is not feasible.

5. Description of the Affected Environment

5.1 Physical Environment

5.1.1 Climate

5.1.1.1 Temperatures

The location of the Eskom monitoring station (Kendal 2) is shown in Figure 5-1. Annual average maximum, minimum and mean temperatures for Kendal 2 are given as 26°C, 10°C and 16°C, respectively, based on the 2005-2009 records. Average daily maximum temperatures range from 30°C in December, January and February to 20°C in June, with daily minima ranging from 15°C in January and December to 3°C in July.

Table 5-1: Annual Temperatures in Degrees Celsius (Kendal weather station, 2005-2009)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
Minimum	15	14	12	9	6	4	3	6	10	13	14	15
Mean	21	20	18	15	12	10	10	13	18	19	20	21
Maximum	30	30	27	25	22	20	21	24	29	29	28	30

5.1.1.2 Precipitation

Long-term monthly average rainfall figures for various stations within the Witbank region are given in Table 5-2. Long-term average total annual rainfall is in the range of 730 mm to 750 mm. Rain falls mainly in summer from October to April, with the peak being in January for the region.

Table 5-2: Long-term monthly rainfall figures (mm) for various stations within the Witbank region

Station	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
Middelburg (1904-1950)	132	103	88	42	19	7	9	8	22	63	124	118	735
Bethal (1904-1984)	134	94	78	46	19	7	8	10	25	78	128	120	747

5.1.1.3 Wind Patterns

As depicted on the wind roses below, the predominant wind direction within the New Largo region is from the west-northwest (Kendal 2). Less frequent winds are from the southern sector. During daytime there is an increase in winds from the west-northwest (Kendal 2) while at night-time the frequency of winds increase from the east-southeast. Night-time conditions also reflect a decrease in wind speeds and an increase in calm conditions.

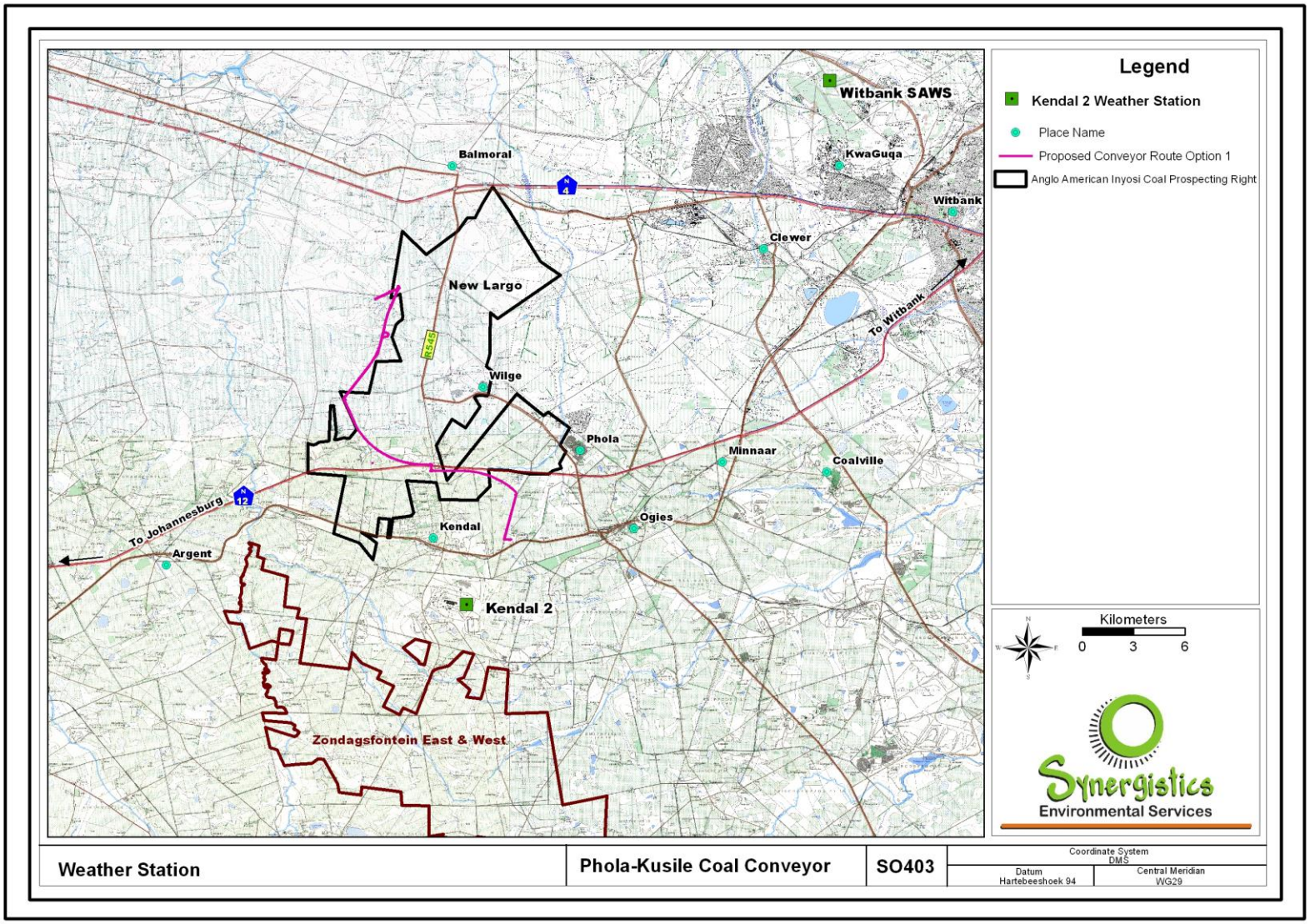

Figure 5-1: Location of the Kendal 2 meteorological data set in relation to the proposed conveyor development.

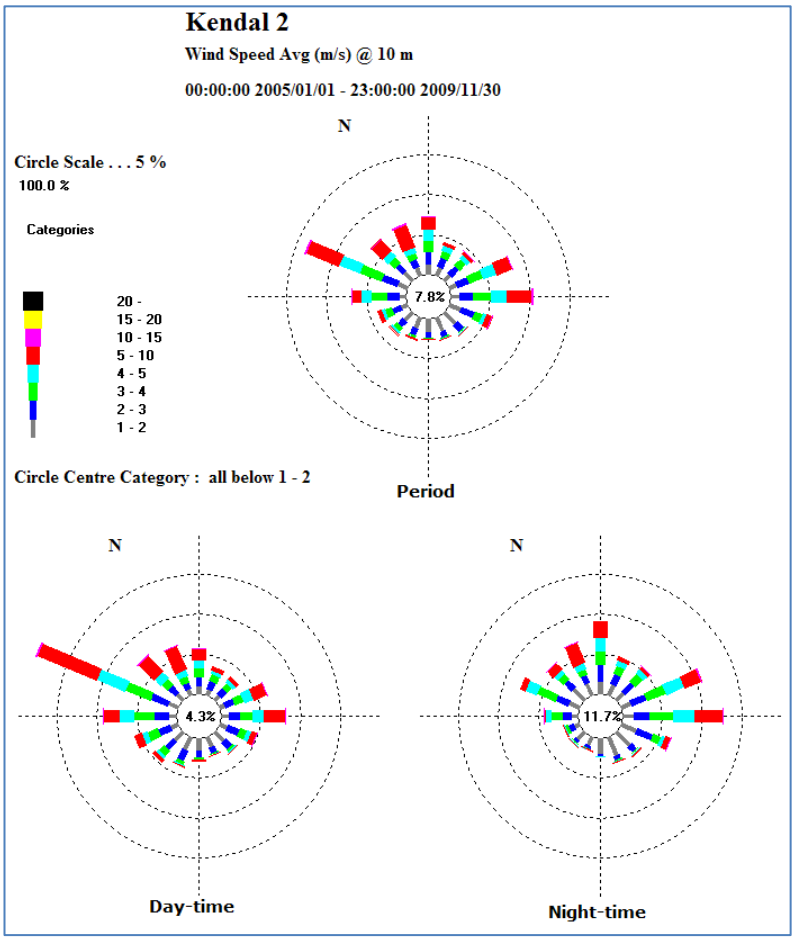

Figure 5-2: Annual average and day/night time wind roses (Kendal 2 weather station)

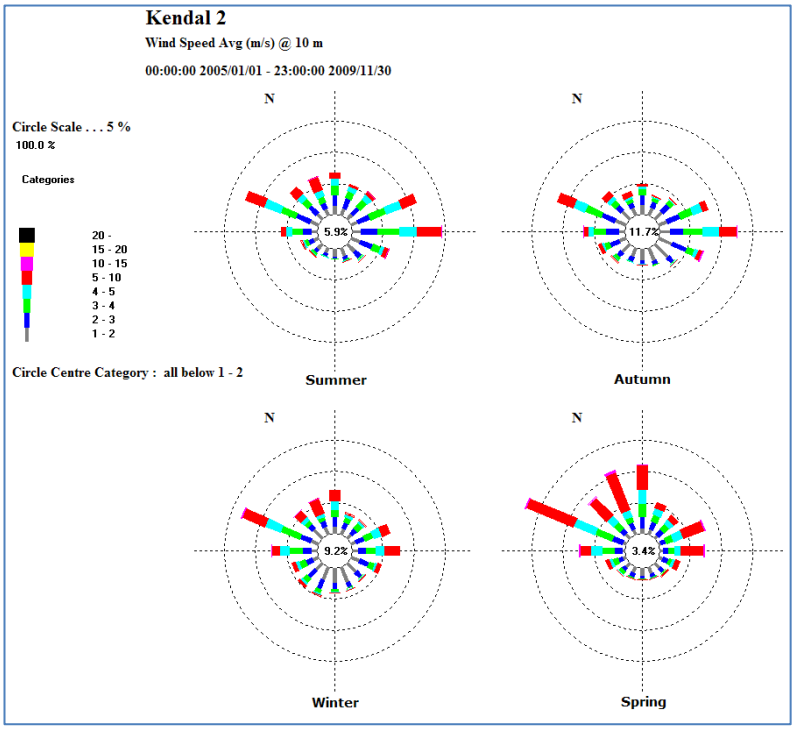

Figure 5-3: Seasonal average wind roses (Kendal 2 weather station)

5.1.2 Topography

The study area comprises of moderately flat to undulating plains with pans. The area is bisected by moderately wide to wide open drainage ways and non perennial streams.

5.1.3 Soils

A number of different soil forms are known to occur across the study area and along the alternative conveyor routes. The materials vary in both physical and chemical composition, based predominantly on the parent materials from which the soils have formed, with additional inputs and complications imprinted by the geomorphology of the area, varying ground roughness, slope and attitude of topography, with the climatic signature of the variable and seasonal changes. It is the complexity of the geomorphological systems that have resulted in a variety of soil forms and families found in the area. The sensitive nature of some of these soils will need to be considered if they are to be disturbed or impacted by the proposed conveyor system.

The variations in soil form are characterized by differences in the texture (grain size), colour, soil structure to some degree, and the effective rooting depths that result from the depth to bedrock and or inhibiting layers that occur. The soils range from deep sandy loams and silt loams with little to no structure, to fine and possibly medium grained sandy clay loams and more structured soils that are associated with the more basic lithologies. Based on available desktop data, coarse textured soils are expected to dominate over the plains and fine textured soils expected to be dominant in the low-lying areas.

The study area has been impacted to some extent by the commercial farming that has been practiced for a number of generations on significantly large sections of the conveyor route alternatives. These impacts will have had some effect on the soil chemistry and to a limited extent on the land forms that have developed.

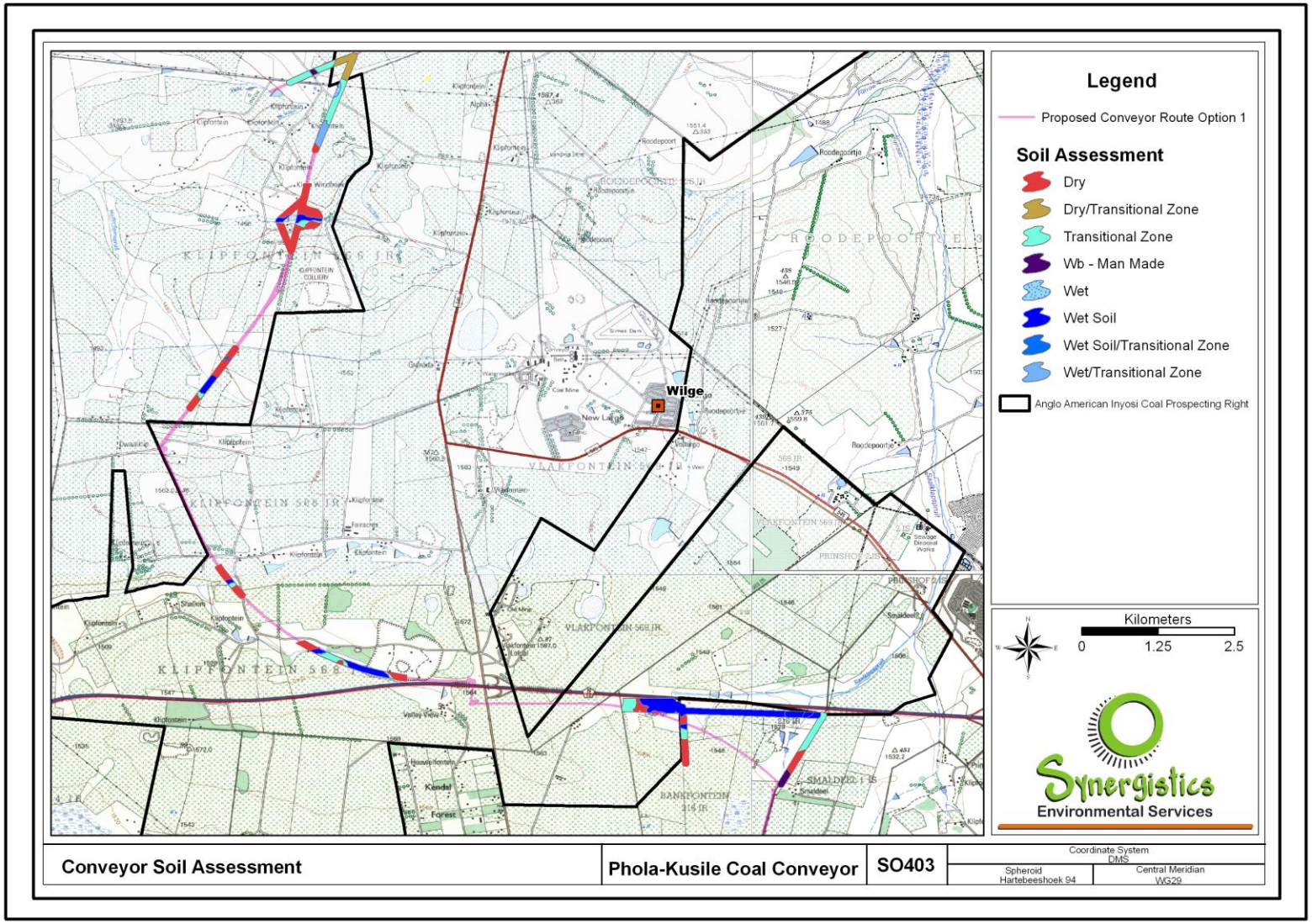

Figure 5-4: Soil Sensitivity Map along AAIC proposed conveyor route

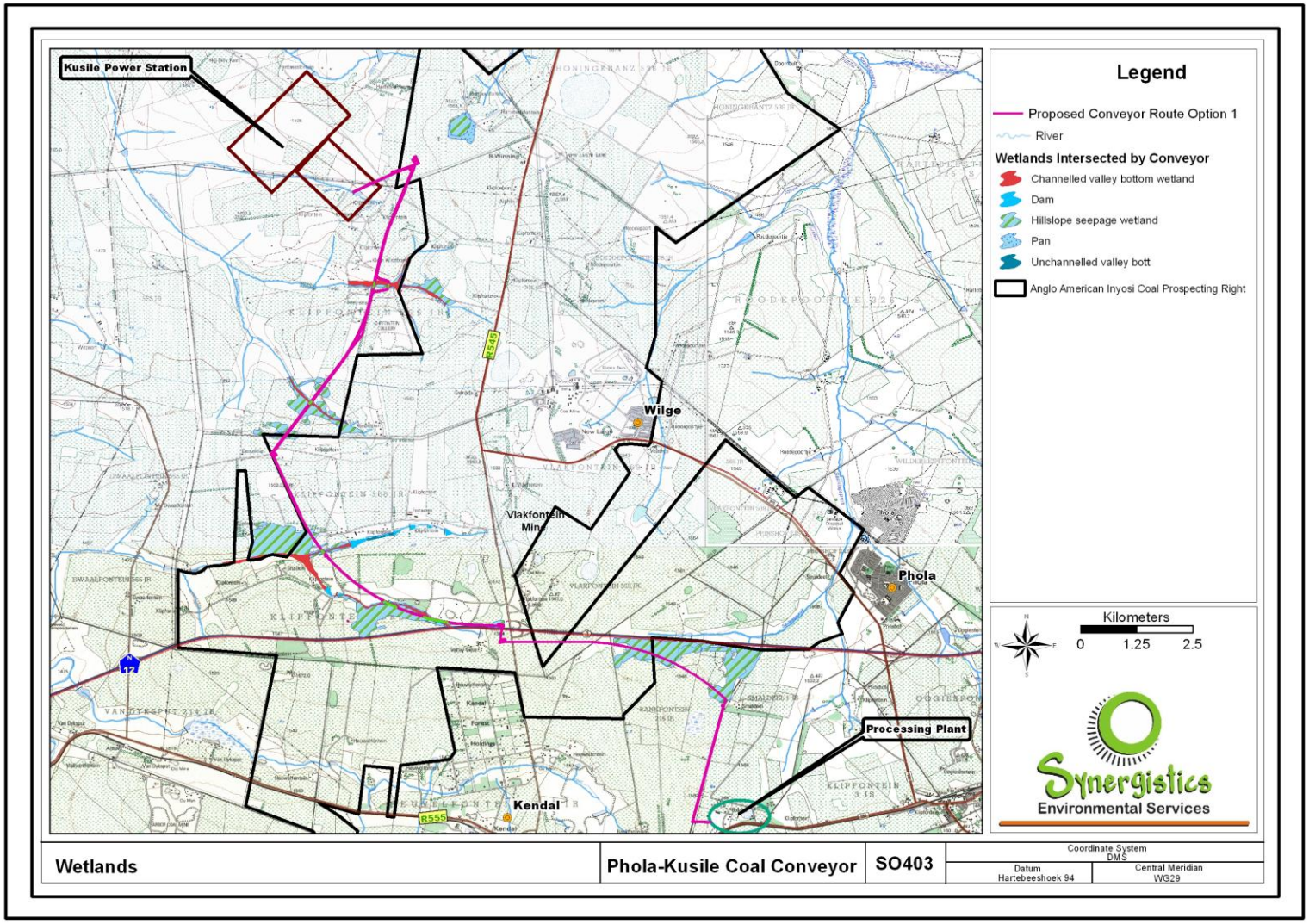

Figure 5-5: Wetland delineation along AAIC proposed conveyor route, showing floodlines and proposed positions of environmental gantries to cross stream channels

5.1.4 Geology

The study area falls within the north-eastern part of the Witbank Coalfield and all the conveyor routes intersect coal resources along certain sections of the routes.

The Witbank Coalfield is underlain by pre-Karoo rocks, mainly Bushveld Complex and Pretoria Group volcanics. Glaciation events resulted in the deposition of tillite (Dwyka Formation) on the basement rocks over most of the area. Within the Karoo Sedimentary Sequence, the Ecca Group rest on top of the Dwyka Formation. In the Witbank coalfield the coal-bearing Vryheid Formation occurs at the bottom of the Ecca Group conformably to the underlying Dwyka Formation.

The Dwyka Formation consists of tillite, siltstone and sometimes a thin shale development. The Ecca Group consists predominantly of sandstone, siltstone, shale and coal. The Vryheid Formation in the Ecca Group contains five bituminous coal seams, numbered as No. 1 to No. 5 from bottom to top. The No. 2, No. 4 and No. 5 seams are the most economical coal seams in the Witbank Coalfield.

During the EIA phase, all prospecting and mining right areas will be mapped for consideration during route corridor selection and final route alignment.

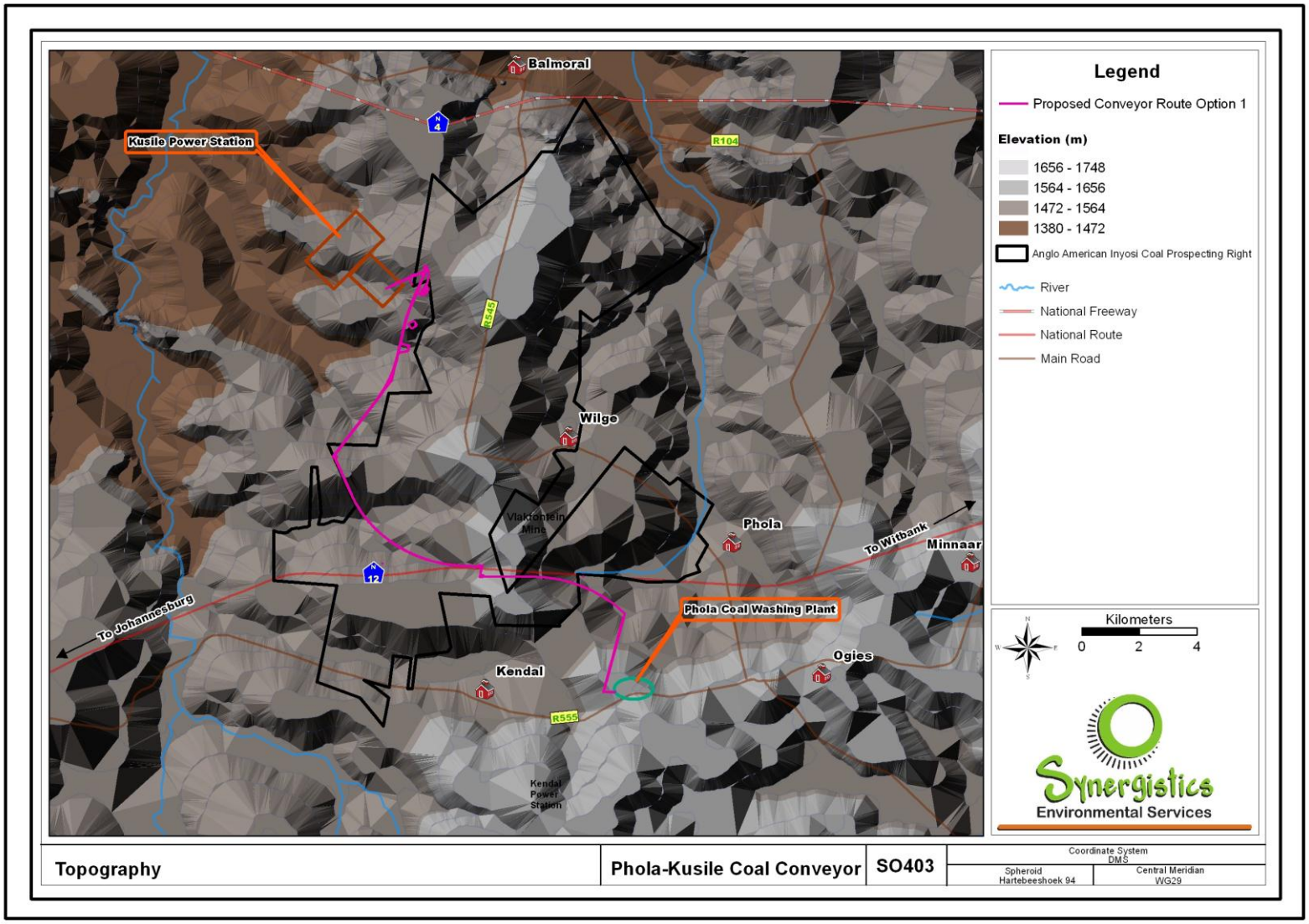

Figure 5-6: Topography

5.1.5 Air Quality

Existing sources of air emissions include the nearby Eskom coal-fired power stations and associated ash disposal facilities, construction activities at Kusile Power Station, industrial developments, blasting and materials transport and handling operations at nearby mines, transportation of coal products, spontaneous combustion associated with old underground coal mining areas and discard (mining waste) disposal facilities, veld fires, vehicle exhaust emissions, household fuel burning and farming (i.e. ploughing) activities.

5.1.6 Surface Water

5.1.6.1 Description of Baseline / Existing Impacts

The Phola-Kusile Coal Conveyor system is situated in the Wilge River catchment area within quaternary catchments B20F of the Limpopo-Olifants primary drainage region. This catchment makes up part of the Loskop Dam catchment.

The Wilge River drains into the Olifants River, which flows to Loskop dam and then through the central part of the Kruger National Park and into Mozambique. It eventually joins the Limpopo River and discharges to the Indian Ocean on the east African coastline.

Surface water downstream of the Phola-Kusile Coal Conveyor System is used primarily for agricultural and livestock watering purposes. There is also a commercial chicken farm (Kendal Poultry), a brick making plant and several other mines around the site using surface water. Other users include mining, the aquatic ecosystem; and informal users of the river (e.g. for washing or drinking purposes). Detailed information on water uses per property is presented in Appendix F.

The receiving water body for the assessment of potential surface water quality impacts of the conveyor system is taken as the Loskop Dam. The use of this dam is motivated on the basis that:

- The proposed conveyor system lies mainly in the Wilge River catchment and the Loskop Dam is downstream of the Wilge River catchment area;
- By implication, the potential impacts on the Loskop Dam will also be included in the impact assessment;
- Beyond the Loskop Dam, the potential impact of the conveyor system becomes extremely small due to the water volumes in the catchment and dilution effects.
- Furthermore, by the time the water reaches Loskop Dam, it is required to be suitable for use for all of the expected uses (drinking water, agricultural, industrial and aquatic ecosystems). Thus, by achieving compliance in terms of these uses, no additional impacts are expected downstream of Loskop Dam. The receiving water body is relevant only in so far as it defines the aerial extent of the catchment to be considered in the impact assessment, and described in the baseline study.
- In terms of impact assessment, the total area affected by the proposed conveyor system is small compared to the Loskop Dam catchment. The proposed conveyor footprint is some 17 km^2, compared to a catchment of 12 285 km^2 for Loskop Dam (or some 0.14% of the area).
- The MAR for Loskop Dam is some 384 x 10^6 m^3 (31 mm), while the MAR for the project area is estimated at 0.543 x 10^6 m^3 (32 mm).

Mean annual runoff per sub-catchment is tabled below.

Table 5-3: Mean Annual Runoff (MAR) for the Phola-Kusile Coal Conveyor

Node	Catchment Area (km^2)	MAR ($x10^6m^3$)	% of MAR at Loskop Dam
NL20	27.9	1.00	0.26
NL21	12.8	0.46	0.12
NL22	9.1	0.33	0.09
NL32	5.4	0.19	0.05
NL33	15.3	0.55	0.14

Note: The MAR for Loskop Dam is estimated at 384 x 10^6 m^3.

Dry weather flows (DWF) for sub-catchments are shown below.

Table 5-4: Dry weather flows of the affected rivers at the Phola-Kusile Coal Conveyor

Node	Catchment Area (km^2)	Computed DWF ($x10^6m^3$ per month average)	Computed DWF (l/s per month average)
NL20	27.9	0.02	7.10
NL21	12.8	0.01	3.26
NL22	9.1	0.01	2.32
NL32	5.4	0.00	1.38
NL33	15.3	0.01	3.90

Note: A flow of less than 0,01 x 10^6 m^3 per month probably implies that the river in question dries out completely during the winter months. This correlates to a flow of less than 10l/s

The peak flows calculated using each method were evaluated for each node and a representative value adopted. The 1:20, 1:50, 1:100, 1:250 and Regional Maximum Flood (RMF) for each node, together with catchment areas, are presented in Table 5-5 below.

Table 5-5: Flood peaks and flood volumes for the Phola-Kusile Coal Conveyor System

Node	Recurrence Interval	Flood Peak (m^3/s)	Flood Volume (m^3x10^6)
Node	**Recurrence Interval**	**Flood Peak (m^3/s)**	**Flood Volume (m^3x10^6)**
NL20	1:20 year	101	1.46
	1:50 year	150	2.16
	1:100 year	189	2.73
	1:250 year	232	3.35
	RMF	354	5.11
NL21	1:20 year	61	0.54
	1:50 year	95	0.85
	1:100 year	120	1.07
	1:250 year	144	1.28
	RMF	263	2.34
NL22	1:20 year	54	0.39
	1:50 year	81	0.58
	1:100 year	101	0.73
	1:250 year	123	0.89

Node	Recurrence Interval	Flood Peak (m^3/s)	Flood Volume (m^3x10^6)
	RMF	231	1.67
NL32	1:20 year	87	0.86
	1:50 year	126	1.25
	1:100 year	158	1.57
	1:250 year	188	1.87
	RMF	282	2.80
NL33	1:20 year	87	0.86
	1:50 year	126	1.25
	1:100 year	158	1.57
	1:250 year	188	1.87
	RMF	282	2.80

- **Floodlines**

Floodlines were determined based on the calculated flood peaks at each node. A steady flow, backwater analysis was performed for each stream using the HEC-RAS river modelling system. HEC-RAS was developed by the United States Army Corps of Engineers, and is considered industry standard software for floodline determination in many countries, including the United States, the United Kingdom, Europe, Australia and South Africa.

When determining floodlines, each stream is defined by inputting a number of cross sections along the length of the stream. The mapping data used consisted of 1 metre contour interval digital terrain model (dtm) received from the client in 2007.

It should be noted that the accuracy of the floodlines produced in this study is commensurate with the accuracy of the dtm data provided. With a contour interval of 1 m, the accuracy of the floodlines can be considered to be within 1 m vertically. The floodlines given here are considered suitable for planning purposes only. Where infrastructure is to be located adjacent to streams, the floodlines should be determined more accurately using a digital terrain model (DTM) developed from a field survey at the area of concern.

Floodlines are indicated in Appendix F (Drawing no. C184-00-001).

- **Water Quality**

The Directorate National Water Resource Planning (DNWRP) of the (then) Department of Water Affairs and Forestry (DWAF) developed a water quality management strategy for the Upper and Middle Olifants River catchment, which was published in 2009 (DNWRP, 2009). One of the key elements of this strategy was the development of Receiving Water Quality Objectives (RWQO). Interim RWQO were determined based on the current set of objectives in the Witbank, Klipspruit and Middelburg Dam catchments, which was modified to account for the water quality component of the Ecological Reserve. Where previous objectives were not available, the South African Water Quality Guidelines together with the present water quality status were used to determine RWQO. The set of RWQO determined were interim objectives that will be reviewed once the water quality component of the Ecological Reserve has been updated (in five years' time) (DNWRP, 2009).

The interim RWQO for MU 22 are given in Table 5-6 below. These objectives were used to assess the water quality data collected at the sampling points given in Table 5-7. The locations of the sampling points are indicated in Appendix F. Although a small part of the conveyor system also falls within MU20, it is not considered to be a significant portion and therefore only MU22 guidelines are used. For the detailed surface water quality data, please refer to Appendix F**.**

Table 5-6: Catchment objectives for surface water quality based on the interim RWQO for the Olifants River catchment

Water Quality Variable	Units	MU22 RWQO
Physical		
Conductivity	mS/m	40
Dissolved Oxygen	% Sat	70
pH	-	6.5-8.4
Suspended solids	mg/ℓ	-
Turbidity	NTU	-
Chemical, Inorganic		
Alkalinity	mg $CaCO_3$/l	120
Boron	mg/ℓ	0.5
Calcium	mg/ℓ	25
Chloride	mg/ℓ	20
Fluoride	mg/ℓ	0.5
Magnesium	mg/ℓ	20
Potassium	mg/ℓ	10
Sodium	mg/ℓ	20
SAR	$meql^{0.5}$	1.0
Sulphate	mg/ℓ	60
Total Dissolved Solids	mg/ℓ	280
Chemical, Organic		
Dissolved Organic Carbon	mg/ℓ	10
Metals, Dissolved		
Iron	mg/ℓ	1.0
Manganese	mg/ℓ	0.18
Aluminium	mg/ℓ	0.02
Chromium VI	mg/ℓ	0.05
Plant Nutrients		
Ammonia*	mg/ℓ as N	0.007
Nitrate	mg/ℓ as N	6

Table 5-7: Surface Water Monitoring points relevant to the Phola-Kusile Coal Conveyor System

Monitoring point	Description
NL1	On the Wilge River at a bridge crossing on the R555. This represents the upstream monitoring point for this sub-catchment, as it will not be impacted by the proposed conveyor system.
NL2	On a tributary of the Wilge River.
NL3	On a tributary of the Wilge River.
NL4	On the Klipfonteinspruit (a tributary of the Wilge River).

Monitoring point	Description
NL5	On the Klipfonteinspruit (a tributary of the Wilge River), downstream of NL4.
NL6	On the Klipfonteinspruit (a tributary of the Wilge River), downstream of NL5 and upstream of the confluence of the Klipfonteinspruit with the Wilge River.
NL7	On a tributary of the Wilge River
NL8	On tributary of the Wilge River, downstream of NL7 and upstream of its confluence with the Wilge River.
NL9	On the Wilge River. This represents the downstream monitoring point for this sub-catchment, reflecting the cumulative impact of the proposed Phola- Kusile conveyor system, the proposed New Largo Colliery, the Kusile Power Station and other activities further upstream on the Wilge River.
NL21	Monitors surface water discharge into the Holfonteinspruit, a tributary of the Klipfonteinspruit.
NL22	On a tributary of the Wilge River, upstream of NL7.

The location of these points are indicated on Figure 5-8.

Sampling of these points was done monthly from October 2010 to February 2011, and every second month thereafter (hereafter referred to as “the monitoring period”). Monthly sampling will again be undertaken from October 2011 onwards on the same basis.

In addition, water quality data was also obtained for DWA gauge B2H014 that is located on the Wilge River, downstream of monitoring point NL9 but upstream of the confluence of the Wilge and the Bronkhorstspruit Rivers. Data for the period January 1991 to February 2011 was obtained from the Department’s website.

For maps and graphics depicting water quality data in more detail, refer to Appendix F**.**

Electrical conductivity (EC)

Electrical conductivity (EC) is a measure of the ability of water to conduct an electrical current, which is as a result of the presence of charged ions such as carbonate, bicarbonate, chloride, sulphate, nitrate, sodium, potassium, calcium and magnesium (Appendix F)). It is therefore an indicator of the salinity, or total salt content, of water. Accumulation of salts can influence the potential to use the water downstream by water users such as irrigation for agriculture.

EC levels at the monitoring points on the Wilge River are generally below the interim RWQO for MU22 of 40 mS/m and the target water quality limit (70 mS/m) for domestic use in the SA Water Quality Guidelines. NL1 and NL2 show concentrations above the interim RWQO, but below 70 mS/m. The exception is NL4, which is located on the Klipfonteinspruit, which had elevated concentrations (maximum of 116.7 mS/m and an average of 78.9 mS/m), exceeding the interim RWQO from October 2010 to February 2011. Concentrations have, however, decreased over time but could be seasonal. Mine water from the underground workings of the discontinued New Largo Colliery is pumped to a large pan to the south-east of NL4. The high levels of EC measured at NL4 are attributed to this aspect.

In the Wilge River sub-catchment, NL9 is the most downstream point of the sampling programme, which is downstream of the proposed conveyor system and New Largo Mine, as well as the Kusile Power Station. The EC values at NL9 are low, with an average of 35.4 mS/m, thus meeting the interim RWQO. The poor quality water in the Klipfonteinspruit (as measured at NL4) is therefore diluted with good quality water from upstream. At the DWA monitoring point B2H14 (downstream of NL9), an average EC level of 23.3 mS/m was measured for the period January 1991 to February 2011. The minimum for the period was 10.31 mS/m and the maximum 63.9 mS/m. As indicated by the trend line, the water quality has shown a steady deterioration over time.

The general good water quality of the Wilge River sub-catchment indicates that the impact in the sub-catchment has been limited to date, but that additional salt increases cannot be afforded.

pH

The pH of natural water is a measurement of the acidity/alkalinity and is the result of complex acid-base equilibriums of various dissolved compounds. The pH of most raw water sources is within the range of 6.5 - 8.5 (DWAF, 1996).

pH levels in the Wilge River sub-catchments is largely within the interim RWQO objective for MU22 of 6.5 - 8.4, with the exception of NL21 as can be seen from Figure 5.2.4 (c). Levels between 5.7 and 6.3 have been measured at NL21 on the Holfonteinspruit and there seems to be a decreasing trend. This could be attributed to the decant of mine water on the farm Klipfontein 566 JR, that could occur as a result of previous underground mining activities.

The pH levels at DWA station B2H14 for the monitoring period is within the interim RWQO (the February 2011 pH level was 8.43). An average pH level of 8.0 was measured for the period January 1991 to February 2011. The minimum for the period was 6.43 and the maximum 9.23.

Chloride

Chloride (Cl) is a common constituent in water, is highly soluble, and is typically found in concentrations from a few to several hundred mg/ℓ in fresh water (DWAF, 1996).

Chloride levels in the Wilge River sub-catchments are generally below the interim RWQO of 20 mg/ℓ. At the DWA monitoring point B2H14, an average Cl concentration of 8.49 mg/ℓ was measured for the period January 1991 to February 2011. The minimum for the period was 3.2 mg/ℓ and the maximum 48.97 mg/ℓ. The Cl concentration has shown a steady increase since 1991 as indicated in the time-series graph for gauge B2H014.\

Sulphate (SO_4)

The concentration of sulphates in surface water is typically low (~5 mg/ℓ), although concentrations of several hundred mg/ℓ may occur where dissolution of sulphate minerals or discharge of sulphate-rich effluents takes place (DWAF, 1996). Chemical fallout during rain events in areas where coal burning takes place can result in an increase in the sulphate content of surface water bodies.

The sulphate levels at some of the monitoring points in the Wilge River sub-catchment are slightly elevated above the interim RWQO of 60 mg/ℓ for the MU. Levels at NL4 were significantly elevated between October 2010 and February 2011, with concentrations ranging between 423 and 555 mg/ℓ. Concentrations show a decreasing trend over time, with concentrations of 167.4 mg/ℓ and 16.7 mg/ℓ measured in April 2011 and June 2011 respectively. Mine water from the underground workings of the old discontinued New Largo Colliery is pumped to a large pan to the south-east of NL4. A sample of this pan was taken by J&W during May 2007 and a sulphate concentration of 3139 mg/ℓ was measured. During the wetland assessment undertaken by Wetland Consulting Services (WCS) in 2007, a sulphate concentration of 2941 mg/ℓ was measured in the pan. Furthermore, the sulphate concentration at a sampling point on a seepage wetland draining into the Wilge River was high (874 mg/ℓ) (this sampling point of WCS and NL4 are located in the same vicinity and are close to the pan). Since the composition of the water samples taken at the two points was similar, WCS suggested that the water at the sampling point in the seepage wetland represents decant from the underground workings at the old colliery, which has been diluted and buffered to some extent by interflow (WCS, 2007).

At the downstream point, NL9, which is representative of the cumulative impact up to that point in the sub-catchment, the sulphate level is slightly elevated above the interim RWQO (minimum of 37.9 mg/ℓ, maximum of 74.0 mg/ℓ and mean of 60.5 mg/ℓ). The high levels of sulphate measured on the Klipfonteinspruit at NL4 are therefore diluted by the good quality water from the upper reaches of the Wilge River.

At the DWA monitoring point B2H14, downstream of NL9, an average sulphate concentration of 22.45 mg/ℓ was measured for the period January 1991 to February 2011. The minimum for the period was 4.4 mg/ℓ and the maximum 195 mg/ℓ. As can be seen from the trend line, the sulphate levels has shown a steady increase since monitoring commenced in 1991.

Ammonium (NH_4)

High levels of ammonium indicate pollution with organic waste such as untreated or partially treated sewage, or run-off from agricultural areas due to excessive fertiliser use.

An interim RWQO has not been set for ammonium (NH_4), but an objective of 0.007 mg/ℓ has been set for ammonia (NH_3) for MU22. Ammonia occurs in equilibrium with the ammonium ion in solution and the position of equilibrium is determined by pH and temperature and to a lesser extent by the total dissolved salts. Ammonia (NH_3) is highly toxic to the aquatic environment, especially fish.

Ammonium levels in the Wilge River and its tributaries are generally low, with occasional increased levels up to as high as 1.0 mg/ℓ and 5.4 mg/ℓ.

At the DWA monitoring point B2H14, an average ammonium concentration of 0.02 mg/ℓ was measured for the period January 1991 to February 2011. The minimum for the period was 0.015 mg/ℓ and the maximum 0.59 mg/ℓ. No specific trend has been observed over time.

Nitrate

Typical concentrations of nitrate in un-polluted fresh water are below 5 mg/ℓ. Sources of nitrogen in surface water include the oxidation of plant and animal debris, discharges from sewage treatment works, effluents from food-related industries, as well as runoff from agricultural activities (DWAF, 1996).

The nitrate levels in the Wilge River sub-catchment is generally well below the interim RWQO of 6 mg/ℓ. The exception is the February 2011 sampling results for monitoring points NL1 to NL4 and NL8. No apparent reason for the sporadic increase at these points could be found and it is expected that it is as a result of an analytical error.

At the DWA monitoring point B2H14, an average nitrate concentration of 0.11 mg/ℓ was measured for the period January 1991 to February 2011. The minimum for the period was 0.02 mg/ℓ and the maximum 0.99 mg/ℓ. A slight increase in the nitrate concentration has been observed over time.

Calcium

Calcium occurs naturally in varying concentrations and the concentration in fresh water bodies is typically 15 mg/ℓ (DWAF, 1996).

The measured calcium concentration in the Wilge River and its tributaries are generally either slightly elevated above the interim RWQO of 25 mg/ℓ, or below this level. The only exception is NL4, which showed concentrations between 136.4 mg/ℓ and 204.9 mg/ℓ for the period October 2010 to February 2011, although at a decreasing trend over time. The concentration decreased further to 37.2 mg/ℓ during April 2011 and to 3.2 mg/ℓ during June 2011. The potential impact at NL4 was discussed above.

At the DWA monitoring point B2H14, an average Ca concentration of 16.1 mg/ℓ was measured for the period January 1991 to February 2011. The minimum for the period was 6.145 mg/ℓ and the maximum 48.59 mg/ℓ. As with the other constituents, the water quality has deteriorated over time with respect to calcium concentration.

Aluminium

Aluminium occurs in water either as suspended aluminium minerals or as dissolved aluminium species. The concentration of dissolved aluminium in unpolluted water at neutral pH is 0.005 mg/ℓ or less. In water with a low pH, or where soluble aluminium complexes are present, the dissolved aluminium concentration can rise to high values (DWAF, 1996).

The aluminium concentration in the Wilge River exceeded the interim RWQO of 0.02 mg/ℓ at all the monitoring sites for most of the monitoring period**.** In particular, NL4 of the Klipfonteinspruit (a tributary of the Wilge River) showed an average concentration of 0.79 mg/ℓ during the 2010/11 sampling period and a maximum concentration of 1.39 mg/ℓ measured during February 2011. The impact at NL4 causing the poor water quality has been discussed previously.

It should be noted that the interim RWQO for aluminium is based on the Aquatic Ecological Reserve determined in 2001 (DNWRP, 2009). When the levels are compared to the SA Water Quality Guidelines for irrigation and stock watering, the measured quality is below the target guideline of 5 mg/ℓ. The levels at most of the monitoring points are above the ideal domestic guideline of 0.15 mg/ℓ, but below the acceptable guideline for domestic use of 0.5 mg/ℓ (except NL4).

Iron

Iron (Fe) is the fourth most abundant element, constitutes 5% of the earth's crust and is found in many minerals. Iron can be present in water as dissolved ferric iron (Fe III), as ferrous iron (Fe II) or as suspended iron hydroxides. The concentration of dissolved iron in unpolluted surface water is in the range of 0.001 - 0.5 mg/ℓ (DWAF, 1996).

The interim RWQO for iron was set as 1 mg/ℓ by the DNWRP for MU22. In general, the iron concentration in the Wilge River sub-catchment is below or at this level, or slightly elevated (but below 2 mg/ℓ). NL7 and NL8 had elevated concentrations on several occasions. As with the other constituents, NL4 showed significantly elevated levels (12.15 mg/ℓ and 14.96 mg/ℓ during the February and April 2011 sampling events respectively) and a mean concentration of 4.55 mg/ℓ during the 2010/11 sampling period. The impact at NL4 has been discussed previously.

Magnesium

Typically, the concentration of magnesium (Mg) in fresh water is between 4 - 10 mg/ℓ (DWAF, 1996).

In general, the magnesium concentration in the Wilge River sub-catchment was below the interim RWQO of 20 mg/ℓ, with the exception of NL4 which showed elevated levels from October 2010 to February 2011, with a mean concentration of 22.3 mg/ℓ during the 2010/11 sampling period and with a decreasing trend over time. Elevated levels were also measured at NL1 (57.7 mg/ℓ) during the November 2010 sampling event.

At the DWA monitoring point B2H14, an average Mg concentration of 10.9 mg/ℓ was measured for the period January 1991 to February 2011. The minimum for the period was 3.531 mg/ℓ and the maximum 32.77 mg/ℓ. The Mg levels at this point have also shown a steady increase since monitoring commenced in 1991.

Potassium

Potassium is ubiquitous in the environment and always occurs in water in association with anions such as chloride or sulphate. Typical concentration in fresh water is 2 - 5 mg/ℓ (DWAF, 1996).
An interim RWQO of 10 mg/ℓ has been set for MU22. Levels of potassium in the Wilge River and its tributaries are below the objective.

At the DWA monitoring point B2H14, an average K concentration of 2.84 mg/ℓ was measured for the period January 1991 to February 2011. The minimum for the period was 1.17 mg/ℓ and the maximum 9.15 mg/ℓ. The levels of potassium have remained fairly constant over time and no specific trend is observed.

5.1.6.2 Synthesis of Baseline / Existing Impacts

The Phola-Kusile Coal Conveyor system is situated in the Wilge River catchment area within quaternary catchments B20F of the Limpopo-Olifants primary drainage region. This catchment makes up part of the Loskop Dam catchment.

The Wilge River drains into the Olifants River, which flows to Loskop dam and then through the central part of the Kruger National Park and into Mozambique. It eventually joins the Limpopo River and discharges to the Indian Ocean on the east African coastline.

Surface water downstream of the Phola-Kusile Coal Conveyor System is used primarily for agricultural and livestock watering purposes. There is also a commercial chicken farm (Kendal Poultry), a brick making plant and several other mines around the site using surface water. Other users include mining, the aquatic ecosystem; and Informal users of the river (e.g. for washing or drinking purposes). Detailed information on water uses per property is presented in Appendix F.

The current water quality in the Wilge River sub-catchment has not been impacted to a large extent and generally is within the interim RWQO's for MU22 as developed by the DNWRP. The only exception is the Klipfonteinspruit (at monitoring point NL4), where an impact associated with the decant of mine water from underground workings has been observed. The impact is noticeable in the macro and micro constituents of the water in the Klipfonteinspruit. The high dissolved aluminium values observed at this point is of particular concern. The poor quality water in the Klipfonteinspruit is however diluted with good quality water from reaches further upstream, resulting in water quality at the furthest downstream monitoring point (NL9) which generally is in the order of the interim RWQO for MU22, with the exception of Al which was exceeded on most occasions.

Historical data for DWA gauge B2H014 show a steady deterioration in the water quality in the Wilge River downstream of the proposed conveyor system, the proposed New Largo Mine and the Kusile Power Station. The levels of sulphate, chloride, calcium and magnesium are approaching the interim RWQO set for the management unit. Any further contribution of salt load into the system can therefore not be tolerated.

5.1.7 Groundwater

An assessment of background groundwater quality was conducted in 2006 and was repeated in 2010 and 2011. Typical groundwater qualities are presented below.

Table 5-8: Typical background groundwater quality in the shallow weathered aquifer (2006)

VARIABLE	AVERAGE
pH	6.79
EC (*mS/m*)	14.55
TDS *(mg/l*)	89.97
Ca *(mg/l*)	12.38
Mg *(mg/l*)	5.80
Na *(mg/l*)	9.63
K *(mg/l*)	2.47
Si *(mg/l*)	7.61
T-Alk *(mg/l*)	62.47
Cl *(mg/l*)	4.91
SO_4 *(mg/l*)	5.64
NO_3 *(mg/l*)	0.95
F *(mg/l*)	0.42
Al *(mg/l*)*	0.186
Fe *(mg/l*)*	2.934

Mn *(mg/l)**	0.074

*Samples acidified before filtration.

There are old underground mine workings to the east of the proposed conveyor route, within the centre of the proposed New Largo Colliery mining area. The workings are flooded and excess mine water currently decants to the surface and/or is pumped into the nearby pan on Portion 1 of the Farm Klipfontein 566 JR.

Based on groundwater monitoring conducted between 2006 and 2011, it is estimated that ~1.5 Mℓ/day of water is generated in the old underground workings (pers. Comm. Jaco van den Berg, JMA groundwater specialist responsible for the ground water monitoring programme for AAIC, see Appendix G).

Surface water monitoring results clearly indicated that the water quality of the pan and downstream areas are negatively affected (Section 5.1.6.1).

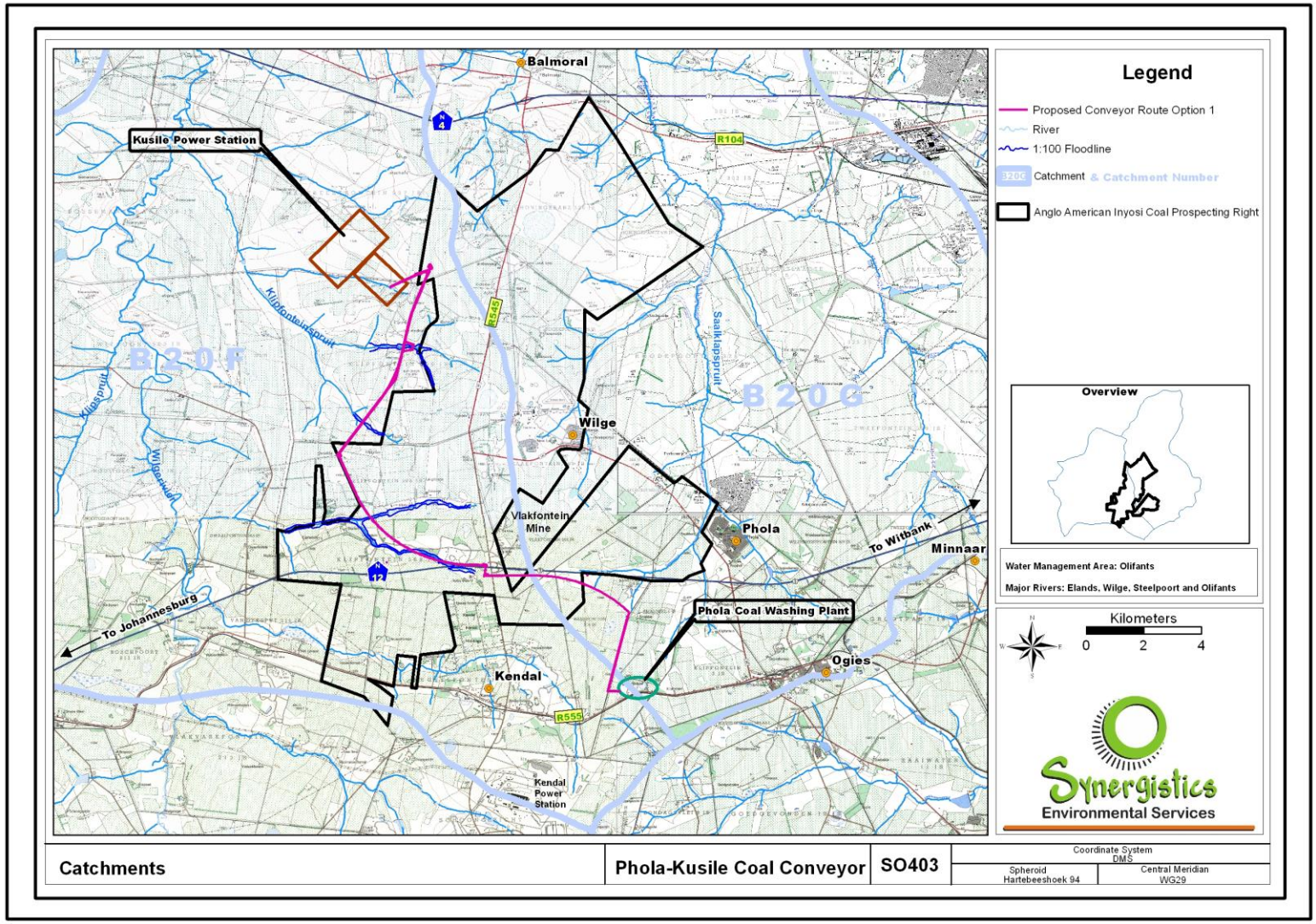

Figure 5-7: Catchments and Rivers

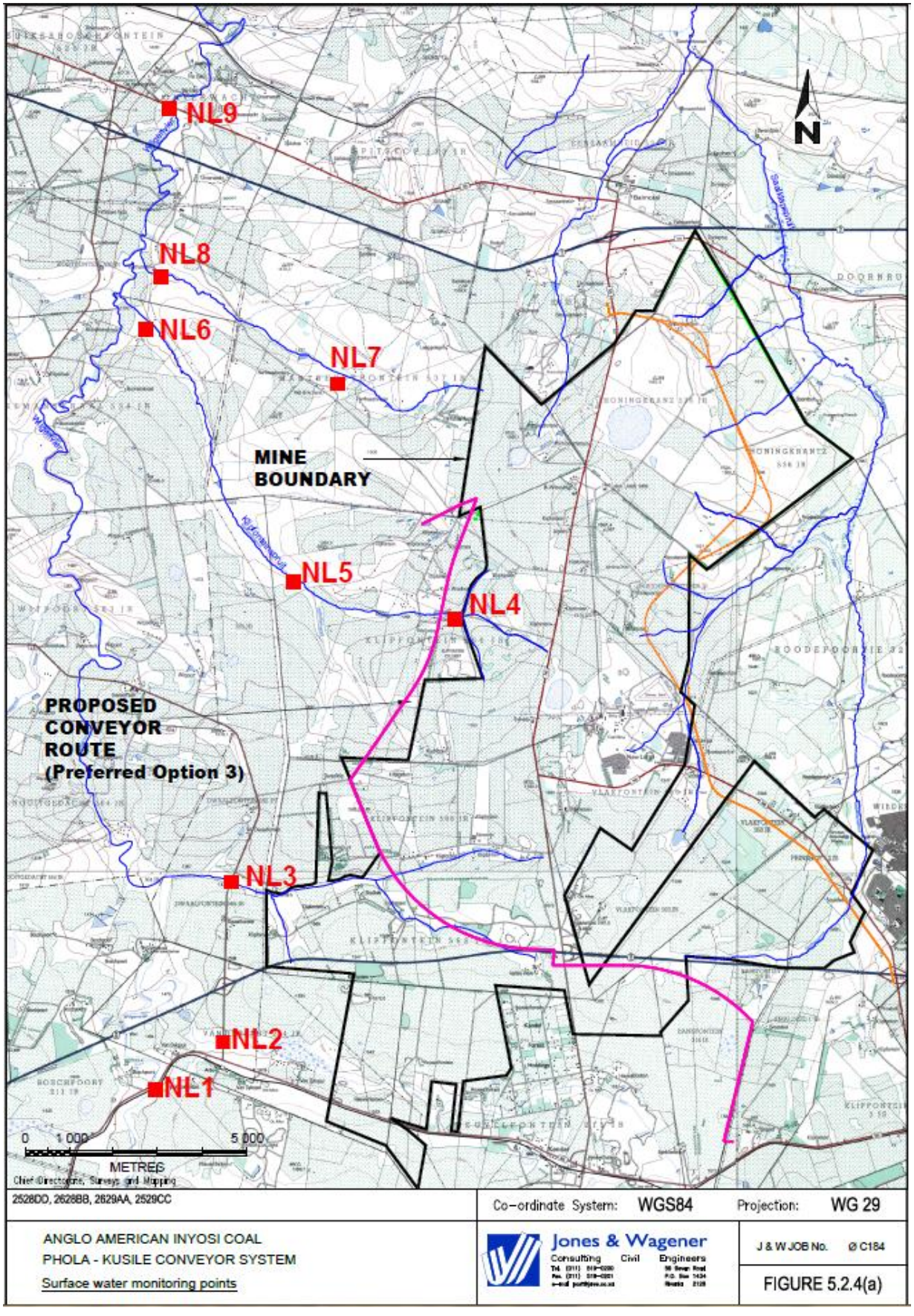

Figure 5-8: Surface Water Monitoring Points

5.1.8 Noise

5.1.8.1 Description of Baseline / Existing Impacts

The proposed Phola-Kusile Overland Coal Conveyor project will be located in an area where the character of ambient noise is to some extent determined by industrialisation and economic activity which over time has resulted in an increase in road traffic noise and noise generated by mining and agricultural activities. Road traffic noise emanates from the N4 and N12 highways, the R545 provincial road, as well as from other secondary roads.

Baseline noise measurements were conducted at seven areas along the proposed Phola-Kusile Coal Conveyor and the broader study area around the proposed New Largo Colliery to determine the conditions before the development of both the Phola-Kusile Coal Conveyor and the New Largo Colliery.

Table 5-9: Noise Baseline Monitoring Points

Monitoring location		Coordinate	Monitoring location		Coordinate
M1	Premises Rockblend	S25 54 18.4 E28 58 27.2	M4	Residence Cloete	S25 57 44.3 E29 01 24.7
M2	Residence Mac Donald	S25 57 09.9 E28 55 57.0	M5	Residence Truter	S25 59 23.7 E29 00 43.6
M3	Residence Engelbrecht	S25 59 51.0 E28 55 47.9	M6	Residence V d Heever	S25 54 00.0 E29 04 04.8
M7	Area south of the N12				

Table 5-10 summarises SANS 10103 criteria for acceptable ambient levels in various districts. Note that ratings increase in steps of 5 dB from one to the next higher category and that, in general, regardless of the type of district, ambient noise levels tend to decline by typically 10 dB from daytime to night-time. It follows that, for the same level of intrusive noise, the noise impact would typically increase by 10 dB from daytime to night-time.

Table 5-10: Typical outdoor ambient noise levels in various districts (SANS 10103)

Type of district		**Noise level** Equivalent continuous level L_{Aeq} (dBA)		
		Day-Night L_{dn}	**Day-time** L_d	**Night-time** L_n
(a)	Rural	45	45	35
(b)	Suburban – With little road traffic	50	50	40
(c)	Urban	55	55	45
(d)	Urban - With some workshops, business premises & main roads	60	60	50
(e)	Central business districts	65	65	55
(f)	Industrial districts	70	70	60

The periods in Table 2.3 into which a 24 hour cycle is divided, are defined as follows:

- Day-time (06:00 – 22:00)
- Night-time (22:00 – 06:00)

- Day-Night (24-hour day-night period)

The day-night level L_{dn} represents a 24-hour average of the ambient noise level, with a weighting of +10 dB applied to night-time levels, yielding numerically equal values for daytime and day-night levels. SANS 10103 also gives guidelines in relation to expected community response to different levels of noise impact (increase in noise level), as summarized in Table 5-11.

Table 5-11: Expected community response to an increase in ambient noise level (SANS 10103)

Increase in ambient level [dB]	Expected community reaction
0 – 10	Sporadic complaints
5 – 15	Widespread complaints
10 – 20	Threats of community action
More than 15	Vigorous community action

In terms of SANS 10103 guidelines (Table 5-10), the area falls in the category between Rural and Urban, described as “Suburban – With little road traffic”. As such, one would expect typical ambient levels in the area to be in the order of 50 dBA (daytime) and 40 dBA (night-time), respectively. The results of the baseline survey should serve to verify the current status and to establish the extent to which ambient levels are currently affected by abovementioned activities.

Ambient levels at M1 (Premises at Rockblend – Nelson family)

Average daytime and night-time ambient levels recorded at this location during the course of this investigation, were 55 dBA (daytime) and 37 dBA (night-time), respectively. The daytime ambient level was determined by:

- Noise from the R545 main road;
- Noise from work activities on this property;
- Trucks and other vehicles arriving at and leaving from the premises.
- Audible sources of noise at night were road traffic from local roads, as well as insect and bird calls.

Ambient levels at M2 (Residence Mac Donald)

Average daytime and night-time ambient levels recorded at this location were 52 dBA (daytime) and 40 dBA (night-time). Audible sources of noise during daytime were found to be heavy mining vehicle traffic on the local unpaved road approximately 500 m from the residence, farming activities, livestock noise and distant traffic noise on the R545 main road. At night it was mainly road traffic in the distance, livestock noise, as well as insect and bird calls which contributed to audible noise. Obvious, noise levels measured at this point included existing distant mining activities.

Ambient levels at M3 (Residence Engelbrecht)

Average daytime and night-time ambient levels recorded at this location were 50 dBA (daytime) and 37 dBA (night-time). Audible sources of noise during daytime were found to be farming activity, livestock and barely audible levels of road traffic noise in the distance. At night it was mainly livestock, bird and insect calls, and at a much lower level, noise from traffic on distant roads.

Ambient levels at M4 (Residence Cloete)

Average daytime and night-time ambient levels recorded at this location were 52 dBA (daytime) and 43 dBA (night-time). The level of activity and the ambient levels are higher but the types of noise sources contributing to audible ambient noise were found to be the same as those recorded at M3.

Ambient levels at M5 (Residence Truter)

Average daytime and night-time ambient levels recorded at this location were 54 dBA (daytime) and 48 dBA (night-time). Daytime levels were determined by traffic on the R545 passing at a distance of approximately 250 m and by work activities and vehicle movement on the premises. Night-time levels are determined predominantly by traffic on the R545.

Ambient levels at M6 (Residence Van den Heever)

Average daytime and night-time ambient levels recorded at this location were 49 dBA (daytime) and 45 dBA (night-time). The types of noise sources contributing to audible ambient noise are similar to those recorded at M3. Night-time levels were elevated by dogs barking. In the absence of barking, the level dropped to 41 dBA.

Ambient levels at M7 (Area south of N12 highway)

Based on probing and short duration averaging, typical daytime and night-time ambient levels in this area are 54 dBA (daytime) and 46 dBA (night-time), respectively. Levels are elevated by traffic noise on the N12 and by mining noise in the area.

The results of the survey are summarised on the map in Figure 5–9. Daytime and night-time periods are as defined in SANS 10103.

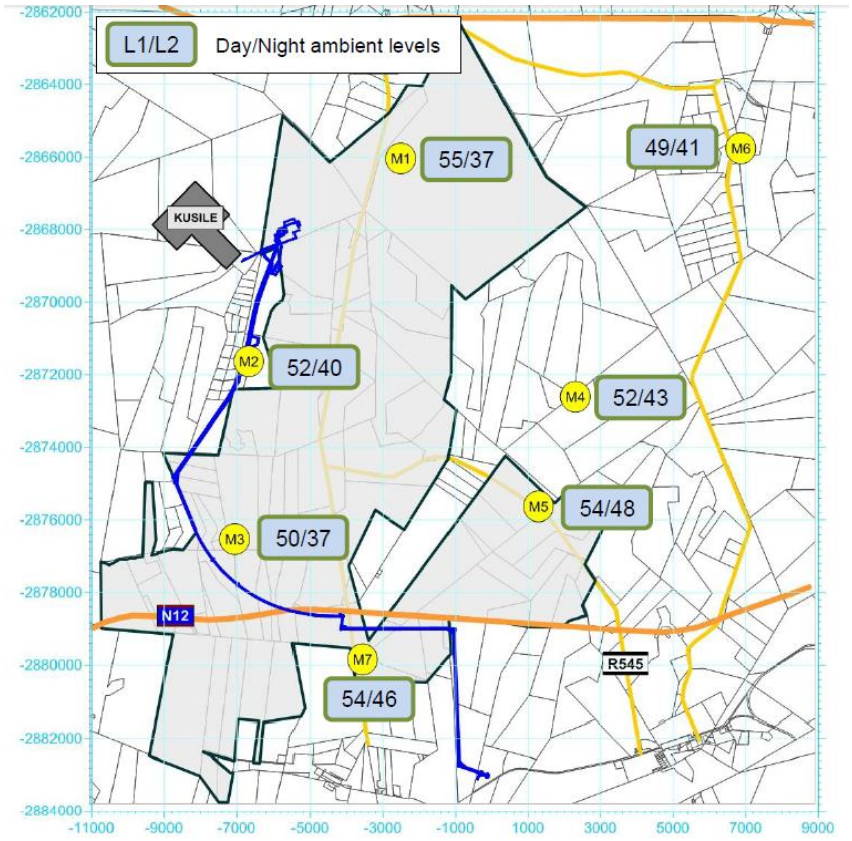

Figure 5-9: Baseline: Average daytime (06:00 to 22:00) and night-time (22:00 to 06:00) Ambient Levels

In terms of SANS 10103 guidelines, the area falls in the category between Rural and Urban (Suburban – with little road traffic). As such, one would expect typical ambient levels in the area to be in the order of 50 dBA (daytime) and 40 dBA (night-time), respectively.

5.1.8.2 Synthesis of Baseline / Existing Impacts

The results of the baseline monitoring survey showed that ambient noise climate is homogeneous over the largest part of the project area. Night-time levels vary between 37 and 43 dBA, which is in good agreement with the typical level (40 dBA) expected in accordance with SANS 10103 guidelines for the area. The exception is to this is areas found within 500 m from the R545 and N12, which are affected by traffic. Monitoring affected by these two roads showed night-time levels of between 46 and 48 dBA.

Averages baseline noise levels for the study area is tabled below:

Table 5-12: Baseline outdoor ambient noise levels derived from field surveys Rounded to the nearest nominal rating in 5 dB steps in accordance with SANS 10103 system

Area	Baseline ambient noise level L_{Aeq} (dBA)	
	Day-time L_d	Night-time L_n
All areas excluding areas near the N12 and R545	50	40
Locations within 500 m from the N12	55	45
Locations within 100 m from the R545 main road	55	45

5.2 Biological Environment

5.2.1 Flora

The study area is located within the grassland biome of South Africa. The grassland biome is one of the most threatened biomes in South Africa, due to agricultural and mining activities. Approximately 60 to 80% of the grassland biome has been irreversibly transformed, while only 2% is formally conserved. In terms of the latest regional vegetation classification, three regional vegetation units occur in the area: Eastern Highveld Grassland, Eastern Temperate Freshwater Wetlands and Rand Highveld Grassland (Mucina & Rutherford 2006) (Figure 5-11).

5.2.1.1 Eastern Highveld Grassland

This vegetation unit is described as occurring on slightly to moderately undulating plains, including some low hills and pan depressions. The vegetation is short dense grassland dominated by the usual Highveld grass composition (Aristida, Digitaria, Eragrostis, Themeda, Tristachya etc.) with small, scattered rocky outcrops with wiry, sour grasses and some woody species (*Acacia caffra, Celtis africana, Diospyroslyciodes subsp lycioides, Parinari capensis, Protea caffra, P. welwitschii* and *Rhus magalismontanum*). Abiotic attributes associated with this vegetation unit are red to yellow sandy soils of the Ba (30%) and Bb (65%) land types found on shale and sandstones on the Madzaringwe Formation (Karoo Supergroup). Land types associated with the Ba and Bb soil patterns are associated with landscapes in which a plinthic catena forms part of the landscape. In these landscapes, soft plinthic soils associated with fluctuating water tables within 1.5 m of the surface of the earth are common.

This vegetation unit is considered to be endangered, its conservation target is 24%. Some 44% is transformed mainly by cultivation, plantations, mines and urbanization and by building of dams. Cultivation may have had a more extensive impact, indicated by land-cover data. No serious alien invasions are reported, but *Acacia mearnsii* can become dominant in disturbed sites. Erosion is very low.

5.2.1.2 Eastern Temperate Freshwater Wetlands

This vegetation is described as occurring on flat landscape or shallow depressions filled with (temporary) water bodies, supporting zoned systems of aquatic and hygrophilous vegetation of temporarily flooded grasslands and ephemeral herblands. Soils are peaty (Champagne form) to vertic (Rensburg form). Wetlands form where flow of water is impeded by impermeable soils and/or by erosion resistant features, such as dolerite intrusions. Surface water inundating may be present at any point while the wetland is saturated and some plant species will be present only under inundated conditions or under permanently saturated conditions. The presence of standing water should not be taken as a sign of permanent wet conditions.

5.2.1.3 Rand Highveld Grassland

This unit is described as forming part of a highly variable landscape with extensive sloping plains and a series of ridges slightly elevated over undulating surrounding plains. The vegetation is species-rich, wiry, sour grassland alternating with low, sour shrub-land on rocky outcrops and steeper slopes.

Biogeographically important taxa occurring in the regional vegetation are *Agapanthus inapertus P.Beauv. ssp. pendulus (L.Bolus) Leight., Eucomis vandermerwei I.Verd., Huernia insigniflora C.A.Maass and Melhania randii Baker f.* The following species are endemic to the regional vegetation unit: *Anacampseros subnuda Poelln. ssp. lubbersii (Bleck) Gerbaulet, Crassula arborescens (Mill.) Willd. ssp. undulatifolia Toelken, Delosperma purpureum, Encephalartos eugene-maraisii I.Verd. ssp. middelburgensis Lavranos & D.L.Goode, Encephalartos lanatus Stapf & Burtt Davy, Frithia humilis, Melanospermum rudolfii Hilliard and Polygala spicata Chodat.*

This unit is also considered endangered; its conservation target is 24%. It is poorly conserved. Almost half has been transformed mostly by cultivation, plantations, urbanization or dam-building. Cultivation may also have had an impact on an additional portion of the surface area of the unit where old lands are currently classified as grasslands in the land-cover classifications. Scattered aliens (most prominently *Acacia mearnsii*) occur in about 7% of this unit. Only about 7% has been subjected to moderate to high erosion levels.

5.2.2 Fauna

The animals observed during previous field assessments are typical of the region in which the study area is located – a combination of ecological characteristics associated with wetlands, grasslands, crop fields and outcrops found in the study area. No Red Data or sensitive animal species were found or any indication of such species observed.

The red data species that are known from the regional databases are considered to have a low or moderate likelihood of occurrence in the study area, lacking some of their habitat requirements within the study area. These include characteristics such as woodland-associated conditions, caves or subterranean habitats. As a result, a large portion of the red data species contingent for the study area is not considered likely inhabitants (49% of species). However, the presence of wetlands and untransformed grasslands has led to the estimations of high (11% of species) and moderate (40% of species) probability of occurrences of red data species within the study area's boundaries.

5.2.3 Ecological Sensitivity

Habitat classifications as defined in the Mpumalanga Conservation Plan (C Plan) are presented in Figure 5-14. Ecological sensitivity, based on the results of ecological surveys conducted in 2006 and 2010 is presented in Figure 5–12. Where required, the ecological specialist will expand the data for any route alternatives located outside the areas previously surveyed.

Important habitats include wetlands and wetland-related habitats (high faunal sensitivity) and untransformed grasslands (moderate sensitivity). These areas are also considered to be important for the conservation of biodiversity in the study area. These areas include ecological conditions that are varied, unique and likely host to restricted (geographically) animal assemblages and communities. The high-lying rocky shrub-land is one ecological system that deserves higher status than based on red data habitat alone. The presence of a much localized plant species, *Frithia humilis*, is an indication of the biological importance of the habitat type in the study area and region. It is likely that the high lying rocky shrub-land will also be host to unique animal assemblages, especially where invertebrates are concerned (one might be a pollinator of *F. humilis*.).

5.2.4 Wetlands

The presence of wetlands in the study area is linked to both perched groundwater and surface water. Three types of natural wetland systems occur within and around the study area:

- Valley bottom wetlands with and without channels;
- Hillslope seepage wetlands; and
- Pans.

Wetlands found in the study area are depicted in Figure 3–1. A schematic diagram of how these systems are positioned in the landscape and the general topography of the study sites is given in Figure 5-10 with the generalised hydrological and other characteristics of the wetlands tabulated in Table 5-13.

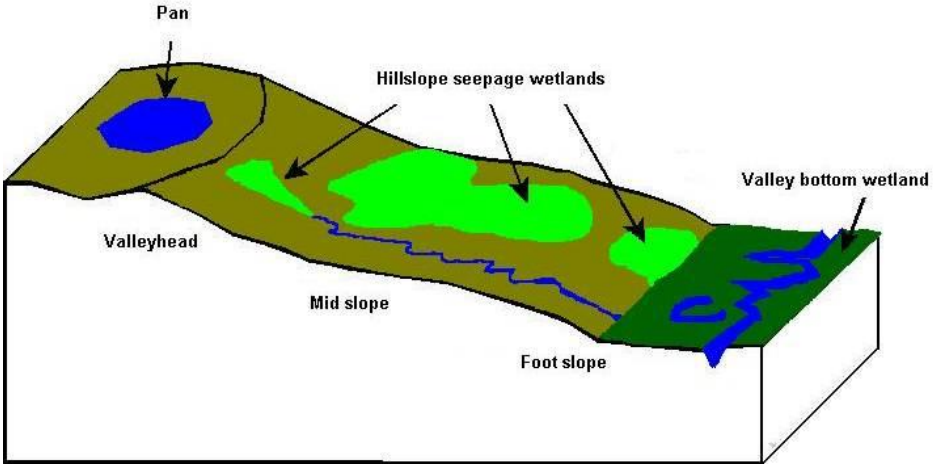

Figure 5-10: Schematic illustration of the types of wetlands and the topographical settings of typical wetlands found in and around the study area

Both seepage and some sections of valley bottom wetlands have been modified to form impoundments to provide access to and to extend the period of availability of water that is moving through the landscape.

The study area straddles a catchment divide form where water flows off to emerge as seepage wetlands where the aquiclude (impermeable area) intercepts the side slopes and where flows concentrate in the valley bottoms. The valley bottom wetlands on the tributaries of the Saalklapspruit are largely channelled implying that the energy associated with the flows is high enough to cause sediment transport. The large *Phragmites* stands in the Saalklapspruit are undoubtedly a reflection of the deposition of sediments emerging from the upstream catchment. In contrast to this the valley bottom wetlands associated with west draining tributaries of the Wilge River are, within the study site, largely naturally unchannelled. There is some evidence of channel development in the systems on the farm Klipfontein where channelling has developed in one of the reaches. The absence of any extensive reed beds in the Wilge River would suggest that the energy associated with flows out of this section of the catchment are high thus transporting sediments to beyond the study area.

The relatively large surface area representing seeps suggests that a considerable portion of the rainfall falling in this area enters the valley bottom systems as diffuse flow, over an extended period of time.

Table 5-13: General characteristics of the wetlands recorded in the study area

WETLAND TYPE		TOPOGRAPHIC SETTING	DESCRIPTION	HYDROLOGIC COMPONENTS		
				Inputs	Throughputs	Outputs
RIPARIAN	Valley bottom wetlands	Generally in the steeper headward parts of the streams and in the shallow valleys that drain the slopes.	Relatively narrow grassland areas (generally < 60m wide) with or without a channel that drain the steeper upper catchment slopes in the study area.	Receive water from overland flow including runoff from the adjacent slopes and from overtopping of the channel banks during high rainfall events.	Surface flow supported in some cases by interflow.	Variable but predominantly overland, stream flow and evapo-transpiration.
NON-RIPARIAN	Hillslope seepage	Hillslopes	Occur on concave or convex slopes which are characterized by the colluvial (transported by gravity) movement of materials. Generally always associated with deep sands.	Predominantly interflow associated with perched aquifers but may include groundwater.	Interflow and diffuse surface flow.	May be seasonal to permanent, surface flow or interflow and evapo-transpiration.
	Pans	In depressions and basins	A basin shaped area with a closed elevation contour that allows for the non-permanent (seasonal or temporary) accumulation of surface water. An outlet is usually absent.	Runoff from the surrounding catchment area.	In some cases, possibly seepage	Evapo-transpiration and in some instances suspected leakage

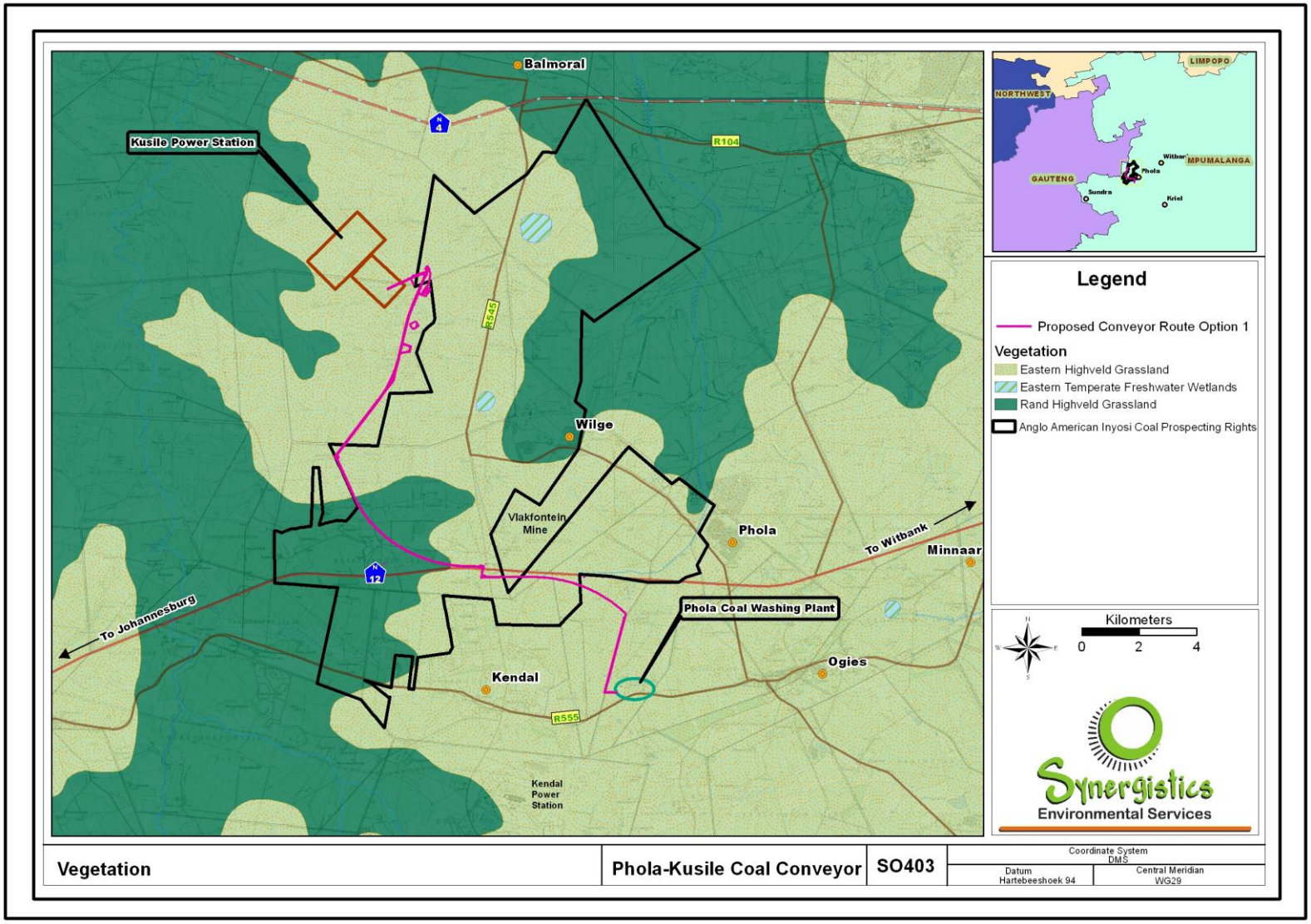

Figure 5-11: Regional Vegetation

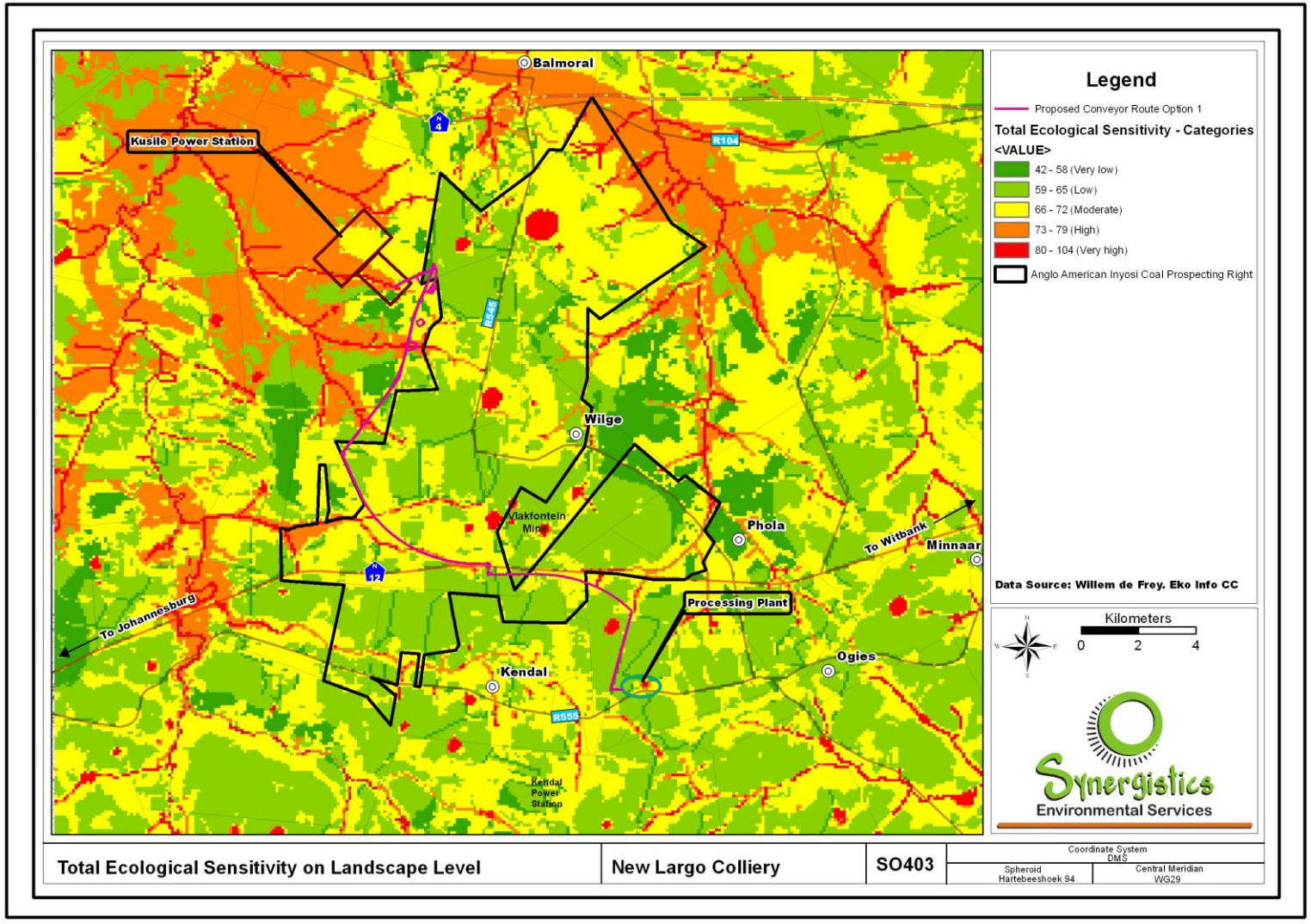

Figure 5-12: Ecological Sensitivity

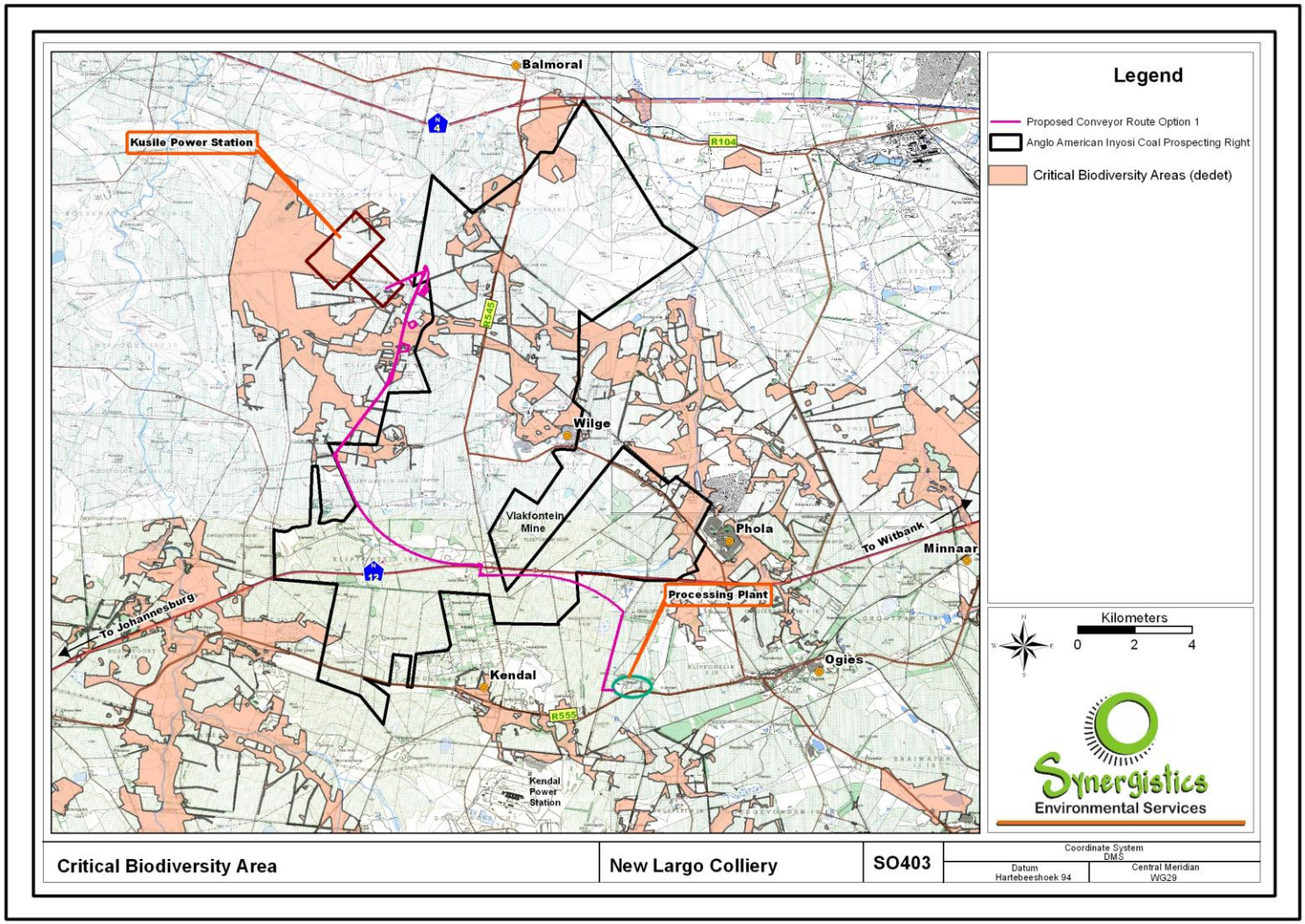

Figure 5-13: Critical Biodiversity Areas

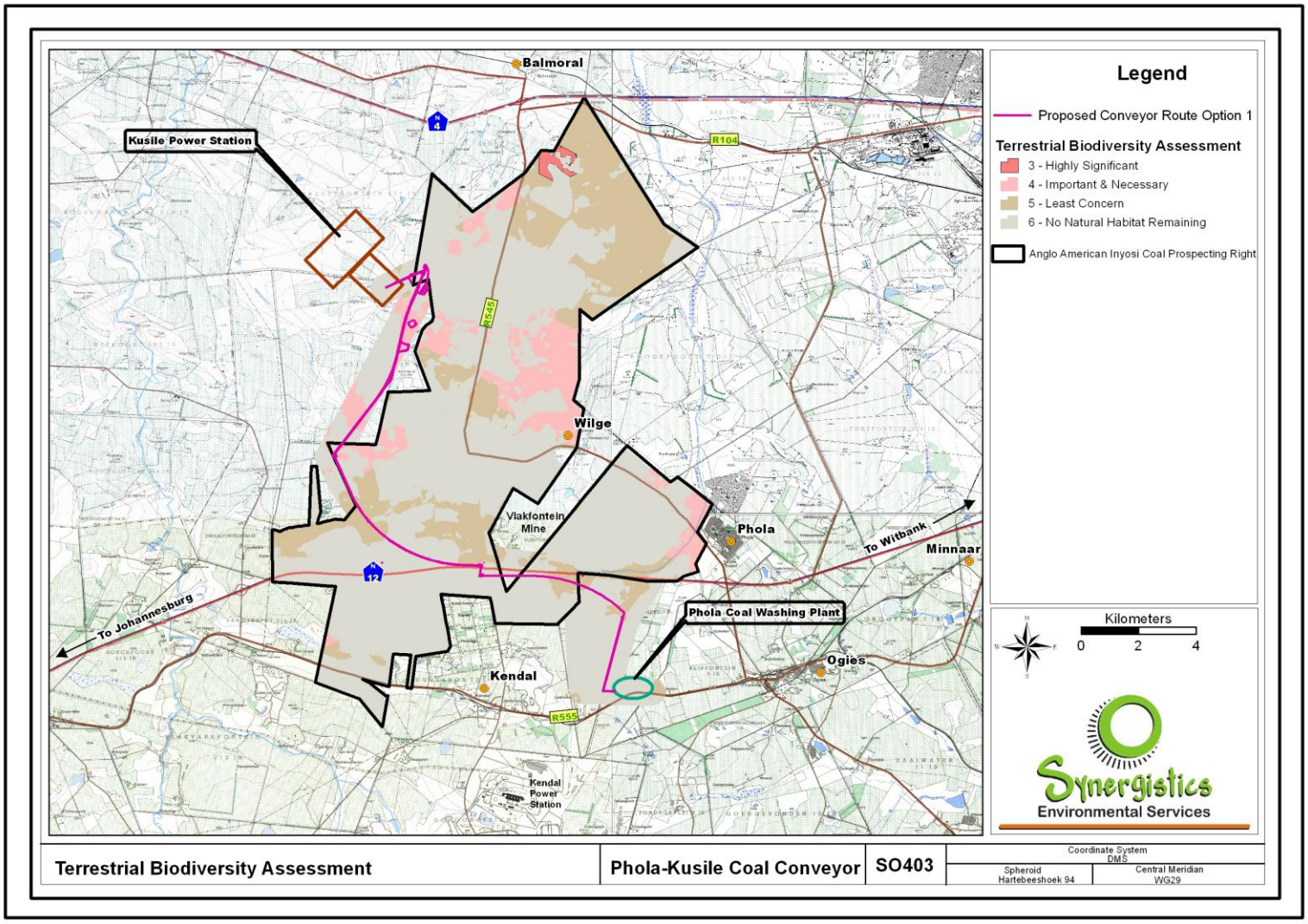

Figure 5-14: Terrestrial Biodiversity Assessment (Mpumalanga Conservation Plan)

5.3 Socio-Economic Environment

5.3.1 Economic Features

The historical drivers of the local economy are that of mining, agriculture and electricity generation.

Mining occurs throughout the broader study area, with large sections of the area affected by under undermined areas, rehabilitated mining land and areas covered by mining and/or mineral rights. Due to the rich coal reserves in local area, Eskom developed the Kendal, Kriel, Matla, Wilge and Duvha power stations during the 1970's and 1980's to provide for future electricity needs. This has led to the establishment of towns such as Kriel, Thubelihle and Wilge.

The non-urban areas consist mainly of farms and agricultural holdings. The agricultural holdings are found on the periphery of the urban settlements. In terms of agriculture, stock farming (sheep and cattle) and maize farming with some irrigated farming occur throughout the area and especially along the river drainage basins. Intensive and extensive agriculture activities are present.

The economic profile of the study area indicates the importance of mining as a driver in the local economy. This is supported by manufacturing activities in the local economy. Additionally the employment figures indicate that the majority of people either work in the trade sector or the mining sector.

5.3.2 Population Structure

5.3.2.1 Population

According to the Community Survey 2007, the population of South Africa is approximately 48.5 million and has shown an increase of about 8.2% since 2001. The household density for the country is estimated at approximately 3.87 people per household. This indicates an average household size of 3-4 people (leaning towards 4) for most households, which is slightly down from the 2001 average household size of 4 people per household.

The growth rate in Mpumalanga was very similar to the national average, but Nkangala District and Emalahleni Local Municipalities experienced growth rates well above the national average with the population within the Emalahleni Local Municipality more than doubling since 2001, as tabled below.

Table 5-14: Population Growth from 2001

Area	Approximate population size	Estimated growth since 2001	Average household size
Mpumalanga	3,643,435	8.25%	3.87
Nkangala District Municipality	1,226,500	20.38%	4.01
Emalahleni Local Municipality	435,217	57.45%	4.12

5.3.2.2 *Age*

Emalahleni Local Municipality has the highest average population age (27.68 years) of the areas investigated. This can possibly be ascribed to the more urban nature of the Emalahleni Local Municipality and the extent of industrial activities in the area compared to the district. Although there are larger urban areas in the Mpumalanga province than Emalahleni, there are also a number of tribal areas in the province which tend to have large proportions of young people that lowers the average age of the population in the province.

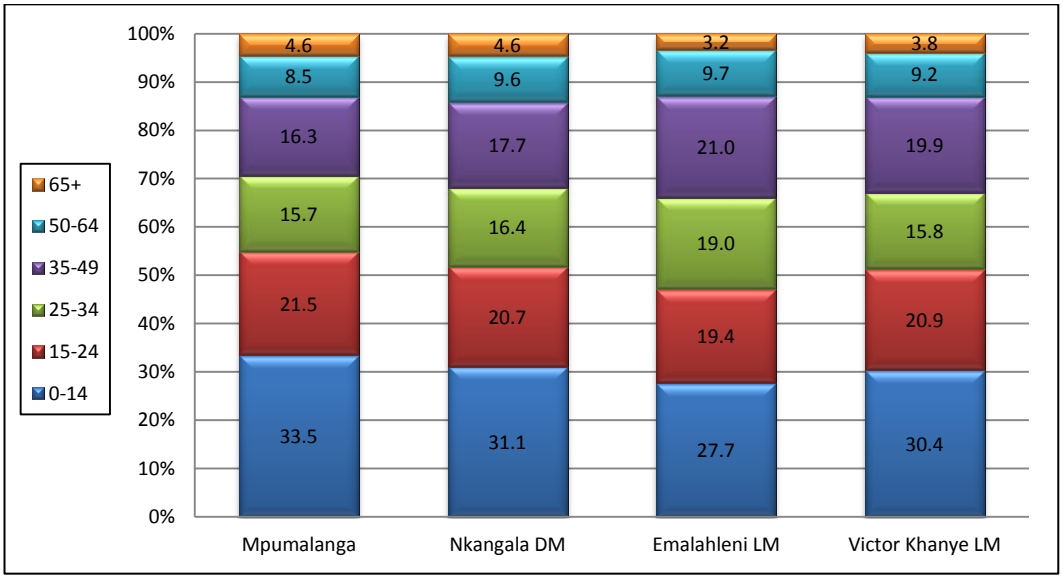

Figure 5-15: Age distribution (shown as percentage, source: Ptersa, 2011)

5.3.2.3 *Gender*

The gender distribution is fairly equal, with a slightly higher percentage of males in the Emalahleni Local Municipality area as well as in the Victor Khanye local municipality area, which can be ascribed to the industrial nature of these areas.

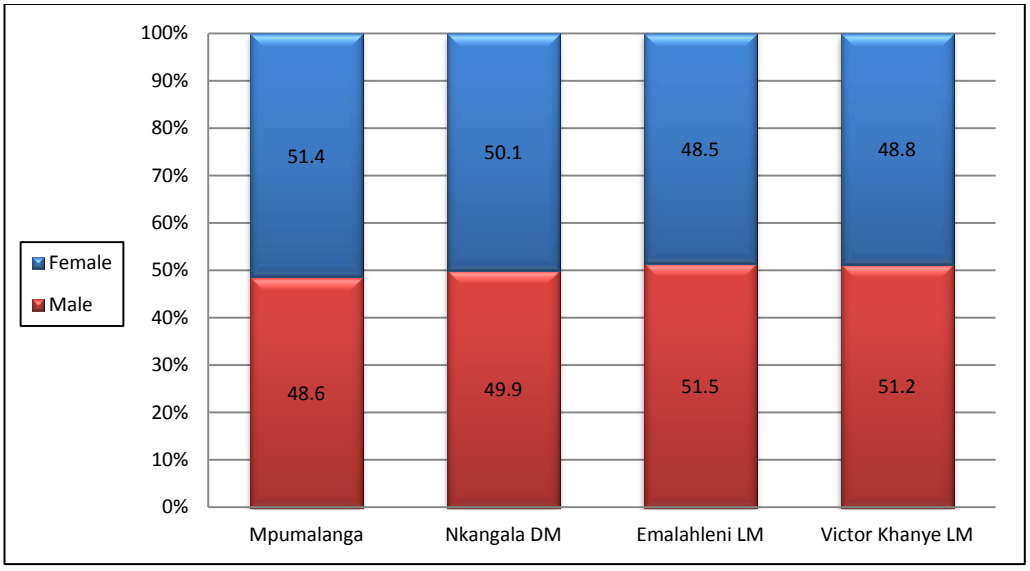

Figure 5-16: Gender distribution (shown as percentage, source: Ptersa, 2011).

5.3.2.4 *Education*

Education deprivation is one of the domains of Multiple Deprivation that was used to calculate the Provincial Indices of Multiple Deprivation. There is a close link between educational attainment, the type of work an individual is engaged in and the associated earnings potential. The level of education achieved by an individual, determines current income and savings potential, as well as future opportunities for individuals and their dependants.

The Emalahleni Local Municipality has a higher proportion of people (23.7%) indicating that they have obtained Grade 12 or a higher qualification than on district or provincial level (**Figure 4.4.2(c)**). Even so, this proportion is still relatively low and this is limiting the employment potential of the population of the area. The Victor Khanye municipality has the lowest proportion of people (11.7%) indicating that they have obtained Grade 12 or a higher qualification. The high proportion of people who did not attend an educational institution has led to a generation of illiterate young people with a future of unemployment. This also poses a huge problem within communities as dependency as well as criminal activities increase.

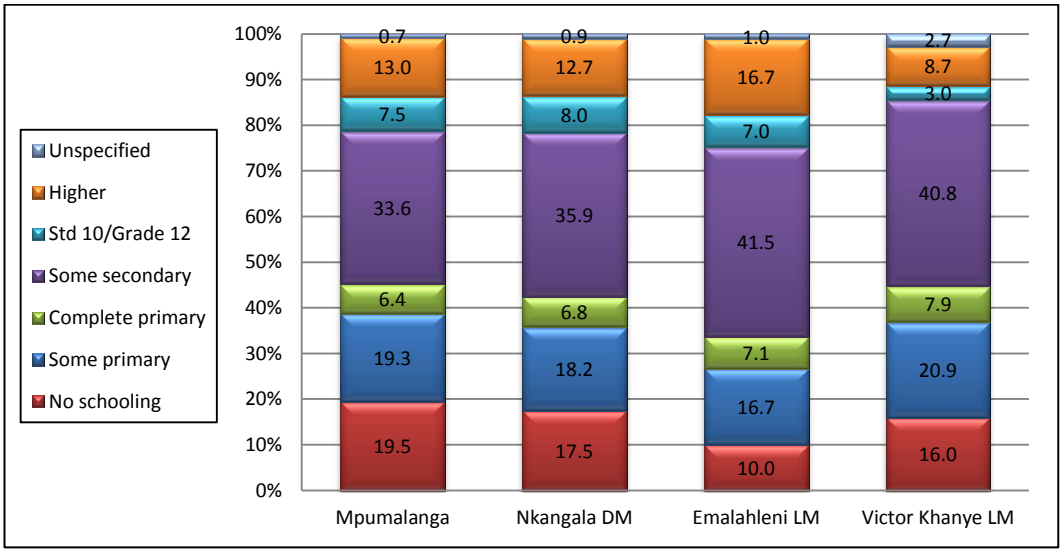

Figure 5-17: Highest education level – people 20 years or older (shown as percentage)

The Nkangala District Municipality identified some challenges with regard to education in the district as decaying schools, lack of learner transport and lack of facilities, e.g. libraries, sport facilities and basic necessities such as ablution facilities. Other important social issues affecting the school attendance rate include drug abuse, teenage pregnancy and violence at schools (Nkangala IDP 2008/2009).

5.3.3 Employment

The majority of the market population (57.5%) is economically active while conversely 42.5% are not economically active. Of the 57.5% of the population that are economically active 74.9% are employed while 25.1% of the economically active population is unemployed. A large number of people which are not economically active, coupled with high rates of unemployment, have created scenarios where the dependency ratio is high. This means that people that are employed have to sustain friends and family members that cannot find work. This reduces the disposable income and in most cases people can only

buy the most basic of products such as food. Very little savings and additional money are available for consumption.

5.3.4 Land Capability and Land Use

The majority of the land between the Phola Coal Processing Plant and the Kusile Power Station, over which a route for the overland conveyor has to be found, can be considered to be arable land or grazing land. Only small areas can be classified as wilderness land and as wetlands, as illustrated in Figure 5-18. The regional land cover is depicted in Figure 5–19.

5.3.4.1 Arable Land

Land capable of sustaining arable crop production is generally found on deeper (> 750 mm) well drained, red (Hutton) and yellow-brown (Clovelly and Griffin) soils on the midslope and upper midslope positions in the landscape. Areas where deeper hydromorphic soil forms (soil that developed in the presence of excess water) are found are also capable of sustaining agricultural crop production (Glencoe, Katspruit, Kroonstad, Rensburg, Westleigh, Pinedene and Avalon), if good management practices are employed. The more structured and shallow hydromorphic soils are not considered to be arable soils.

5.3.4.2 Grazing Land

Grazing land is generally confined to areas with shallower soils. These soils are generally darker in colour and are hydromorphic. They can be moderately to well drained but are not always free draining to a depth of 750 mm. These soils are capable of sustaining palatable plant species on a sustainable basis, especially since only the subsoils (at a depth of 500 mm) are periodically saturated. To be classified as grazing land, there should be no rocks or pedocrete fragments (a type of infertile and compacted soil formed by the concentration of minerals due to terrestrial weathering in the upper soil layers). If present, these would limit the land capability to wilderness land.

5.3.4.3 Wilderness Land

The areas that classify as wilderness land are found associated with the shallower and rockier soils and are not suitable for agriculture or grazing.

5.3.4.4 Wetlands

Wetlands are generally delineated based on a combination of soil types and the presence of hydromorphic vegetation. Wetland soils are defined using hydromorphic soil criteria. The soils are generally dark grey to black in the topsoil horizons with a high transported clay component and show pronounced mottling in the subsoils layers. A general wetland map of the area is provided as Figure 3–1, while the detailed wetland delineation along the AAIC proposed conveyor route is depicted on Figure 5–5.

5.3.5 Road Infrastructure

The Phola Coal Processing Plant (conveyor start point) is situated to the south of the N12 highway and Kusile Power Station (conveyor end point) lies to the south of the N4 highway. The majority of the conveyor route is therefore situated between the N4 and the N12, with a small portion to the south of the N12.

The R545 provincial tar road currently provides a north-south link between the N4 and the N12 highways. Approximately 12 km to the south of the N4 interchange the R545 diverts to the east, towards Wilge Village. The D686 continues to the south to form the north-south link between the R545 (from the point of diversion) to the N12 interchange, and Kendal further south (the D686 is often referred to as the southern extension of the R545).

A new road, known as the Kusile road, is currently under construction to the west of the Kusile Power Station. The road will provide future access to the Kusile Power Station.

5.4 Land Ownership and Sensitive Receptors

The most current landownership information is depicted on Figure 5–20 and listed in Table 3-2 and Table 7-1. Buildings and structures found in close proximity to the AAIC proposed conveyor route are depicted on Figure 7–4 and listed in Table 7-2. I&APs are encouraged to notify Synergistics of any changes or updates required to the information as presented.

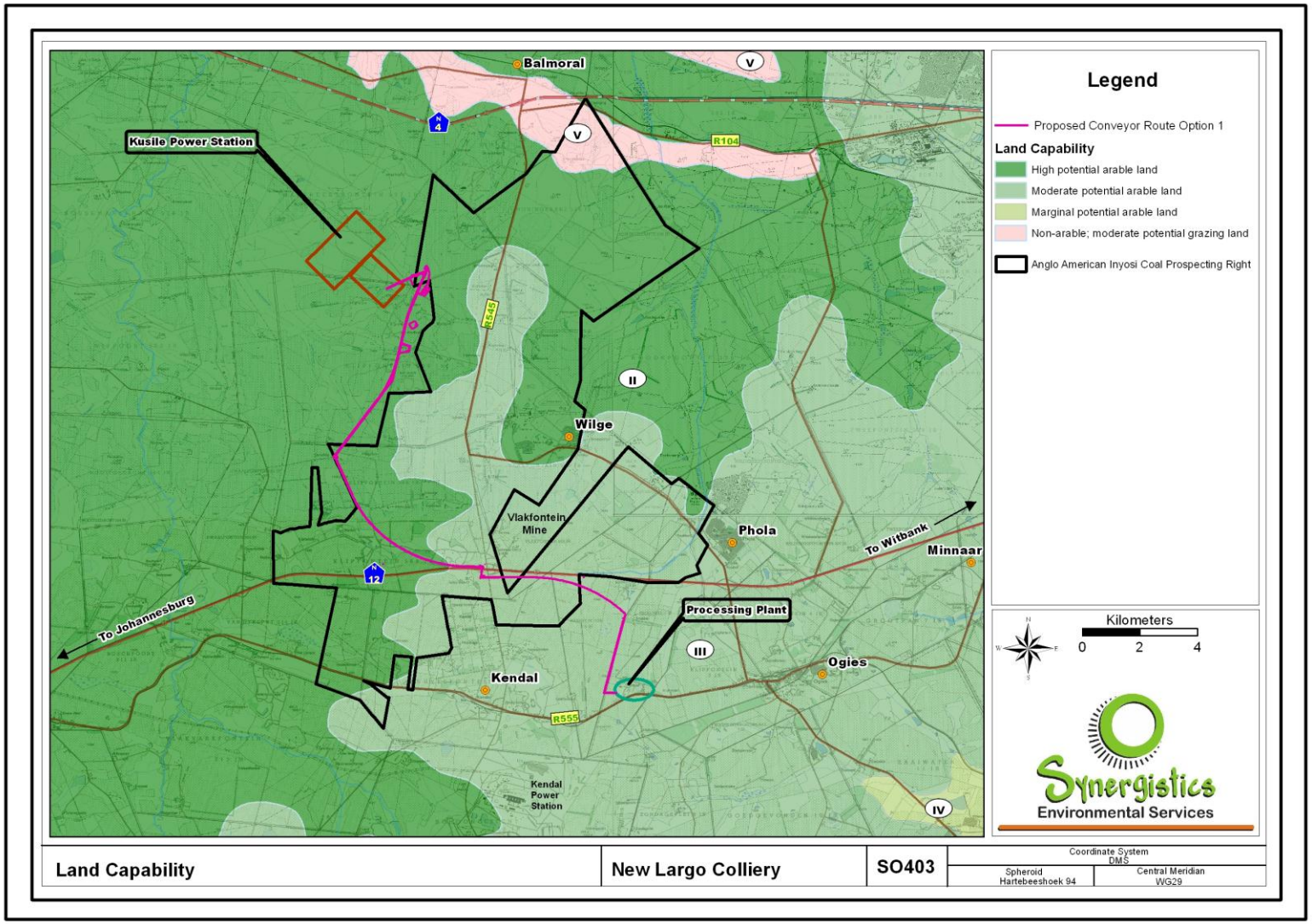

Figure 5-18: Land Capability

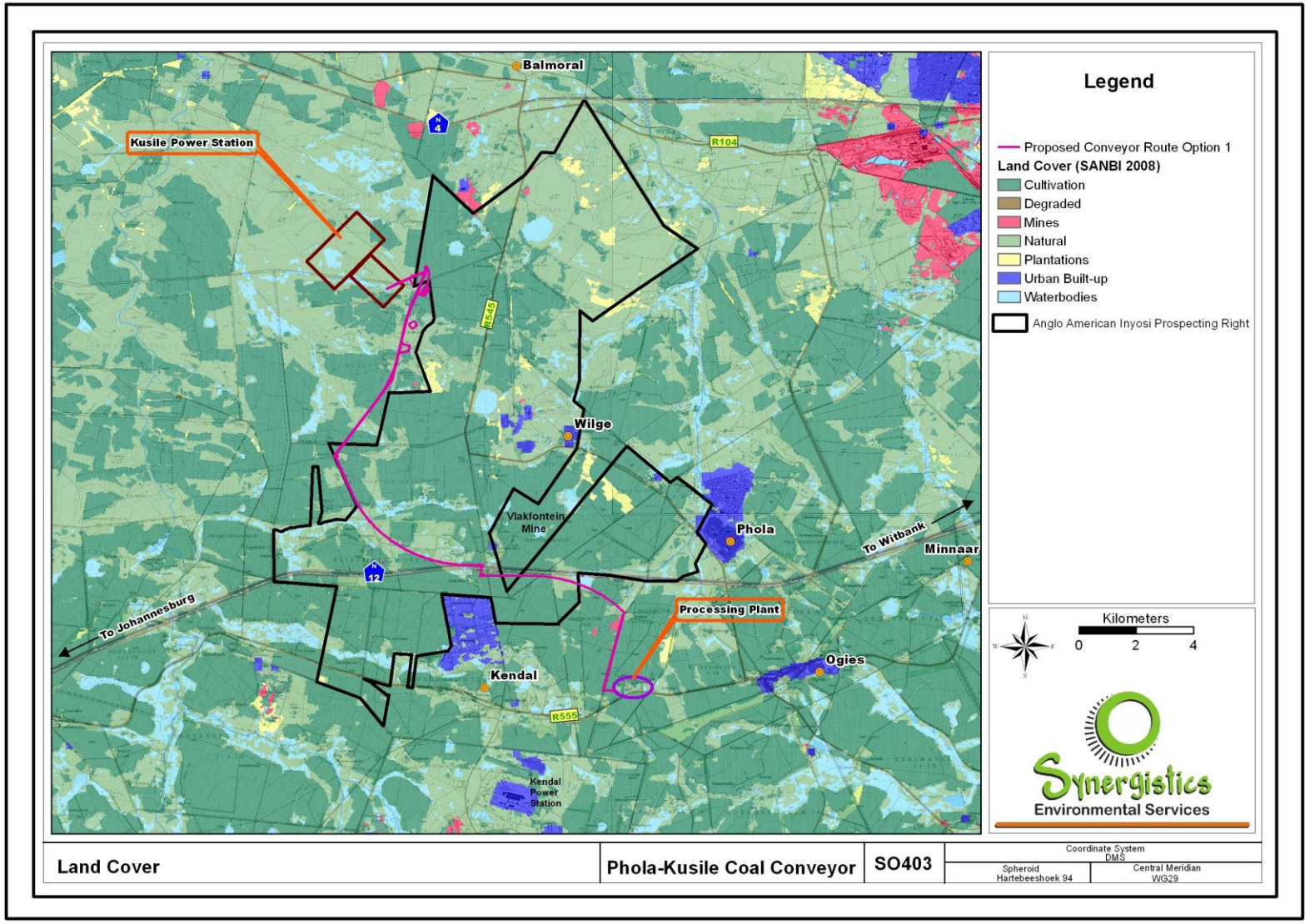

Figure 5-19: Land Cover (SANBI 2008)

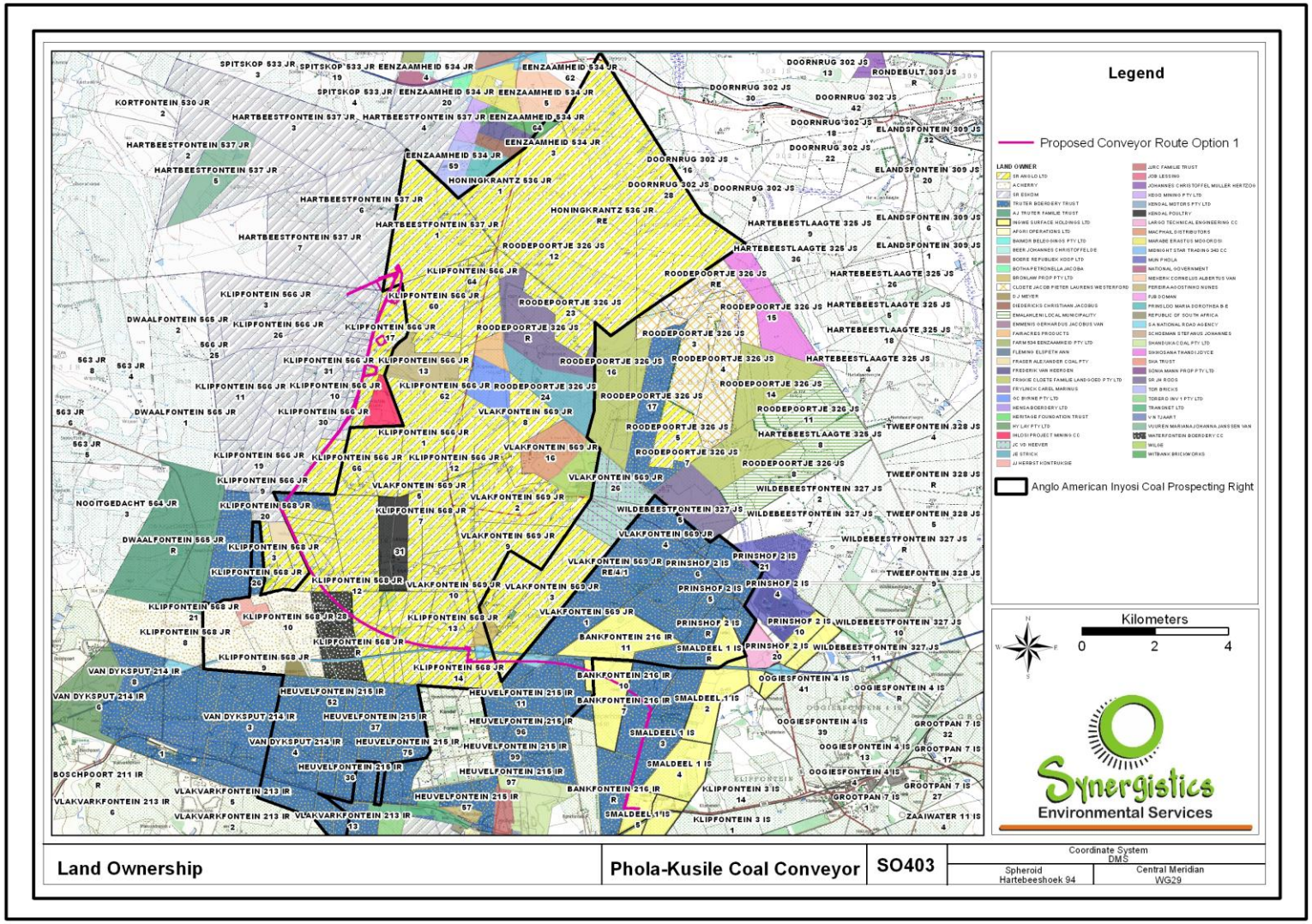

Figure 5-20: Land Ownership

5.5 Cultural and Heritage Resources

The cultural landscape qualities of the larger region essentially consist of a two components. The first is a rural area in which the human occupation is made up of a pre-colonial (Stone Age and Iron Age) occupation and a much later colonial (farmer) component. The second component is an urban one consisting of a number of smaller towns, most of which developed during the last 150 years or less. Irrespective of this low density of habitation, a variety of heritage sites dating to all periods of the past are known to exist in the larger region.

Large parts of the conveyor servitude has been under cultivation, which would have destroyed any heritage resources that could have existed preciously in the cultivated areas.

During a survey of the Phola-Kusile Coal Conveyor route by a heritage specialist, no objects of cultural heritage significance were identified within the immediate vicinity of the proposed conveyor servitude. There are known graves located along conveyor flight 5, but these are at a sufficient distance away from the conveyor servitude for damage to these graves to be avoided. Six known graves are located close to the transfer station at the at the end of flight 5 (transfer station 6). These graves should be demarcated to avoid damage. Alternatively, these graves should be relocated according to applicable legislation and best practices covering relocation of graves.

It should be noted that graves are notoriously difficult to notice in tall grass. The ecological specialist team reported that they noticed a grave along the conveyor servitude during their survey of the route, the ecological survey was conducted when the grass was shorter a few weeks after veld fires in the area.

A follow up survey was performed by AAIC in November 2011 in order to identify and plot the presence of possible additional graves .

Known graves and heritage sites are depicted on Figure 5–21.

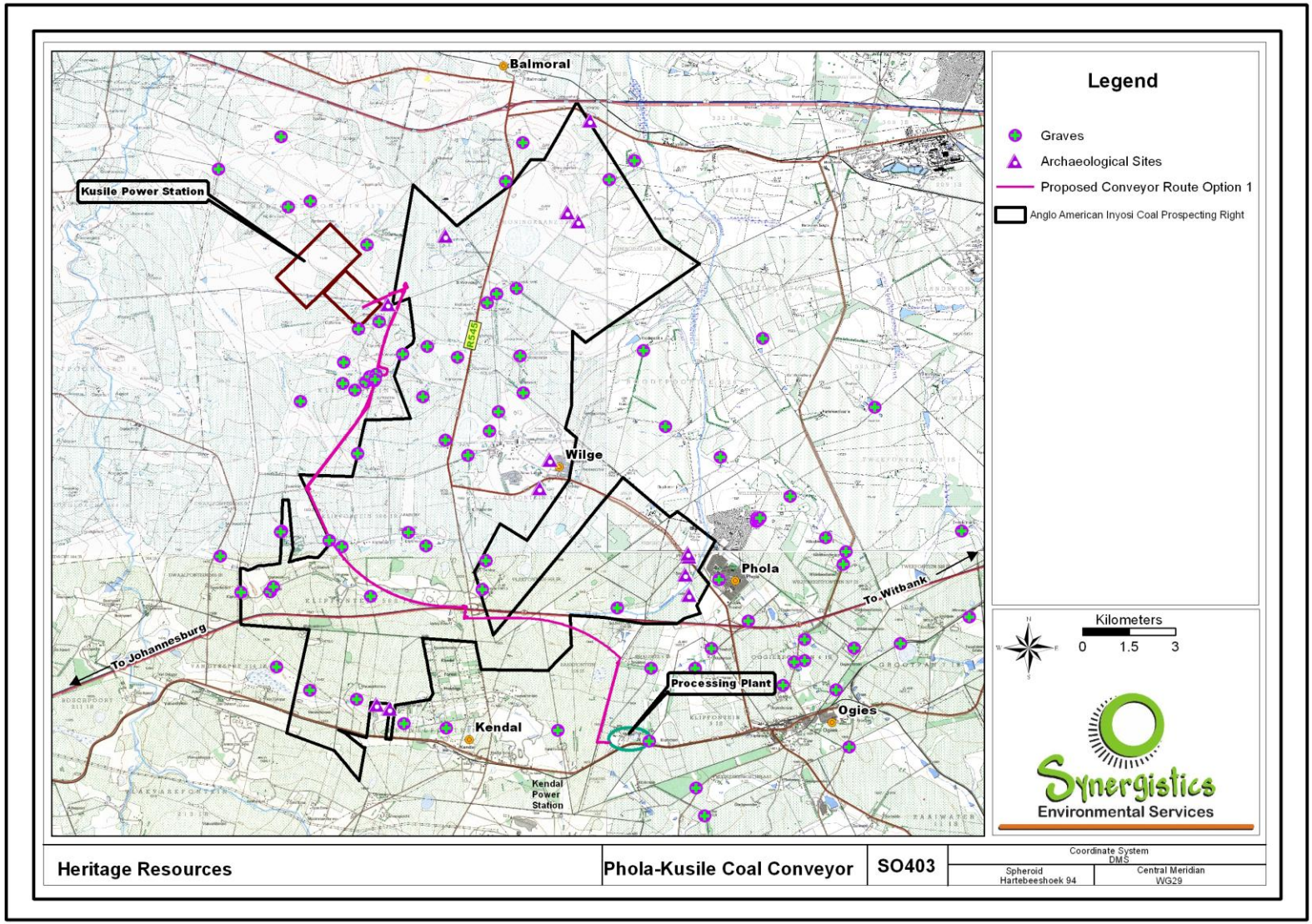

Figure 5-21: Graves and Heritage Sites found in the Study Area

6. Results of Consultation with Interested and Affected Parties

6.1 Summary of Key Issues

The key comments and issues raised during scoping, to be addressed in the EIA phase, are as follows:

- **Preferred development option - overland coal conveyor**
  The overland coal conveyor is the preferred development alternative. Current dust levels and road safety issues due to coal trucks are major existing issues to people living in the area and the conveyor option is therefore preferred to the road transport option.

- **Railway option**
  At the project announcement meetings, a representative from Homeland Mining and Energy SA and Shanduka Coal suggested that the rail option should not be discarded at this stage (public meeting 25 November 2010). AAIC provided more comprehensive information regarding the rail option and why it is not a feasible option at the scoping phase meetings. An environmental assessment of the rail option will not be conducted as part of this EIA.

  A more comprehensive comparison (environmental and economic) of the rail and conveyor options was provided at the scoping meetings on 22 and 23 March 2011 and all in attendance, including Mr Cherry, agreed that the conveyor is the preferred transport option but Mr Cherry stated that the impacts of the conveyor on the local environment and landowners should not be ignored and should be mitigated / compensated. Impacts are assessed in Section 7 and proposed mitigation measures are provided in the draft EMP (Section 12). AAIC is in consultation with all affected landowners

- **Air quality management**
  Dust is already a major concern for people living in the area. Regular monitoring and dust control is therefore important, both during construction and operation.
  Size of coal particles transported on the conveyor should not be too small, to avoid windblown coal.

- **Inspections and maintenance**
  Regular inspections and maintenance are considered to be a general problem at existing mines. There is a concern that the same lack of inspections and maintenance will occur for this project. This could result in fences or metal sheeting being stolen, which would result in additional safety risks and air quality impacts.

- **Conveyor noise emissions**
  Receptors near the conveyor will be affected due to noise generated by the conveyor.

- **Long-term enforcement, monitoring and implementation of environmental management plan commitments**

There is a general concern about long-term enforcement of environmental management programme commitments at mines in the area, mitigation measures are often only implemented when external audits of the operations are expected. When there is a change in ownership of the project, the new owners are often not committed to implementing the environmental management programme measures.

There is a concern that the same lack of long-term enforcement, monitoring and implementation of environmental management plan commitments will occur for this project; if AAIC is no longer the owner, AAIC's environmental management programme commitments will not be implemented by the new owners.

Individuals that have lived in the area for a long period of time, have witnessed that mines in the area have often not delivered on promises made during the EIA phase and environmental management programme.

- **Disruptions at conveyor-road and conveyor-stream crossings**
  Traffic disruptions should be avoided.
  Aquatic environmental impacts at stream crossings should be investigated.

- **Appointment of community liaison officer will be required**

- **Negotiations will be required with affected landowners and prospecting / mining right holders**

- **Cumulative impacts on existing and all planned future mining areas**
  Impacts on people living in the area are already high. There are concerns about all the proposed projects and that living conditions would further deteriorate.

- **Cattle and farm crossings should be provided along the conveyor route**

- **Wildlife migration routes should be considered**

- **Theft and fencing of the conveyor servitude**
  Theft is a big problem in this area. Fencing as well as any parts of the conveyor such as the metal roof and side panels will be stolen. Once the fence has been stolen, there will be safety risks for people and livestock.

- **Impact of veld fires**

- **Sterilisation of prospecting and mining rights**
  There are concerns with all three route corridors.

- **Impact on groundwater due to coal pollution**

- **Impact on Transnet Pipeline**

- **Security of coal supply to Kusile and Kendal Power Station**

The coal earmarked for Kusile is currently used at Kendal and other power stations. There are concerns that there will not be sufficient supplies to supply Kusile and the other power stations. Sizing of stockpiles should be sufficient to eliminate stoppages due to shortage of coal supplies.

- **Water supply to conveyor for dust suppression**
  Unnecessary use of drinking water quality water should be prevented.

- **Options for sharing the conveyor belt with mines along the route should be investigated**

- **Preferred Conveyor Route Corridor**
  I&APs generally preferred the Blue Route Corridor (Figure 1-3) and agreed that the Red and Purple Route Corridors had to be discarded based on environmental impacts.

6.2 Complete List of Issues and Responses

A list of I&AP issues and concerns are provided in Table 6-1 with the names of the I&AP and the date the issue or concern was raised. Responses to all concerns are provided.

The last column indicates the level to which the issues have been addressed (completely, adequately, incomplete, or not relevant to the EIA process), as well as any further actions required (*in italic text*).

Table 6-1: Complete record of all issues raised by I&APs and responses given by AAIC and the EAP

	COMMENTS, QUESTIONS AND ISSUES	COMMENTATOR(S)	SOURCE(S)	RESPONSE(S) GIVEN BY AAIC AND/OR THE ENVIRONMENTAL ASSESSMENT PRACTITIONER	Has this issue been addressed? *Actions Required*
A.	**Description of the proposed conveyor**				
1.	What is a transfer station?	Stakeholder at the meeting.	Announcement meeting, 24 November 2010	A transfer station is used where a conveyor system has to change direction. A belt can only run in a straight line and if a change of direction is needed, a transfer station is used where the coal from one belt falls on to another belt to take it further.	Completely
2.	How will cattle and other animals cross the conveyor belt if it runs through a farmer's land?	Mr Andre Cherry, Landowner, PO Box 129, Kendal, 2225	Announcement meeting, 25 November 2010	Animal crossings will be built at regular intervals or as many as a landowner needs (within reason). Once the route is confirmed AAIC will meet with each landowner individually to determine his/her needs with regards to this matter.	Completely *Crossing points along conveyor were discussed with landowners and confirmed*
3.	Would the coal conveyor be designed to align with Eskom's coal stock yard infrastructure?	Ms Goody Ntuli, Eskom	Response to the Background Information Document in January 2011	Yes, there will be a short transfer conveyor at the end of this conveyor which would deliver coal directly into Eskom's yard. Design is done mutually between Anglo and Eskom. The last section of the conveyor ending at Kusile will be managed by Eskom in terms of their EMP.	Adequately *Eskom EMP*
4.	How many conveyor belts will be built? Will there be a standby conveyor belt?	Mr Arthur Joubert, Plot 52, PO Box 15, Kendal, 2225	Announcement meeting, 24 November 2010	There are three alternative routes being investigated, but only one route will be used and only one conveyor belt (comprising of a number of flights or sections) will be built. A certain amount of coal has to be delivered to Kusile on a daily basis. In the proposed operational planning for the conveyor, AAIC will take into account down time for maintenance. A standby conveyor belt will thus not be constructed.	Completely
B.	**Alternatives to be considered**				
1.	According the map, all alternative routes of the proposed conveyor belt will affect the ash facility of the Kusile power station.	Mr Andre Cherry, Landowner, PO Box 129, Kendal, 2225	Public meeting on 22 March 2011 to discuss the DSR	Mr Lamprecht said AAIC is aware of this and the chosen route will curve around the ash facility. A conveyor belt can curve to some degree, but not too much. In this case, the curve will be sufficient to go around the ash facility. AAIC is engaging directly with Eskom on this issue. Recent discussions (Sep 2011) indicates that the conveyor does not impact on the Eskom site selection for the ash facility	Adequately *Eskom to discuss ash facility location with AAIC*
2.	Studies have shown that the red and purple alternatives will not work for a variety of reasons and all studies will now focus on the blue route and various deviations of this route.	Ms Mari Wolmarans, Environmental Assessment Practitioner.	Public meeting on 22 March 2011 to discuss the DSR	Red and purple routes discarded at the end of the scoping phase.	Completely
3.	Are the blue route and the new alternatives cast in concrete? It would be better if the new route runs on Eskom property, because then high potential farmland will be saved.	Mr Andre Cherry, Landowner, PO Box 129, Kendal, 2225	Public meeting on 22 March 2011 to discuss the DSR	AAIC is engaging directly with Eskom to align the conveyor in relation to Eskom infrastructure. The concerns over impacting on farmland have been noted and route has been optimised. Discussions with land owners are on-going.	Adequately *On-going discussions with landowners*

	COMMENTS, QUESTIONS AND ISSUES	COMMENTATOR(S)	SOURCE(S)	RESPONSE(S) GIVEN BY AAIC AND/OR THE ENVIRONMENTAL ASSESSMENT PRACTITIONER	Has this issue been addressed? *Actions Required*
4.	Minimum impact on the environment is very important when looking at alternative routes and the blue route looks best from that perspective.	Mr Ian Troskie. Cabanga Concepts for Shanduka Mining and Homeland Mining and Energy SA	Public meeting on 23 March 2011 to discuss the DSR	Various alternative alignments were investigated. Proposed route optimised to minimise impacts along the blue corridor. The proposed route balances impacts on all environmental components, i.e. visual, ecology, economics, social, noise, impacts on infrastructure, etc. All these impacts must be integrated and cannot be looked at in isolation, i.e. the best option from an economic point of view is not the best from an ecological point of view.	Adequately *I&APs to comment on proposed route in draft and final EIA report*
5.	Why does the route of the conveyor belt not follow the R545?	Mr Mike Elliot, Kusile Mining, P. O. Box 13643, Leraatsfontein, 1038	Announcement meeting, 25 November 2010	The proposed mine, New Largo, will be situated where the R545 is currently running, should authorisation be granted for that area to be mined. It is proposed that the road will then be moved. The proposed route balances impacts on all environmental components, i.e. visual, ecology, economics, social, noise, impacts on infrastructure, etc. All these impacts must be integrated and cannot be looked at in isolation, i.e. the best option from an economic point and land use point of view (along R545) is not the best from an ecological point of view. *Proposed Route was Optimised in EIA.*	Adequately *I&APs to comment on proposed route in draft and final EIA report*
6.	How has the three alternatives been decided upon and how will the final route be selected?	Mr Claude Haven, Kusile Mining, P. O. Box 13643, Leraatsfontein, 1038	Announcement meeting, 25 November 2010	The following criteria was applied in the section of the three alternative routes: – Land ownership – Availability of land for the conveyor servitude. – Public safety and security risks. – Minimise stream and wetland crossings and alignments in areas prone to flooding. – Minimise environmental impacts – Avoid human settlement areas – Maximise alignments along existing linear infrastructure and disturbed areas. – Minimise the total footprint area of impact. – Minimise sterilisation of coal reserves and avoid future opencast mining areas. – Minimise impacts on existing infrastructure. – Topography and steep slopes. – Technical design considerations. – Economic considerations. Various alternatives evaluated and an optimised route has been proposed	Adequately *I&APs to comment on proposed route in draft and final EIA report* *Outstanding agreements with landowners along proposed route to be finalised.*
7.	Why does the maps show that the three alternative routes stop just outside the Kusile Power Station?	Ms Tinkie Höll, Eskom	Announcement meeting, 25 November 2010	It stops on AAIC property which borders Kusile Power Station. Another, short conveyor belt will be built to transport the coal into the Power Station. This short conveyor forms part of the EIA. This portion on the Eskom property will become their responsibility in terms of operations and environmental management.	Completely

	COMMENTS, QUESTIONS AND ISSUES	COMMENTATOR(S)	SOURCE(S)	RESPONSE(S) GIVEN BY AAIC AND/OR THE ENVIRONMENTAL ASSESSMENT PRACTITIONER	Has this issue been addressed? *Actions Required*
8.	Use the existing railroad network to transport the coal to Kusile. North of Kusile a line will be built to take limestone to the Power Station. It will be also be more cost effective.	Mr Andre Cherry, Landowner, PO Box 129, Kendal, 2225	Announcement meeting, 25 November 2010	This option was investigated, but the route is too long (almost 50 km), making the operating cost much more expensive than a conveyor belt and the railway line at the north of Kusile also will not have space for an offloading area for coal. All in all, a conveyor belt will be the cheapest option by far. At meetings later in the scoping process, Mr Cherry accepted the conveyor option but stated that impacts should be carefully looked at and the route should be optimised to minimise impacts. All landowners along the proposed route were consulted.	Incomplete *Outstanding agreements with landowners along proposed route to be finalised.*
9.	The railway option should not be rejected. You should also look at the environmental costs as well. The railway option could be more expensive, but it could have less of an environmental impact than a conveyor belt.	Mr Ken van Rooyen, Shanduka Mining and Homeland Mining and Energy SA.	Announcement meeting, 25 November 2010	More information about the economic implications of the rail option was made available at later meetings and I&APs agreed that the conveyor is the best alternative.	Adequately
10.	I still believe that the railroad option will have less impact on the farming community than a conveyor belt, because a railroad is already being planned to the north of Kusile Power Station for the sorbent. All that is needed is to add a tipping facility to that line. I understand that it will be more expensive in the long term, but the railroad is already being planned.	Mr Andre Cherry, Landowner, PO Box 129, Kendal, 2225	Public meeting on 22 March 2011 to discuss the DSR	The conveyor will have impacts on the farming community but the rail is not a feasible options for reasons explained at meetings and in EIA report: Development Alternatives. The route has been optimised as far as possible. AAIC is in regular consultation with affected landowners as well as the tenants on land owed by AAIC. AAIC will put in place agreements with all landowners along the final conveyor route alignment.	Incomplete *Outstanding agreements with landowners along proposed route to be finalised.*
11.	All three your alternative routes impact on both Shanduka Mining and Homeland Mining and Energy SA operations. How can we resolve this? Routes 2 and 3, for example, run over an underground mine where regular blasting takes place. How will this affect the conveyor belt?	Mr Ken van Rooyen, Shanduka Mining and Homeland Mining and Energy SA	Announcement meeting, 25 November 2010	Route affecting Shanduka discarded.	Completely
12.	We prefer the coal to be transported by a conveyor belt, because that means fewer trucks on the road.	Mr Arthur Joubert, Plot 52, PO Box 15, Kendal, 2225	Announcement meeting, 24 November 2010	Confirmation that the proposed option to use a conveyor is preferred.	Completely
13.	An overland conveyor is the best option as road will have too many impacts and Spoornet is unreliable.	Mr Louw Potgieter, Ogies Business Forum	Response to the Background Information Document in January 2011	Confirmation that the proposed option to use a conveyor is preferred.	Completely
14.	In selecting a conveyor route the most important is to avoid human settlement areas and to take the economic impacts into consideration.	Mr Louw Potgieter, Ogies Business Forum	Response to the Background Information Document in January 2011	Confirmation that the proposed option to use a conveyor is preferred.	Completely
15.	Eskom also needs clarity on the exact conveyor belt route, because Eskom is renting land out to farmers who could also be affected by the proposed conveyor belt.	Ms Tinkie Höll, Eskom	Public meeting on 23 March 2011 to discuss the DSR	AAIC is engaging directly with Eskom on this issue.	Adequately *AAIC discussions with Eskom*

	COMMENTS, QUESTIONS AND ISSUES	COMMENTATOR(S)	SOURCE(S)	RESPONSE(S) GIVEN BY AAIC AND/OR THE ENVIRONMENTAL ASSESSMENT PRACTITIONER	Has this issue been addressed? *Actions Required*
16	Will the proposed ash disposal facility of Kusile Power Station be in the way of the conveyor?	Mr André Cherry, landowner.	Public meeting to discuss the DEIR at 18:00 on 1 November 2011 at the El Toro Conference Facility	No, Eskom and AAIC are talking about the various developments in the area on a regular basis to prevent one development from interfering with another. The alignment of flight 5 has been discussed with Eskom and has moved slightly to accommodate Eskom's requirements.	Adequately.
17	Take care when crossing the wetlands with the conveyor belt, because these systems are very sensitive for any coal spillages.	Mr André Cherry, landowner.	Public meeting to discuss the DEIR at 18:00 on 1 November 2011 at the El Toro Conference Facility	Noted. This has been addressed in the design. The conveyor is equipped with belt turn-overs and double scrapers to avoid spills along the entire route, including the wetland sections. There will also be environmental gantries at stream and river crossings. Addressed in EMP.	Adequately
18	How far will the conveyor be from our houses?	Messrs Daniel Hlatshwayo and Mr Donald Mohlala residents	Public meeting to discuss the DEIR at 18:00 on 1 November 2011 at the El Toro Conference Facility	After studying a map it was noted that the conveyor will be about 300 metres away from their homes.	Adequately
19	How will we be able to cross the conveyor?	Messrs Daniel Hlatshwayo and Mr Donald Mohlala residents	Public meeting to discuss the DEIR at 18:00 on 1 November 2011 at the El Toro Conference Facility	Mr Mokhine Makgalemele from AAIC will visit these residents and discuss where the best place will be to build a bridge over the conveyor belt.	Adequately *AAIC further consultation.*
C.	**Operation, monitoring and maintenance of the conveyor**				
1.	What will happen in case of an emergency, because it can sometimes be difficult to cross the N12 and with a conveyor belt running next to the N12 it will worsen this problem?	Mr Andre Cherry, Landowner, PO Box 129, Kendal, 2225	Public meeting on 22 March 2011 to discuss the DSR	The existing N12 crossings will not be affected by the conveyor belt which will run in a servitude parallel to the highway. Conveyor will cross under the highway through an existing culvert (old unused Transnet culvert).	Adequately *Emergency control measures (fire protection and dust suppression)*
2.	Theft will be a massive problem, because thieves will remove all metal parts of the conveyor belt system.	Mr Andre Cherry, Landowner, PO Box 129, Kendal, 2225	Public meeting on 22 March 2011 to discuss the DSR	Mr Lamprecht said a nearby conveyor belt transporting coal to the Phola Coal Processing Plant from Zibulo Colliery has been in use for a number of years and theft is not a problem. Security fencing will be provided along the entire length of the conveyor belt.	Adequately *Security and Inspections*
3.	Your fencing next to the servitude of the conveyor belt as well as any parts such as the proposed side panels of the conveyor will be stolen. Theft is a big problem in this area.	Mr Andre Cherry, Landowner, PO Box 129, Kendal, 2225	Announcement meeting, 25 November 2010	Regular security patrols will be done to prevent this from happening.	Adequately *Security and Inspections*

	COMMENTS, QUESTIONS AND ISSUES	COMMENTATOR(S)	SOURCE(S)	RESPONSE(S) GIVEN BY AAIC AND/OR THE ENVIRONMENTAL ASSESSMENT PRACTITIONER	Has this issue been addressed? *Actions Required*
4.	Will there be a big enough stockpile at Kusile Power Station to have such a long stoppage?	Mr Ken van Rooyen for Shanduka Mining and Homeland Mining and Energy SA	Announcement meeting, 25 November 2010	Yes, because this conveyor belt will not be the sole supplier of coal to Kusile. The conveyor belt will deliver ~2000 tons per hour. The Kusile coal stockpile will be around 2,364 million tons and the Power Station will need about 50 000 tons per day.	Completely
5.	What will be the size of the coal transported on the conveyor belt?	Mr Andre Cherry, Landowner, PO Box 129, Kendal, 2225	Announcement meeting, 25 November 2010	It will be 50 mm and smaller.	Completely
6.	I have lived in this area for over 20 years and the mining companies always promise everything before the start of a new project, but once it is operational, all the promises are forgotten.	Mr Daan Duvenage, Plot 32, PO Box 132, Kendal, 2225	Announcement meeting, 24 November 2010	This is one of the reasons for this meeting, to allow stakeholders to voice their concerns and the EIA team will investigate these concerns. All issues and concerns will be included in the EMP and AAIC is legally required to adhere to the EMP once it has been approved.	Adequately *EMP Implementation*
7.	There are normally problems with conveyor belts where cross-overs are built.	Mr Daan Duvenage, Plot 32, PO Box 132, Kendal, 2225	Announcement meeting, 24 November 2010	The EIA did not identify fatal flaws. The EMP addresses the management of impacts.	Adequately *EMP Implementation*
8.	Ownership can change after a few years. Who will then look after the conveyor belt?	Mr Ben Zwane, ANCYL, 195 Mtshali Street, Phola Location, Ogies	Announcement meeting, 24 November 2010	The EMP must be adhered to during the total lifespan of the conveyor belt and the obligations stated in the EMP would transfer to any new owners if ownership of the conveyor changes. It is also in the interest of the company to maintain the belt or else it will become unprofitable. Responsibility for managing the belt will transfer to a new owner if the ownership changes.	Adequately *EMP Implementation*
9.	Under which Act will Anglo operate the coal conveyor on Eskom's property – the OSH Act or the Mining Health and Safety Act?	Ms Goody Ntuli, Eskom	Response to the Background Information Document in January 2011	Heath and safety dealt with separately in a detailed and comprehensive heath and safety management system developed to the highest standards. Since AAIC is the owner of the Phola-Kusile Coal Conveyor, it is anticipated that the Mining Health and Safety Act will apply.	Adequately *Separate health and safety programme*
10.	The lifespan of Kusile Power Station is around 50 years. What is the lifespan of the conveyor belt and the current coal deposits?	Mr Robert van Bulderen, Transnet Pipelines, PO Box 1802, Standerton, 2430	Announcement meeting, 25 November 2010	The same. Eskom has done a lot of research and that is the reason why Kusile is being built, due to sufficient coal deposits to its south eastern side.	Completely
11.	From which point of the conveyor servitude would Anglo be allowed to maintain and inspect, and operate the facility to deliver coal to Eskom?	Ms Goody Ntuli, Eskom	Response to the Background Information Document in January 2011	AAIC is responsible for the operation, maintenance and inspection of the conveyor as well as all infrastructure within the allocated conveyor servitude.	Adequately *Inspections and maintenance*
12.	How should Eskom deal with their working procedures in case of emergency repairs of the conveyor?	Ms Goody Ntuli, Eskom	Response to the Background Information Document in January 2011	The conveyor has been designed to deliver sufficient quantities of coal to the Kusile stockyard to offset the impacts of potential downtime. The contract which is to be finalised between AAIC and Eskom will address what happens during abnormal emergency situations.	Completely

	COMMENTS, QUESTIONS AND ISSUES	COMMENTATOR(S)	SOURCE(S)	RESPONSE(S) GIVEN BY AAIC AND/OR THE ENVIRONMENTAL ASSESSMENT PRACTITIONER	Has this issue been addressed? *Actions Required*
13.	Eskom has certain procedures and conditions that will have to be followed when Eskom pipelines, roads and Tx lines are crossed. These should be observed.	Ms Goody Ntuli, Eskom	Response to the Background Information Document in January 2011	Noted and agreed. AAIC and Eskom have formed a Joint Working Group whose role it is to discuss issues of mutual concern.	Adequately *Agreements with Eskom*
14.	The proposed conveyor will go underneath a service road. In this respect detailed safety designs are required.	Mr Ian Troskie. Cabanga Concepts for Shanduka Mining and Homeland Mining and Energy SA	Letter in response to the BID	All designs will comply with the Anglo Fatal risk standards. A general description of typical designs for road crossings to be employed for the Phola-Kusile Overland Coal Conveyor can be made available if required.	Completely
15.	Will the conveyor belt be monitored regularly?	Mr Daan Duvenage, Plot 32, PO Box 132, Kendal, 2225	Announcement meeting, 24 November 2010	Yes, it will be serviced and monitored regularly but the exact frequency is not known at this stage.	Adequately *Inspections and maintenance*
16.	This whole area suffers from veld fires during the dry season and this could have a negative effect on the conveyor belt.	Mr Andre Cherry, Landowner, PO Box 129, Kendal, 2225	Announcement meeting, 25 November 2010	Fire breaks on both sides of the conveyor is proposed to prevent fire damage. The maintenance road on the one side of the conveyor could also be used as a fire break.	Adequately
17	How do impacts differ between construction and operational phases of this project?	Dr James Meyer, Topigs SA	Public meeting to discuss the DEIR at 14:00 on 1 November 2011 at the El Toro Conference Facility	The impacts of construction are short term (12 to 13 months) while the impacts of the operational phase are long-term. The EMP covers both the construction and operational phases. Only a small number of people are employed during operation. During construction there could be ~ 800 to 1400 workers since there will be different teams doing simultaneous construction at the different flights (sections) of the conveyor. There could be two teams per flight to finish the conveyor belt as fast as possible. This is due to the tight programme for delivering coal to Kusile. Workers will, however, stay in the nearby towns, there will not be a construction camp for workers and informal settlements will be actively discouraged according to AAIC policies. It should be noted that the environmental impacts will be more significant during construction than operation.	Adequately
18	What about theft of equipment during construction and the theft of coal and equipment during operations.	Dr James Meyer, Topigs SA	Public meeting to discuss the DEIR at 14:00 on 1 November 2011 at the El Toro Conference Facility	Security companies will be employed during construction as well as during operations. Security is a concern but is effectively managed at other conveyors in the area.	Adequately

	COMMENTS, QUESTIONS AND ISSUES	COMMENTATOR(S)	SOURCE(S)	RESPONSE(S) GIVEN BY AAIC AND/OR THE ENVIRONMENTAL ASSESSMENT PRACTITIONER	Has this issue been addressed? *Actions Required*
19	How much coal falls off a conveyor belt?	Dr James Meyer, Topigs SA	Public meeting to discuss the DEIR at 14:00 on 1 November 2011 at the El Toro Conference Facility	AAIC is confident that spillages almost never happen on the straight, long stretches of a belt since measures are incorporated into the design to prevent spillages (i.e. double scrapers and belt turn-overs as described in the draft and final EIA report). There will be environmental gantries at river and stream crossings. Spillage can occur at the transfer stations but bunded areas and enclosures are provided at all transfer stations to capture spills.	Adequately
20	Choosing a colour for the conveyor is very important. It should be camouflaged to blend in with the surroundings. The colour should be similar to the veld and grass. Towards Witbank is a conveyor belt that has been painted blue. It stands out like a sore thumb and does not blend into the surroundings. The creamy colour of the conveyor in the pictures in the scoping report (Zibulo Conveyor) does not blend in well with the colour of the veld and soil, it should be painted a more brown khaki colour as typically used for SANDF vehicles.	Mr André Cherry, landowner.	Public meeting to discuss the DEIR at 18:00 on 1 November 2011 at the El Toro Conference Facility	AAIC will investigate which colours can be used and silver, white or blue will not be used. AAIC is currently in discussion with Mr Cherry regarding the colour for the conveyor sheeting. AAIC will provide feedback on their discussions with Mr Cherry by the end of February 2012.	Adequately *AAIC to conclude discussions with Mr Cherry.*
D.	**Air pollution and dust**				
1.	Investigate the possibility of air pollution caused by the conveyor belt.	Mr Louw Potgieter, Ogies Business Forum, PO Box 143, Ogies	Response to the Background Information Document on 22 November 2010.	Air quality impacts have been assessed. It found that the project incremental impacts from the conveyor are very low and confined to small areas around the transfer stations. The number of transfer stations was minimised and a dust suppression sprinkler system will be installed at each transfer station. Wet suppression will also be implemented on haul roads during construction. Conveyor cover provided.	Adequately *Dust suppression on construction roads and at transfer stations.*
2.	What measures will be taken to prevent dust from the conveyor?	Ms Goody Ntuli, Eskom and Mr Ian Troskie. Cabanga Concepts for Shanduka Mining and Homeland Mining and Energy SA	Response to the Background Information Document in January 2011	Air quality impacts have been assessed. It found that the project incremental impacts from the conveyor are very low and confined to small areas around the transfer stations. The number of transfer stations was minimised and a dust suppression sprinkler system will be installed at each transfer station. Wet suppression will also be implemented on haul roads during construction. Conveyor cover provided.	Adequately *Dust suppression on construction roads and at transfer stations.*
3.	What will be done regarding dust, because the mines only do dust suppression when an inspection is about to take place. A conveyor belt also makes a lot of noise.	Mr Daan Duvenage, Plot 32, PO Box 132, Kendal, 2225	Announcement meeting, 24 November 2010	Air quality impacts have been assessed. It found that the project incremental impacts from the conveyor are very low and confined to small areas around the transfer stations. The number of transfer stations was minimised and a dust suppression sprinkler system will be installed at each transfer station. Wet suppression will also be implemented on haul roads during construction. Conveyor cover provided.	Adequately *Dust suppression on construction roads and at transfer stations.*

	COMMENTS, QUESTIONS AND ISSUES	COMMENTATOR(S)	SOURCE(S)	RESPONSE(S) GIVEN BY AAIC AND/OR THE ENVIRONMENTAL ASSESSMENT PRACTITIONER	Has this issue been addressed? *Actions Required*
4.	If the transported coal is too fine, it will be blown off the belt, because we have wind gusts of up to 80 km/h in this area. We also have strong rains in this area that will wash the coal off the belt.	Mr Andre Cherry, Landowner, PO Box 129, Kendal, 2225 Ms Tinkie Höll, Eskom	Announcement meeting, 25 November 2010	Air quality impacts have been assessed. It found that the project incremental impacts from the conveyor are very low and confined to small areas around the transfer stations. The number of transfer stations was minimised and a dust suppression sprinkler system will be installed at each transfer station. Wet suppression will also be implemented on haul roads during construction. Conveyor cover provided.	Adequately *Dust suppression on construction roads and at transfer stations.*
E.	**Public participation and communication**				
1.	Why were I&APs not consulted on the rail, road or conveyor processes?	Mr Ian Troskie. Cabanga Concepts for Shanduka Mining and Homeland Mining and Energy SA	Letter in response to the BID	I&APs were consulted on all three options and these were also presented at the announcement meeting on 24 and 25 November 2010. These alternatives are also addressed in the Scoping and EIA Reports and further information on the alternatives were presented on 22 and 23 March 2011 when the Draft Scoping Report was discussed.	Completely
2.	The proposed conveyor routes go through two mines – Shanduka Coal and Homeland Energy Group – have they been consulted?	Mr Ian Troskie. Cabanga Concepts for Shanduka Mining and Homeland Mining and Energy SA	Letter in response to the BID	Both mining groups received landowner notifications in October 2010 and are registered I&APs. Representatives of both mining groups attended the public meetings held in November 2010 and March 2011. Red and Purple conveyor corridors discarded.	Completely
3.	When asked by the facilitator, stakeholders said they prefer the choice of two meetings, one at night and one in the morning.	Stakeholders at the meeting	Announcement meeting, 24 November 2010	Noted.	Adequately *Meetings to be conducted both at night and during the day*
4.	Have all adjacent landowners and stakeholders been consulted of the process?	Mr Ian Troskie. Cabanga Concepts for Shanduka Mining and Homeland Mining and Energy SA	Letter in response to the BID	Landowners on all the proposed alternative routes were notified by registered mail. Background Information Documents (BIDs) were hand delivered to all stakeholders in the area. Site notices were put up to cover all road crossings in the area. Advertisements were published widely during the announcement of the project and to advertise the availability of the Scoping and EIA Reports for public comment. Notifications were sent regarding the review of the draft and final scoping and EIA reports and will again be sent out when the environmental authorisation is issued.	Adequately *Notifications to I&APs regarding final EIA review and environmental authorisation*
5.	Will the Integrated Water and Waste Management Plan as well as the Integrated Water Use License application be available for public review?	Mr Ian Troskie. Cabanga Concepts for Shanduka Mining and Homeland Mining and Energy SA	Letter in response to the BID	All documentation relating to submissions of the EIA and IWULA will be made available for public review, as required by the various Acts.	Adequately *Notifications to I&APs regarding IWWMP review*
6.	Has the Department of Roads registered as an I&AP?	Mr Ian Troskie. Cabanga Concepts for Shanduka Mining and Homeland Mining and Energy SA	Letter in response to the BID	The South African National Roads Agency (SANRAL) is an I&AP. The Mpumalanga Department of Public Works, Roads and Transport is also an I&AP as well as a commenting authority.	Completely

	COMMENTS, QUESTIONS AND ISSUES	COMMENTATOR(S)	SOURCE(S)	RESPONSE(S) GIVEN BY AAIC AND/OR THE ENVIRONMENTAL ASSESSMENT PRACTITIONER	Has this issue been addressed? *Actions Required*
7.	Anglo American Inyosi Coal must appoint a community liaison officer for this project to keep the communities informed.	Mr Thabiso Gwambe, ANCYL, 63 Oylo Section, Phola Location, Ogies	Announcement meeting, 24 November 2010	There is already an employee from AAIC interacting with the communities, Mr Mokhine Makgalemele. He will also discuss the conveyor belt with the communities. The communities are welcome to attend any meetings and can participate in this process freely. AAIC is in the process of consulting with landowners. This process is ongoing.	Adequately *On-going discussions with landowners*
8	People living close to the conveyor, who is currently unemployed were interested in opportunities.	Two attendees of public meeting. As per meeting minutes.	Public meeting, 1 November 2011	Mr Lampies Lamprecht undertook to send and AAIC representative to consult with these people. AAIC is in the process of consulting with people living on the land. This process is ongoing.	In process. *On-going discussions with people living on the land*
F.	**Ownership of servitude required for the conveyor**				
1.	What happens if a landowner refuses to have the conveyor belt on his property?	Mr Arthur Joubert, Plot 52, PO Box 15, Kendal, 2225	Announcement meeting, 24 November 2010	That is one of the reasons why there are three alternative routes to find the route with the least impact on people and the environment, but AAIC will also negotiate with landowners to find the best practical solution. AAIC is in the process of negotiation with all landowners regarding mitigation / compensation, the final conveyor alignment and servitude agreements. It is expected that all agreements will be in place in due course and before construction commences. A great deal of the properties affected by the conveyor belongs to AAIC. All landowners, except Eskom, have signed consent letters approving the conveyor servitude on their property. AAIC provided Eskom with a servitude agreement and is awaitong feedback in this regard.	In process, almost complete. *Outstanding agreements with landowners along proposed route to be finalised.*
2.	With regards to the servitude agreement between Eskom and the developer, what are the conditions that should be stipulated in the agreement?	Ms Goody Ntuli, Eskom	Response to the Background Information Document in January 2011	AAIC and Eskom have formed a Joint Working Group whose role it is to discuss issues of mutual concern. AAIC is in the process of negotiation with all landowners regarding mitigation / compensation, the final conveyor alignment and servitude agreements. It is expected that all agreements will be in place in due course and before construction commences. AAIC provided Eskom with a servitude agreement and is awaitong feedback in this regard.	In process, almost complete. *Outstanding agreements with landowners along proposed route to be finalised.*
3.	The proposed routes run over a number of our properties. Will it be possible to negotiate a share on the belt?	Mr Mike Elliot, Kusile Mining, P. O. Box 13643, Leraatsfontein, 1038	Announcement meeting, 25 November 2010	If Kusile Mining can secure a contract with Eskom to supply Kusile Power Station and there is capacity on the conveyor belt, then this possibility can be discussed. Negotiations will need to be undertaken directly between Kusile Mining and Eskom.	Adequate but not applicable to this EIA *Separate agreement between third parties*

	COMMENTS, QUESTIONS AND ISSUES	COMMENTATOR(S)	SOURCE(S)	RESPONSE(S) GIVEN BY AAIC AND/OR THE ENVIRONMENTAL ASSESSMENT PRACTITIONER	Has this issue been addressed? *Actions Required*
4.	When will negotiations start with affected landowners?	Mr Arthur Joubert, Plot 52, PO Box 15, Kendal, 2225	Announcement meeting, 24 November 2010	AAIC is in the process of negotiation with all landowners regarding mitigation / compensation, the final conveyor alignment and servitude agreements. It is expected that all agreements will be in place in due course and before construction commences. A great deal of the properties affected by the conveyor belongs to AAIC. All landowners, except Eskom, have signed consent letters approving the conveyor servitude on their property. AAIC provided Eskom with a servitude agreement and is awaitong feedback in this regard. AAIC is also negotiating with Mr Truter, who owns a number of properties along the conveyor route.	In process, almost complete. *Outstanding agreements with landowners along proposed route to be finalised.*
G.	**Water related issues**				
1.	There are very limited water resources in the area – the development of an IWWMP will be critically important.	Mr Ian Troskie. Cabanga Concepts for Shanduka Mining and Homeland Mining and Energy SA	Letter in response to the BID	An IWWMP has been developed and will be issued for public review.	Adequately *Notifications to I&APs regarding IWWMP review*
2.	It does not make sense to use drinking water on coal to prevent it from blowing away. Enclosed railway trucks will not have this problem. Rather use polluted water pumped from one of the mines for this purpose.	Mr Andre Cherry, Landowner, PO Box 129, Kendal, 2225	Announcement meeting, 25 November 2010	This is a good suggestion. AAIC investigated this option but it was found that clean water is needed to avoid clogging of sprinkler nozzles of the dust and fire protection system. If the nozzles get clogged, it would have serious impacts on dust generation and fire protection. Small qualities of water is used for wash down. It is not feasible to install a separate pipeline for clean water (dust protection and fire protection) and general wash down water at transfer stations.	Completely
3.	An aquatic specialist must do a proper study at each of the river crossings	Mr AC Hoffman, Mpumalanga Tourism and Parks Agency, PO Box 1250, Groblersdal, 0470	Response to the Background Information Document on 22 November 2010.	The soil, wetland and a team of ecologists investigated each river and wetland crossing. It should be noted that all impacts cannot be avoided but measures to minimise impacts have been made in the EMP and IWWMP.	Adequately *EMP and IWWMP measures to minimise impacts on wetlands and river crossings.*
4.	Will studies be done to understand the proposed impact on wetlands and streams?	Mr Ian Troskie. Cabanga Concepts for Shanduka Mining and Homeland Mining and Energy SA	Letter in response to the BID	The soil, wetland and a team of ecologists investigated each river and wetland crossings. It should be noted that all impacts cannot be avoided but measures to minimise impacts have been made in the EMP and IWWMP.	Adequately *EMP and IWWMP measures to minimise impacts on wetlands and river crossings.*

	COMMENTS, QUESTIONS AND ISSUES	COMMENTATOR(S)	SOURCE(S)	RESPONSE(S) GIVEN BY AAIC AND/OR THE ENVIRONMENTAL ASSESSMENT PRACTITIONER	Has this issue been addressed? *Actions Required*
5.	What measures should Eskom take with regards to storm water and water seeping from the coal during delivery of coal at Eskom?	Ms Goody Ntuli, Eskom	Response to the Background Information Document in January 2011	AAIC is responsible for the operation, maintenance and inspection of the conveyor as well as all infrastructure within the allocated conveyor servitude. Once the coal has been delivered into Kusile's stockyard then the pollution control measures stated in Kusile's approved EIA would need to be implemented by Eskom. Silt traps and evaporation dams will be installed at all transfer stations, including at the Kusile transfer station. The Kusile transfer station will be managed by Eskom.	Adequately *Silt traps and evaporation dams to be installed.* *Eskom to adapt responsibility for managing the silt trap and evaporation dam at the Kusile transfer station*
6.	What impact will the conveyor belt have on the ground water, because some of the coal or the water proposed to wash the coal could end up polluting the water in the area.	Mr Dan Swart, Plot 37, PO Box 212,Kendal,	Announcement meeting, 25 November 2010	Silt traps and evaporation dams will be installed at all transfer stations, including at the Kusile transfer station. The proposed mobile water treatment plant will be designed to strict engineering design criteria. The groundwater specialist concluded that, with the engineering designs in place, the impacts on groundwater impacts will be minimal. The proposed abstraction and treatment of water from old underground mine workings will have an overall positive impact.	Adequately *Silt traps and evaporation dams to be installed.* *If mobile water treatment plant is installed, this should be in accordance with proposed designs.* *EMP implementation.*
7.	Water is a huge problem and Eskom, the government and mining companies should assist in the improved management thereof.	Mr Louw Potgieter, Ogies Business Forum	Response to the Background Information Document in January 2011	Noted. The proposed water supply option – to abstract and treat water from old mine workings addresses this concern.	Adequately.
8.	The blue route and its alternatives run all along the borders of affected parties to minimise the impact. AAIC will walk the route with the affected farmers to where floods occur. Normally infrastructure is built outside the 1:50 year flood line, but for this conveyor belt, it will be built outside the 1:200 years flood line.	Mr Lampies Lamprecht, Project Manager for Anglo American Inyosi Coal	Public meeting on 23 March 2011 to discuss the DSR	Noted.	Adequately *On-going discussions with landowners*
9	How mobile is a mobile water treatment plant.	Dr James Meyer, Topigs SA	Public meeting to discuss the DEIR at 14:00 on 1 November 2011 at the El Toro Conference Facility	According to AAIC it is highly mobile, because it is built on a truck. It can be moved where it is needed.	Completely

	COMMENTS, QUESTIONS AND ISSUES	COMMENTATOR(S)	SOURCE(S)	RESPONSE(S) GIVEN BY AAIC AND/OR THE ENVIRONMENTAL ASSESSMENT PRACTITIONER	Has this issue been addressed? *Actions Required*
10	What will happen to the waste from the mobile treatment plant?	Dr James Meyer, Topigs SA	Public meeting to discuss the DEIR at 14:00 on 1 November 2011 at the El Toro Conference Facility	AAIC is investigating water treatment technology that would not produce brine. Gypsum will be produced but will be removed from the site by the contractor responsible for operating the water treatment plant. As a precautionary measure, the design allows for a brine disposal facility, which will be designed to strict specifications. The EIA and IWULA and water specialist studies assessed the impacts of brine and gypsum.	Adequately
11	What will the treated water be used for and how will it be distributed along the conveyor belt?	Mr Carel Frylinck, Landowner	Public meeting to discuss the DEIR at 14:00 on 1 November 2011 at the El Toro Conference Facility	It will be used for fire fighting and dust suppression. There will be a pipeline parallel to the conveyor in the servitude to distribute water to the various sections of the conveyor. The remaining treated water that is not used will be released into the streams.	Adequately
12	When you extract water from the disused underground mines, what will happen if you strike a pocket of oil? The old mines in this area were used years ago for bunkering (storing) oil and some oil is still inside these old mines.	Mr Robbie van Bulderen, Transnet Pipelines	Public meeting to discuss the DEIR at 14:00 on 1 November 2011 at the El Toro Conference Facility	It will not be a problem as abstraction will not take place near the old oil storage areas. This issue will be addressed in the New Largo Colliery EIA as mining will occur closer to the old storage areas.	Adequately
13	What can be done in and around wetlands to prevent grass owls and herons from flying into fences? Many fatalities happen because these birds sit on the ground and when flying up, they fly straight into the fence.	Mr Robbie van Bulderen, Transnet Pipelines	Public meeting to discuss the DEIR at 14:00 on 1 November 2011 at the El Toro Conference Facility	This was discussed with the ecological specialist. The main impacts on owls happen when they are spooked. The risk along the conveyor fence is low. High risk areas are where there are movement of vehicles and sudden movement of people. This is not the case along the conveyor.	Adequate
14	Clean, fresh water should not be used for dust suppression.	Mr André Cherry, landowner.	Public meeting to discuss the DEIR at 18:00 on 1 November 2011 at the El Toro Conference Facility	Clean water has to be used to ensure that the fine nozzles of the fire protection system and dust suppression system do not get clogged. However, decant water from the old mines will be treated at the water treatment plant for this purpose and the remaining unused volume of treated cleaned water will be released into the nearby stream, thus improving water quality in the stream.	Adequate

	COMMENTS, QUESTIONS AND ISSUES	COMMENTATOR(S)	SOURCE(S)	RESPONSE(S) GIVEN BY AAIC AND/OR THE ENVIRONMENTAL ASSESSMENT PRACTITIONER	Has this issue been addressed? *Actions Required*
H.	**Infrastructure that may be affected**				
1.	Please be advised that BHP Billiton Energy Coal South Africa (BECSA) objects to the proposed development due to the following reasons: i. The proposed routes for the Phola-Kusile Overland Conveyor Belt will have a problematic and negative impact on BECSA's current mining operations and methods at its Klipspruit Colliery. Each of the three options will in fact sub-divide BECSA's coal reserves into two or more sections which require individual mining operations with major cost implications for each section to be mined. ii. The conveyor will sterilise a large volume of BECSA's coal reserves within its Klipspruit Mining Authorisation area. These reserves have been calculated and provided for in Klipspruit's five year mining plan. iii. The conveyor will impact on BECSA's surface rights, required and obtained for the exclusive purpose of mining operations at the Klipspruit Colliery.	Mr JB Muller, BHP Billiton Energy Coal South Africa, PO Box 61075, Marshalltown, 2107	Letter on 5 April 2011	BECSA (BHP Billiton) objected to the initial conveyor alignment options for flight 1 due to sterilisation of their coal resources. However, BECSA has given verbal consent for the conveyor along the final proposed route alignment, which follows the Eskom 132 kV power line, on condition that AAIC provides a crossing for BECSA mining equipment (haul road crossing) as compensation . Details of the compensation measures were being discussed at the time of writing this report. AAIC is in the process of negotiation with all mining / prospecting right holders regarding mitigation / compensation, the final conveyor alignment and servitude agreements. It is expected that all agreements will be in place in due course and before construction commences. BECSA agreed in principle to the Conveyor over their reserves and property, subject to the conveyor being as close as possible to the existing Eskom Servitude. AAIC is awaiting BECSA`s formal response to their request.	In process (expected to be complete at the time construction commences). *Agreements with BECSA to be finalised.*
2.	The proposed route 1 [Blue Corridor] crosses right over our mining area and several of our infrastructure. Route 2 and 3 cross an old mining area currently in rehabilitation and possible future mining areas.	Burger du Toit, Shanduka Coal (Pty) Ltd	Letter in response to the BID	Red and Purple corridor route (Figure 1-3) has been discarded. Blue corridor route has been optimised (Figure 1-1) after various route alignments have been considered (Figure 1-2).	Incomplete *Shanduka to comment on proposed route in draft and final EIA report*
3.	Kusile Mining is the prospecting rights holder of Heuvelfontein Portions 73, 72, 63, 61, 58, 57 and 51. The proposed routes 2 and 3 [red and purple corridors] cross our potential mining resources. Kusile Mining proposes to mine these resources as soon as a Mining Right has been granted. The proposed route 2 and 3 may sterilize portions of our coal resources and possibly split access between the portions of the resources.	Mr Mike Elliot, Kusile Mining, P. O. Box 13643, Leraatsfontein, 1038	Letter in response to the BID	Red and Purple corridor route (Figure 1-3) has been discarded.	Adequately
4.	Please note that there are underground Telkom cables on the Ogies to Kendal and on the Kendal to Balmoral roads.	Ms Janine Stoop, Telkom SA Planner	Letter in response to the BID	AAIC is in the process of negotiation with all infrastructure owners regarding measures to protect infrastructure, to avoid disruptions and provide access for maintenance and repair. It is expected that all agreements will be in place in due course and before construction commences.	Adequately *Infrastructure protection measures to be confirmed with infrastructure owners and implemented during construction*

	COMMENTS, QUESTIONS AND ISSUES	COMMENTATOR(S)	SOURCE(S)	RESPONSE(S) GIVEN BY AAIC AND/OR THE ENVIRONMENTAL ASSESSMENT PRACTITIONER	Has this issue been addressed? *Actions Required*
5.	We are still worried about the proposed route through the Shanduka Mining and Homeland Mining properties which could be on the barrier pillar. We must walk through these properties with AAIC officials so that we can discuss the impact of the proposed conveyor belt.	Mr Ian Troskie. Cabanga Concepts for Shanduka Mining and Homeland Mining and Energy SA	Public meeting on 23 March 2011 to discuss the DSR	Red and Purple corridor route (Figure 1-3) has been discarded. Blue corridor route has been optimised (Figure 1-1) after various route alignments have been considered (Figure 1-2).	Incomplete *Shanduka to comment on proposed route in draft and final EIA report*
6.	It is recommended that all infrastructure in the study area be superimposed on a map to assist with the identification of risks with regards to the construction and operation of the conveyor.	Ms Goody Ntuli, Eskom	Response to the Background Information Document in January 2011	AAIC is in the process of negotiation with all infrastructure owners regarding measures to protect infrastructure, to avoid disruptions and provide access for maintenance and repair. It is expected that all agreements will be in place in due course and before construction commences.	Adequately *Infrastructure protection measures to be confirmed with infrastructure owners and implemented during construction*
7.	The conveyor belt will cross between one and four of our pipelines, depending on what route will finally be selected. What can be done should maintenance be needed near or under your belt, or a section of a pipeline must be replaced? This can take up to 80 hours. Will you be able to stop the conveyor belt for such a long period of time?	Mr Robert van Bulderen, Transnet Pipelines, PO Box 1802, Standerton, 2430	Announcement meeting, 25 November 2010	AAIC has had meetings with Transnet and discussions regarding the pipelines and measures to protect the pipelines during construction and operation of the conveyor. Measures to provide Transnet with access to their pipelines were also disused – i.e. AAIC to place a moveable belt section over the pipeline that can be moved aside when Transnet needs to replace / maintain a pipeline. Interruptions and stoppages for general maintenance have been factored into the operational management of the conveyor belt. AAIC is in the process of negotiation with all infrastructure owners regarding measures to protect infrastructure, to avoid disruptions and provide access for maintenance and repair. It is expected that all agreements will be in place in due course and before construction commences.	Adequately *Infrastructure protection measures to confirmed with infrastructure owners and implemented during construction*
I.	**Impacts to be assessed in the EIA phase**				
1.	Noise and visual impacts will impact on land users and will affect property values.	Mr Ian Troskie. Cabanga Concepts for Shanduka Mining and Homeland Mining and Energy SA	Letter in response to the BID	Noise and visual impacts have been assessed by specialists. Economic impacts were also assessed. Synergistics will consult with all land owners. Findings presented in EIA section. Recommendations incorporated into the EMP. Impacts are presented in Section 7 and mitigation in the EMP (Section 12).	Adequately *On-going discussions with landowners* *EMP implementation* *Outstanding agreements with landowners along proposed route to be finalised.*

	COMMENTS, QUESTIONS AND ISSUES	COMMENTATOR(S)	SOURCE(S)	RESPONSE(S) GIVEN BY AAIC AND/OR THE ENVIRONMENTAL ASSESSMENT PRACTITIONER	Has this issue been addressed? *Actions Required*
2.	The following components should be assessed in the EIA: • economic development • employment • health • odours • veld fires • public safety • security and crime levels	Mr Louw Potgieter, Ogies Business Forum	Response to the Background Information Document in January 2011	Findings of the various specialist studies are presented in EIA section. Recommendations incorporated into the EMP.	Adequately *EMP implementation*
3.	We would like the following potential impacts to be addressed in the EIA and EMP: • Air pollution; • Spillages that may occur; • Noise pollution. Mitigation measures to counter these potential impacts must be implemented.	Ms Pricilla Fenyane, Environmental Health Practitioner, Emalahleni Local Municipality	Response to the Background Information Document on 7 January 2011.	Findings of the various specialist studies are presented in EIA section. Recommendations incorporated into the EMP.	Adequately *EMP implementation*
4.	What about the wildlife? A conveyor belt will prevent animals from moving around. You will need an animal crossing every 200 metres.	Mr Andre Cherry, Landowner, PO Box 129, Kendal, 2225	Announcement meeting, 25 November 2010	Findings of the various specialist studies are presented in EIA section. Recommendations incorporated into the EMP.	Adequately *EMP implementation*
5.	The Balmoral grave yard has cultural and historical importance and should be considered in the investigations.	Mr Louw Potgieter, Ogies Business Forum	Response to the Background Information Document in January 2011	Noted. Not affected by the proposed conveyor route.	Completely.
6.	Even if the conveyor belt is built on AAIC property, a veld fire that starts at the belt will affect the whole farming community. There are also strong winds in this area that has caused veld fires to jump over the N12 highway.	Mr Andre Cherry, Landowner, PO Box 129, Kendal, 2225	Public meeting on 22 March 2011 to discuss the DSR	Risks have been assessed in a risk assessment with project design team. – The major risk for fires is at transfer stations. – There is a minimal risk along the remaining length of the conveyor. – A fire protection system is provided at high risk areas. – At all transfer stations, sprinkler systems will wet the coal – this will suppress dust and the risk for fires. – Need and details of firebreaks to be discussed with landowners as per EMP measures – monitoring committee to be put in place. All these measures accommodated in design and EMP.	Adequately *EMP implementation*

	COMMENTS, QUESTIONS AND ISSUES	COMMENTATOR(S)	SOURCE(S)	RESPONSE(S) GIVEN BY AAIC AND/OR THE ENVIRONMENTAL ASSESSMENT PRACTITIONER	Has this issue been addressed? *Actions Required*
7.	High potential farmland will be lost to mining activities and it is becoming a critical point to save as much of this land as possible for food production.	Mr Andre Cherry, Landowner, PO Box 129, Kendal, 2225	Public meeting on 22 March 2011 to discuss the DSR	Route optimised to avoid impacts as far as reasonably possible.	Adequately *I&APs to comment on proposed route in draft and final EIA report* *Outstanding agreements with landowners along proposed route to be finalised.*
8.	Are there any graves or archaeological sites on the blue route?	Stakeholder	Public meeting on 23 March 2011 to discuss the DSR	Route was moved to avoid graves.	Adequately *EMP implementation*
9.	What specialist studies will be undertaken?	Mr Ian Troskie. Cabanga Concepts for Shanduka Mining and Homeland Mining and Energy SA	Public meeting on 23 March 2011 to discuss the DSR	See specialist studies listed in EIA report. All specialist studies appended to EIA report.	Completely.
J.	**Other**				
1.	We are the distributors and agent for Dunlop Conveyor Belts and Systems and humbly request to be part of this project.	Mr Kuben Kisten, ZKT, No 6 White House Building, 18 Vuyisile Mini Street, Bethal, 2310	Fax on 1 March 2011 in response to the DSR	Noted.	Completely.
2.	Where are the coal sourced for Kendal Power Station and is there enough coal?	Mr Andre Cherry, Landowner, PO Box 129, Kendal, 2225	Announcement meeting, 25 November 2010	To the east of Kendal. Yes, there are substantial reserves.	Completely.
3.	Should you need transportation for the work force on this project, please contact us so that we can negotiate a deal.	Mr Master Thugwana, Ogies, Phola Taxi Association, PO Box 6357, Tasbet Park, 1040	Announcement meeting, 25 November 2010	Noted.	Completely.
4.	We have heard of more mining operations being planned for the area east of the Kusile Power Station. When is this going to happen?	Mr Daan Duvenage, Plot 32, PO Box 132, Kendal, 2225	Announcement meeting, 24 November 2010	AAIC would like to open another coal mine (New Largo) in the area, but this will be dealt with in a separate EIA process. All stakeholders will be consulted again as part of a separate EIA process. This separate process is ongoing.	Completely.
5.	Is the planned mine the area lined in black on the map you had in the background information document? Will it be open cast and will it use this conveyor belt?	Mr Arthur Joubert, Plot 52, PO Box 15, Kendal, 2225	Announcement meeting, 24 November 2010	The area lined in black is where AAIC has prospecting rights. This proposed conveyor belt will only transport coal from the Phola Coal Processing Plant and Vlakfontein mine. It will not be used by the proposed mine, New Largo, which will have its own dedicated coal processing plant and conveyor belt to transfer coal to Kusile Power Station.	Completely.

7. Environmental Impact Assessment

7.1 Description of Affected Properties

Affected properties, land uses, ownership, and sensitive receptors along the proposed conveyor route (as depicted on Figure 1-1) are described below in Table 7-1 and Table 7-2. I&APs are encouraged to notify Synergistics of any changes or updates required to this information or if information as presented is incorrect.

Table 7-1: Affected Properties along the Proposed Conveyor Route Land Use and Route Description (refer Figure 1-1)

Property description		Landowner	Contact Person	Existing Land Uses on land along the AAIC proposed conveyor route	Conveyor route comments	Summary of Consultation to date
Farm	Portion					
Smaldeel 1 IS	5	Ingwe Surface Holdings	Johan Muller/ Vikesh Dhanooklal	- Phola Plant.	The route originates west of the centre of the property and exits on the western boundary. Distance affected ±215 m.	BECSA agreed in principle to the Conveyor over their reserves and property, subject to the conveyor being as close as possible to the existing Eskom servitude. AAIC is a waiting BECSA`s formal response to their request.
Bankfontein 216 IR	R/E	Ingwe Surface Holdings	As above.	- Dry land cultivation. - Public road – Route runs adjacent to this road. - Private gravel road – Route does not cross or run along this road. Road forms a 90° angle with the route. Access to housing not expected to be affected. - Natural grasslands.	The route runs along the eastern boundary of the property. Distance affected ±1.29 km.	BECSA agreed in principle to the Conveyor over their reserves and property, subject to the conveyor being as close as possible to the existing Eskom servitude. AAIC is awaiting BECSA`s formal response to their request.

Property description		Landowner	Contact Person	Existing Land Uses on land along the AAIC proposed conveyor route	Conveyor route comments	Summary of Consultation to date
Farm	Portion					
Bankfontein 216 IR	7	Truter Boerdery Trust	Christy Truter.	- Dry land cultivation. - Grazing. - Boreholes (not in working condition). - Private gravel road - Route runs adjacent to this road. Other smaller roads are crossed. Access to housing not expected to be affected. - Natural grasslands.	The route runs along the eastern boundary of the property for the first part. It then deviates to the west and splits the property in two. Distance affected ±2.08 km	Synergistics consulted with the owner on 12 September 2011. No major issues were raised. Christi and Berti Truter offered to sell all their properties affected by AAIC`s mining and related activities. Management agreed that we may proceed with negotiations with the Truters. Dirk Kitching is in process of determining the exact measurements of affected areas.
Bankfontein 216 IR	11	Truter Boerdery / Ingwe Surface Holdings (to be verified - based on information received from Mr Truter, this portion is owned by Truter Boerdery)	As above.	- Dry land cultivation. - Grazing. - Private gravel roads – some of the roads on the property are crossed by the route. Access to housing not expected to be affected. - Natural grasslands.	The route runs through the property, splitting it in two. Distance affected ±1.12 km.	As above (see Bankfontein 216 IR Portion 7).
Bankfontein 216 IR	10	Truter Boerdery Trust	As above.	- Dry land cultivation. - Grazing. - Private gravel road – the route cross only the western boundary road. Access to housing not expected to be affected. - Natural grasslands.	The route runs through the property, splitting it in two. Distance affected ±695 m.	As above (see Bankfontein 216 IR Portion 7).
Heuwelfontein 215 IR	11	Truter Boerdery Trust	As above.	- Dry land cultivation. - Boreholes (not in working condition) - Private gravel road - the route cross only the eastern boundary road. Access to housing not expected to be affected. - Natural grasslands. - Other houses (informal) – access is not expected to be impacted. - Small reservoir.	The route runs through the northern part of the property, splitting it in two. Distance affected ±320 m.	As above (see Bankfontein 216 IR Portion 7).

Property description		Landowner	Contact Person	Existing Land Uses on land along the AAIC proposed conveyor route	Conveyor route comments	Summary of Consultation to date
Farm	Portion					
Vlakfontein 569 JR	22	Truter Boerdery Trust / SANRAL (to be verified - based on AAIC records this property is owned by SANRAL).	Christy Truter (Truter Boerdery Trust) / Ockert Stevens and Kevin Rudd (SANRAL).	- Dry land cultivation. - Private gravel road - the route cross only the western boundary road. Access to housing not expected to be affected. - Natural grasslands.	The route runs through the central parts of the property, splitting it in two. Distance affected ±655 m.	AAIC in consultation with SANRAL. SANRAL agreed that AAIC may purchase the property from them. AAIC has a meeting scheduled with Werner, from SANRAL, on Tuesday, 14th of February to finalise the transaction. As above (see Bankfontein 216 IR Portion 7) for Truter Boerdery.
Vlakfontein 569 JR	11	Truter Boerdery Trust	As above.	- Dry land cultivation. - Private gravel road – the route does not cross any roads on this property. Closest distance to the route is ±55 m. - Natural grasslands.	The route cuts through the northern tip of the property. Very small portion is affected.	As above (see Bankfontein 216 IR Portion 7).
Vlakfontein 569 JR	3	Anglo American Inyosi Coal (AAIC), previously Anglo Operations Limited (AOL).	Henry Niewoudt	- Dry land cultivation. - Private gravel roads - the route cross only the western and boundary roads. Access to housing not expected to be affected. - Natural grasslands - Bush and trees. - Two dams. Southern dam ±1.7 km from route, northern dam ±3.4 km from route. Only the northern dam forms part of a wetland.	The route cuts through the Southern tip of the property. Distance affected ±560 m.	Land owned by AAIC. AAIC in consultation with tenants and occupiers of the land.
Klipfontiein 568 JR	14	AAIC, previously AOL	As above.	- Dry land cultivation. - R545 public road – the route cross this road. Access to housing might be affected during construction. - Private gravel roads – not affected. - Natural grasslands. - Grazing. - Main homestead – access might be affected. - Other houses – access might be affected. - Conveyor route ±345 m from housing infrastructure.	The route runs through the eastern and northern parts of this property. Distance affected ±1.2 km.	Land owned by AAIC. AAIC in consultation with tenants and occupiers of the land.

Property description		Landowner	Contact Person	Existing Land Uses on land along the AAIC proposed conveyor route	Conveyor route comments	Summary of Consultation to date
Farm	Portion					
Klipfontein 568 JR	59	SANRAL	Hermans and Roman Property Solutions	- N4 / R545 intersection (on & off ramps).	The route will run underneath the N4 highway, through an existing culvert.	AAIC in consultation with SANRAL. SANRAL agreed to the installation of the conveyor in the existing culvert underneath the N12 – Ref: N11/1/3-12/20-9. Consent was signed on 17/09/2011.
Klipfontein 568 JR	13	AAIC, previously AOL	As above.	- Dry land cultivation. - Public road – not affected. - Natural grasslands. - Bush and trees. - Other houses (Informal) - conveyor route ±40 m to 130 m from housing infrastructure. Access not expected to be affected. - Stream (wetland) - conveyor route runs along the wetland.	The route cuts through the Southern tip of the property. Distance affected ±1.05 km.	Land owned by AAIC. AAIC in consultation with tenants and occupiers of the land.
Klipfontein 568 JR	12	AAIC, previously AOL	As above.	- Dry land cultivation. - Private gravel roads – route cross more than one gravel road. Access to housing not expected to be affected. - Natural grasslands. - Bush and trees. - Other houses (Informal) – conveyor route runs ±120 m from housing infrastructure. Access might be affected. - Stream (wetland) - conveyor route runs along the wetland.	The route runs through the central part of the property, splitting it in two. Distance affected ±510 m.	Land owned by AAIC. AAIC in consultation with tenants and occupiers of the land.
Klipfontein 568 JR	15	AAIC, previously AOL	As above.	- Dry land cultivation. - Private gravel roads – route cross more than one gravel road. Access to housing not expected to be affected. - Natural grasslands. - Bush and trees. - Stream (wetland) - conveyor route runs along the wetland.	The route runs through the central part of the property, splitting it in two. Distance affected ±140 m.	Land owned by AAIC. AAIC in consultation with tenants and occupiers of the land.

Property description		Landowner	Contact Person	Existing Land Uses on land along the AAIC proposed conveyor route	Conveyor route comments	Summary of Consultation to date
Farm	Portion					
Klipfontein 568 JR	16	AAIC, previously AOL	As above.	- Dry land cultivation. - Private gravel roads – route cross one gravel road. Access to housing not expected to be affected. - Natural grasslands. - Bush and trees. - Stream (wetland) - conveyor route cross the wetland.	The route runs through the central part of the property, splitting it in two. Distance affected ±675 m	Land owned by AAIC. AAIC in consultation with tenants and occupiers of the land.
Klipfontein 568 JR	1	AAIC, previously AOL	As above.	- Dry land cultivation. - Private gravel roads – route cross more than one gravel road. Access to housing might be affected. - Natural grasslands. - Bush and trees. - Stream (wetland) - conveyor route cross the wetland.	The route runs through the property just north of the centre, splitting it in two. Distance affected ±695 m	Land owned by AAIC. AAIC in consultation with tenants and occupiers of the land.
Klipfontein 568 JR	29	AAIC, previously AOL	As above.	- Private gravel roads - route cross one gravel road. Access to housing might be affected. - Natural grasslands. - Bush and trees. - Stream (wetland) - conveyor route runs ±360 m to ±600 m north of the wetland. - Graves. ±580 m from conveyor route.	The route runs through the central part of the property, splitting it in two. Distance affected ±965 m	Land owned by AAIC. AAIC in consultation with tenants and occupiers of the land.
Klipfontein 568 JR	36	AAIC, previously AOL	As above.	- Dry land cultivation. - Private gravel roads - route cross one gravel road. Access to housing might be affected. - Natural grasslands - Bush and trees. - Graveyard. ±175 m from conveyor route.	The route runs through the central part of the property, splitting it in two. Distance affected ±420 m	Land owned by AAIC. AAIC in consultation with tenants and occupiers of the land.
Klipfontein 568 JR	35	AAIC, previously AOL	As above.	- Dry land cultivation. - Private gravel roads - route cross one gravel road. Access to housing might be affected. - Natural grasslands. - Bush and trees.	The route enters the property on the southern boundary. It then cuts through the property and runs along the western boundary. Distance affected ±1.42 km	Land owned by AAIC. AAIC in consultation with tenants and occupiers of the land.
Klipfontein 568 JR	34	AAIC, previously AOL	As above.	- Natural grasslands. - Grazing. - Private gravel roads – not affected.	The route runs along the western boundary of the property. Distance affected ±1.29 km	Land owned by AAIC. AAIC in consultation with tenants and occupiers of the land.

Property description		Landowner	Contact Person	Existing Land Uses on land along the AAIC proposed conveyor route	Conveyor route comments	Summary of Consultation to date
Farm	Portion					
Klipfontein 568 JR	33	AAIC, previously AOL	As above.	- Dry land cultivation. - Private gravel roads - route cross more than one gravel road. Access to housing might be affected. - Natural grasslands. - Grazing.	The route runs along the western boundary of the property and deviates to the north east. Distance affected ±410 m	Land owned by AAIC. AAIC in consultation with tenants and occupiers of the land.
Klipfontein 568 JR	32	Truter Boerdery Trust	As above.	- Dry land cultivation. - Private gravel road – not affected. - Natural grasslands.	The route runs through the central part of the property, splitting it in two. Distance affected ±330 m.	Synergistics consulted with the owner on 12 September 2011. No major issues were raised. Christi and Berti Truter offered to sell all their properties affected by AAIC`s mining and related activities. Management agreed that we may proceed with negotiations with the Truters. Dirk Kitching is in process of determining the exact measurements of affected areas.
Klipfontein 566 JR	9	Eskom Holdings Ltd	Jan De Klerk Tinkie Holl	- Dry land cultivation. - Private gravel road – not affected. Closest distance to the route is ±640 m. - Natural grasslands. - Grazing . - Small stream (not wetland) – not affected on this property.	The route cuts through the southern tip of the property. Distance affected ±565 m.	Synergistics personally consulted with Eskom's Estate Officer on 23 September 2011. No issues were raised. AAIC is awaiting Eskom`s comments on the Servitude Agreement.
Klipfontein 566 JR	66	AAIC, previously AOL	As above.	- Dry land cultivation. - Private gravel road - route cross more than one gravel road. Access to housing might be affected. - Natural grasslands. - Grazing. - Small stream (not wetland) – the conveyor route cross the stream.	The route cuts through the western part of the property. Distance affected ±1.20 km.	This affected portion of land is owned by the applicant, AAIC. Should it be required, Synergistics will consult with Anglo's Estate Officer prior to the submission of the final EIA.
Klipfontein 566 JR	53	Eskom Holdings Ltd	As above.	- Natural grasslands. - Grazing.	The route cuts through the south-eastern tip of the property. Very small portion is affected.	Synergistics personally consulted with Eskom's Estate Officer on 23 September 2011. No issues were raised. AAIC is awaiting Eskom`s comments on the Servitude Agreement.

Property description		Landowner	Contact Person	Existing Land Uses on land along the AAIC proposed conveyor route	Conveyor route comments	Summary of Consultation to date
Farm	Portion					
Klipfontein 566 JR	54	Eskom Holdings Ltd	As above.	- Dry land cultivation. - Natural grasslands. - Grazing.	The route cuts through the western part of the property. Distance affected ±280 m.	Synergistics personally consulted with Eskom's Estate Officer on 23 September 2011. No issues were raised. AAIC is awaiting Eskom`s comments on the Servitude Agreement.
Klipfontein 566 JR	52	Eskom Holdings Ltd	As above.	- Dry land cultivation. - Natural grasslands.	The route runs through the central part of the property, splitting it in two. Distance affected ±330 m	Synergistics personally consulted with Eskom's Estate Officer on 23 September 2011. No issues were raised. AAIC is awaiting Eskom`s comments on the Servitude Agreement.
Klipfontein 566 JR	50	Eskom Holdings Ltd	As above.	- Dry land cultivation. - Private gravel road - route cross more than one gravel road. Access to housing might be affected. - Natural grasslands. - Bush and trees. - Grazing .	The route runs through the central part of the property, splitting it in two. Distance affected ±335 m.	Synergistics personally consulted with Eskom's Estate Officer on 23 September 2011. No issues were raised. AAIC is awaiting Eskom`s comments on the Servitude Agreement.
Klipfontein 566 JR	48	Eskom Holdings Ltd	As above.	- Dry land cultivation. - Private gravel road – not affected. Closest distance to the route is ±30 m. - Natural grasslands. - Grazing. - Abandoned infrastructure.	The route exist this property on the north eastern corner. Distance affected ±300 m.	Synergistics personally consulted with Eskom's Estate Officer on 23 September 2011. No issues were raised. AAIC is awaiting Eskom`s comments on the Servitude Agreement.
Klipfontein 566 JR	31	AAIC, previously AOL	As above.	- Dry land cultivation. - Private gravel road – not affected. - Natural grasslands. - Grazing. - Bush and trees. - Main homestead – access not expected to be affected. Distance to route is ±40 m. Possible allocation required. - Farming infrastructure. Adjacent to route. - Four dams. Closest dam is ±250 m from the route. - Stream (wetland) – not affected. Closest distance to the route is ±560 m.	The route runs along the western boundary of the property. Distance affected ±300 m.	Land owned by AAIC. AAIC in consultation with tenants and occupiers of the land.

Property description		Landowner	Contact Person	Existing Land Uses on land along the AAIC proposed conveyor route	Conveyor route comments	Summary of Consultation to date
Farm	Portion					
Klipfontein 566 JR	17	AAIC, previously AOL	As above.	- Public gravel road – route cross this gravel road. Access to housing might be affected. - Natural grasslands - Dam - ±500 m from the route. - Keaton Mine - ±155 m from the route.	The route runs along the western boundary of the property. It then deviates north east and cuts through the property. Distance affected ±1.42 km.	Land owned by AAIC. AAIC in consultation with tenants and occupiers of the land.
Hartbeesfontein 537 JR	7	Eskom Holdings Ltd	As above.	- Kusile power station under construction.	The route cuts through the south eastern tip of the property. Distance affected ±310 m.	Synergistics personally consulted with Eskom's Estate Officer on 23 September 2011. No issues were raised. AAIC is awaiting Eskom`s comments on the Servitude Agreement.
Hartbeesfontein 537 JR	6	Eskom Holdings Ltd	As above.	- Kusile power station under construction.	The route cuts through the southern tip of the property. Distance affected ±415 m.	Synergistics personally consulted with Eskom's Estate Officer on 23 September 2011. No issues were raised. AAIC is awaiting Eskom`s comments on the Servitude Agreement.
Hartbeesfontein 537 JR	RE	AAIC, previously AOL	As above.	- Dry land cultivation. - Private gravel road – not affected. - Natural grasslands. - Grazing. - Main homestead – access not expected to be affected. ±2.23 km from the route. - Other houses (informal) – access is not expected to be impacted. ±1.61 km from the route. - Three dams. Closest dam ±975 m from the route.	The route enters the property on the southern boundary. It then deviates to the west and exit the property. Distance affected ±800 m.	Land owned by AAIC. AAIC in consultation with tenants and occupiers of the land.

Table 7-2: Buildings and Structures along the Proposed Conveyor Route (refer Figure 7-1 for location of HH1 to HH45)

Residence reference	Property description		Landowner	Approximate distance from conveyor	Details regarding the residences
	Farm	**Portion**			
HH1	Bankfontein 216 IR	6	Ferret Coal Pty Ltd	880 m	Mining related infrastructure. Not known if buildings are used for overnight accommodation.
HH2	Heuwelfontein 215 IR	11	Truter Boerdery Trust	1.25 km	Main homestead, informal houses and other farming infrastructure.
HH3	Heuwelfontein 215 IR	11	Truter Boerdery Trust	325 m	Approximately 13 formal residential units.
HH4	Heuwelfontein 215 IR	2	Kendal Forest Holdings	1.21 km	Smallholding.
HH5	Heuwelfontein 215 IR	1	Kendal Forest Holdings	890 m	Smallholding.
HH6	Heuwelfontein 215 IR	21	Kendal Forest Holdings	1.22 km	Smallholding.
HH7	Heuwelfontein 215 IR	20	Kendal Forest Holdings	800 m	Smallholding.
HH8	Heuwelfontein 215 IR	39	Kendal Forest Holdings	1.08 km	Smallholding.
HH9	Heuwelfontein 215 IR	39	Kendal Forest Holdings	910 m	Smallholding.
HH10	Heuwelfontein 215 IR	19	Kendal Forest Holdings	810 m	Smallholding.
HH11	Klipfontein 568 JR	14	AAIC (previously AOL)	450 m	Main homestead, informal houses and other farming infrastructure.
HH12	Klipfontein 568 JR	14	AAIC (previously AOL)	350 m	Main homestead and other related infrastructure.
HH13	Vlakfontein 569 JR	24	Transnet	1.19 km	Commercial activities. Not known if buildings are used for overnight accommodation.
HH14	Klipfontein 568 JR	13	AAIC (previously AOL)	45 m to 175 m	Multiple informal dwellings.
HH15	Klipfontein 568 JR	13	AAIC (previously AOL)	400 m	Multiple informal dwellings.

Residence reference	Property description		Landowner	Approximate distance from conveyor	Details regarding the residences
	Farm	**Portion**			
HH16	Klipfontein 568 JR	11	AAIC (previously AOL)	885 m	Main homestead, informal houses and other farming infrastructure.
HH17	Klipfontein 568 JR	11	AAIC (previously AOL)	580 m	Approximately five informal dwellings.
HH18	Klipfontein 568 JR	10	A. Cherry	845 m	Farming infrastructure. Not known if buildings are used for overnight accommodation.
HH19	Klipfontein 568 JR	35	AAIC (previously AOL)	165 m to 240 m	Farm houses (formal and informal).
HH20	Klipfontein 568 JR	26	Truter Boerdery Trust	1.06 km	Multiple informal dwellings.
HH21	Klipfontein 568 JR	4	AAIC (previously AOL)	205 m	Individual homestead.
HH22	Klipfontein 568 JR	36	AAIC (previously AOL)	345 m	Main homestead, informal houses and other farming infrastructure.
HH23	Klipfontein 568 JR	2	AAIC (previously AOL)	560 m	Farm houses (formal and informal).
HH24	Klipfontein 568 JR	2	AAIC (previously AOL)	580 m	Individual homestead.
HH25	Klipfontein 568 JR	5	AAIC (previously AOL)	640 m	Individual homestead.
HH26	Klipfontein 568 JR	5	AAIC (previously AOL)	770 m	Farming infrastructure. Not known if buildings are used for overnight accommodation.
HH27	Klipfontein 568 JR	20	Eskom Holdings Ltd	620 m	Main homestead, informal houses and other farming infrastructure.
HH28	Klipfontein 566 JR	19	Eskom Holdings Ltd	900 m	Multiple informal dwellings. Not known if buildings are used for overnight accommodation.
HH29	Klipfontein 566 JR	66	AAIC (previously AOL)	35 m	Farming infrastructure. Not known if buildings are used for overnight accommodation.
HH30	Klipfontein 566 JR	30	Eskom Holdings Ltd	340 m	Farming infrastructure. Not known if buildings are used for overnight accommodation.

Residence reference	Property description		Landowner	Approximate distance from conveyor	Details regarding the residences
	Farm	**Portion**			
HH31	Klipfontein 566 JR	48	Eskom Holdings Ltd	130 m	Main homestead. Not known if buildings are used for overnight accommodation.
HH32	Klipfontein 566 JR	45	Eskom Holdings Ltd	480 m	Main homestead.
HH33	Klipfontein 566 JR	45	Eskom Holdings Ltd	390 m	Individual informal dwelling. Not known if buildings are used for overnight accommodation.
HH34	Klipfontein 566 JR	45	AAIC (previously AOL)	50 m	Main homestead.
HH35	Klipfontein 566 JR	44	Eskom Holdings Ltd	30 m	Farming infrastructure. Not known if buildings are used for overnight accommodation.
HH36	Klipfontein 566 JR	45	Eskom Holdings Ltd	45 m	Farming infrastructure. Not known if buildings are used for overnight accommodation.
HH37	Klipfontein 566 JR	44	Eskom Holdings Ltd	10 m	Informal dwellings.
HH38	Klipfontein 566 JR	44	Eskom Holdings Ltd	45 m	Farming infrastructure. Not known if buildings are used for overnight accommodation.
HH39	Klipfontein 566 JR	44	Eskom Holdings Ltd	60 m	Main homestead.
HH40	Klipfontein 566 JR	44	Eskom Holdings Ltd	160 m	Formal farm house.
HH41	Klipfontein 566 JR	30	Eskom Holdings Ltd	910 m	Main homestead, informal houses and other farming infrastructure.
HH42	Klipfontein 566 JR	30	Eskom Holdings Ltd	755 m	Approximately 4 formal residential units.
HH43	Klipfontein 566 JR	40	Eskom Holdings Ltd	510 m	Formal residential units. Not known if buildings are used for overnight accommodation.
HH44	Klipfontein 566 JR	38	Eskom Holdings Ltd	410 m	Formal residential units. Not known if buildings are used for overnight accommodation.
HH45	Klipfontein 566 JR	13	Pereira Agostinho	1.03 km	Two formal residential units.

7.2 Summary of Environmental Impacts

	Impact	Existing Impact	Incremental Project Impact		Cumulative Impact		No-Go / Alternative Development
			Unmitigated	Mitigated	Unmitigated	Mitigated	
A	**Physical Environment**						
A1	Climate and Greenhouse Emissions.	Neg Low	Neg Low	Neg Low	Neg Low	Neg Low	Neg Low
A2	Air Quality.	Neg Moderate	Neg Moderate	Neg Low	Neg Moderate	Neg Moderate	Neg Moderate
A3a	Groundwater Quality.	Neg Moderate	Neg Moderate	Pos Moderate	Neg Moderate	Pos Moderate	Neg Moderate
A3b	Groundwater Quantity (Yield).	Neg Low	Neg Moderate	Neg Low	Neg Moderate	Neg Low	Neg Low
A4a	Surface Water Quality.	Neg Moderate	Neg Low	Pos Moderate	Neg Moderate	Pos Moderate	Neg Moderate
A4b	Surface Water Quantity (Catchment Yield).	Neg Low	Neg Moderate	Neg Low	Neg Moderate	Neg Low	Neg Low
A4c	Surface Water - Flood Levels.	Neg Low	Neg Moderate	Neg Low	Neg Moderate	Neg Low	Neg Low
B	**Biological Environment**						
B1a	Ecology and Biodiversity (Terrestrial Habitats).	Neg High	Neg High	Neg Moderate	Neg High	Neg High	Neg High
B1b	Ecology and Biodiversity (Aquatic Habitats).	Neg Moderate	Neg High	Neg Moderate	Neg High	Neg Moderate	Neg Moderate
B1c	Wetlands (Biodiversity and Water).	Neg High	Neg Moderate	Neg Moderate	Neg High	Neg High	Neg High
C	**Social and Economic Environment**						
C1	Soils and Land Capability.	Neg Moderate	Neg High	Neg Moderate	Neg High	Neg Moderate	Neg Moderate
C2	Roads, Traffic and Infrastructure.	Neg Moderate	Neg Moderate	Neg Low	Neg Moderate	Neg Moderate	Neg Moderate
C3	Social Impacts.	Neg Moderate	Neg Moderate	Neg Low	Neg Moderate	Neg Moderate	Neg Moderate
C4	Land Use Change (Impact on Existing Land Uses).	None	Neg Moderate	Neg Low	Neg Moderate	Neg Low	None
C5a	Economic Impacts of Coal Supply to Kusile.	Neg High	Neg Very High	Pos Very High	Neg High	Neg Moderate	Neg Very High
C5b	Benefits of Conveyor Development versus Loss of Existing Economic Activities.	Pos Moderate	Neg Moderate	Pos Moderate	Neg Moderate	Pos Moderate	Pos Moderate
C6	Noise Impacts.	Neg Moderate	Neg Moderate	Neg Low	Neg Moderate	Neg Moderate	Neg Moderate
C7	Visual Impacts.	Neg Moderate	Neg Moderate	Neg Moderate	Neg Moderate	Neg Moderate	Neg Moderate
D	**Cultural and Heritage Resources**						

	Impact	Existing Impact	Incremental Project Impact		Cumulative Impact		No-Go / Alternative Development
			Unmitigated	Mitigated	Unmitigated	Mitigated	
D1	Cultural and Heritage Impacts.	Neg Low	Neg Low	Neg Low	Neg Low	Neg Low	Neg Low

7.3 Comprehensive Assessment and Rating of Potentially Significant Environmental Impacts during Construction and Operation of the Phola-Kusile Coal Conveyor

The following sections present the assessment of impacts of the Phola-Kusile Coal Conveyor during the construction and operational phases.

7.3.1 Physical Environment

7.3.1.1 Climate and Greenhouse Gasses

Baseline / Existing Impacts

Greenhouse gas emissions emitted by existing land uses.

Project Impact Sources

Use of electricity generated off-site.
On-site use of diesel.

Description of Impacts

The main sources of greenhouse gas emissions are:

Construction Phase

- Diesel and electricity use by construction vehicles and equipment and transportation of project components and construction materials and personnel.

Operational Phase

- Electricity use for conveyor operation.
- Diesel use for maintenance vehicles and electricity use in offices and by safety and security systems will be minimal (~16 employees).

Environmental Management Framework

The reduction in energy use was a key criterion for the engineering design of the project. Energy reduction measures were therefore incorporated into the design where possible.

EMP Section on Energy Use and Reduction.

Cumulative Impacts

On a regional scale, the project will have a small contribution to greenhouse gas emissions.

No-Go / Alternative Development

Greenhouse gas emissions emitted by existing land uses will continue.

The no-go development will have high negative impacts on the cost and timing of coal supply to Kusile Power Station, delivery of electricity to the national grid, and associated impacts on national economy. It is therefore assumed that if the proposed Phola-Kusile Coal Conveyor is not allowed to be developed, an alternative coal supply and transportation of that coal supply will have to be found.

If the conveyor is not developed, alternative transportation of the coal could involve road transportation. Greenhouse gas emissions associated with road transportation is known to be notably more than that of an overland conveyor.

7.3.1.2 Air Quality

Synthesis of Baseline / Existing Impacts

The nearest sensitive receptors in terms of human settlements are Kendal Forest Holdings, Wilge Village and the town of Phola.

Current ambient PM10 concentrations[8] were predicted to be in line with the National Ambient Air Quality Standards (NAAQS) applicable untill 31 December 2014, but exceed the daily PM10 limit applicable from 01 January 2015. The highest PM10 concentrations were predicted over household fuel burning areas, this is due to low-level emissions from such areas during periods of poor atmospheric dispersion (night-time).

Dust fallout records for the area around the proposed development are within the SANS Residential band (<600 mg/m²/day) and the Industrial band (between 600 mg/m²/day and 1 200 mg/m²/day).

Dust generated by coal trucks using the local road network was a key concern raised by people living in the area, especially for people living in Kendal Forest Holdings.

Project Impact Sources

Existing Impact Sources in the Region

- Coal transportation by road.
- Household fuel burning.
- Eskom power stations.
- Chemical industries.
- Brick manufacturers which use coal.
- Woodburning and wood drying by sawmills.
- Other heavy industries.
- Fuel combustion (primarily coal) by institutions such as schools and hospitals.
- Blasting operations at mines.

[8] As obtained from the NEDLAC study.

- Spontaneous combustion at coal mines.
- Veld burning.
- Vehicle exhaust emissions.

Project Impact Sources

- Movement of equipment, material and people during construction.
- Loading of coal onto the conveyor at the Phola Coal Processing Plant.
- Windblown dust generated along the conveyor due to transportation of coal on the conveyor belt.
- Transfer of coal from one conveyor flight to the next at transfer stations, and from the last conveyor flight to Kusile Power Station.
- Airborne dust generated along the conveyor due to dust carry-back (material that sticks to the conveyor belt instead of falling off at the head pulley at the transfer station, which becomes airborne dust as the belt dries and passes over the return idlers).

Description and Synthesis of Project Impacts

Construction Phase

PM10 concentrations and deposition rates due to the construction phase of the proposed conveyor will be of relatively short-term and of local impact. The implementation of effective controls is possible during this phase to mitigate impacts to be within acceptable levels at nearby receptors.

Operational Phase

The main source of dust generation is the transfer stations.

Predicted PM10 ground level concentrations due to the proposed conveyor transfer activities from Phola to the Kusile Power Station, are well within the NAAQS at the sensitive receptors of Phola and Wilge for unmitigated and mitigated activities.

Predicted dustfall rates due to the conveyor operations were predicted to be less than 1 mg/m²/day at the sensitive receptors of Kendal Forest Holdings, Phola and Wilge (well within the SANS 600 mg/m²/day limit considered acceptable for residential areas).

Impacts of the different routes investigated were very similar. The impact zones along two conveyor routes are illustrated in Figure 7-1 (unmitigated) and Figure 7-2 (mitigated through the design measures listed below).

Dust impacts are centred around the transfer stations, as such, the total dust generated by the project will depend on the number of transfer stations. The fewer number of transfer stations there are, the less the total emissions generated will be. The further the transfer stations are located away from residential areas, the lower the air quality impact would be.

Environmental Management Programme Framework

The following management measures have been incorporated into the design of the project to reduce dust generation:

- The conveyor will be equipped with double scrapers at the transfer stations to reduce the amount of dust carry-back, which could become airborne dust as the belt dries and passes over the return idlers.

- There will be belt turn overs to avoid coal fines spilling and falling to the ground along the conveyor route.

- Transfer stations equipped with sheeting to prevent dust liberation when coal is dropped down from one conveyor flight to the next.

- The conveyor system will have sprinkler dust suppression systems to suppress dust at all the transfer stations. It will also dampen the coal that is transported along the conveyor flights. There are seven transfer stations along the conveyor route where the coal will be dampened.

- Along the length of the conveyor, the metal cover will be placed in accordance to the prevailing wind direction and will act as mitigation to reduce windblown coal dust along the conveyor route.

Management measures and monitoring during construction and operation have been incorporated into the EMP Section on Dust Control (Appendix B).

Cumulative Impacts

For cumulative impacts, the contribution of the proposed development is very small and cumulative impacts really reflect the baseline conditions.

No-Go / Alternative Development

With the no-go development, existing impacts of coal transportation will remain.

The no-go development will have high negative impacts on the cost and timing of coal supply to Kusile Power Station, delivery of electricity to the national grid, and associated impacts on national economy. It is therefore assumed that if the proposed Phola-Kusile Coal Conveyor is not allowed to be developed, an alternative coal supply and transportation of that coal supply will have to be found.

The development of any alternative coal transportation option to supply coal to Kusile Power Station will have its own set of impacts on air quality. Transportation of coal by road will have much higher dust emissions due to dust entrainment on roads and materials handling at coal loading / unloading points compared to transportation by overland conveyor.

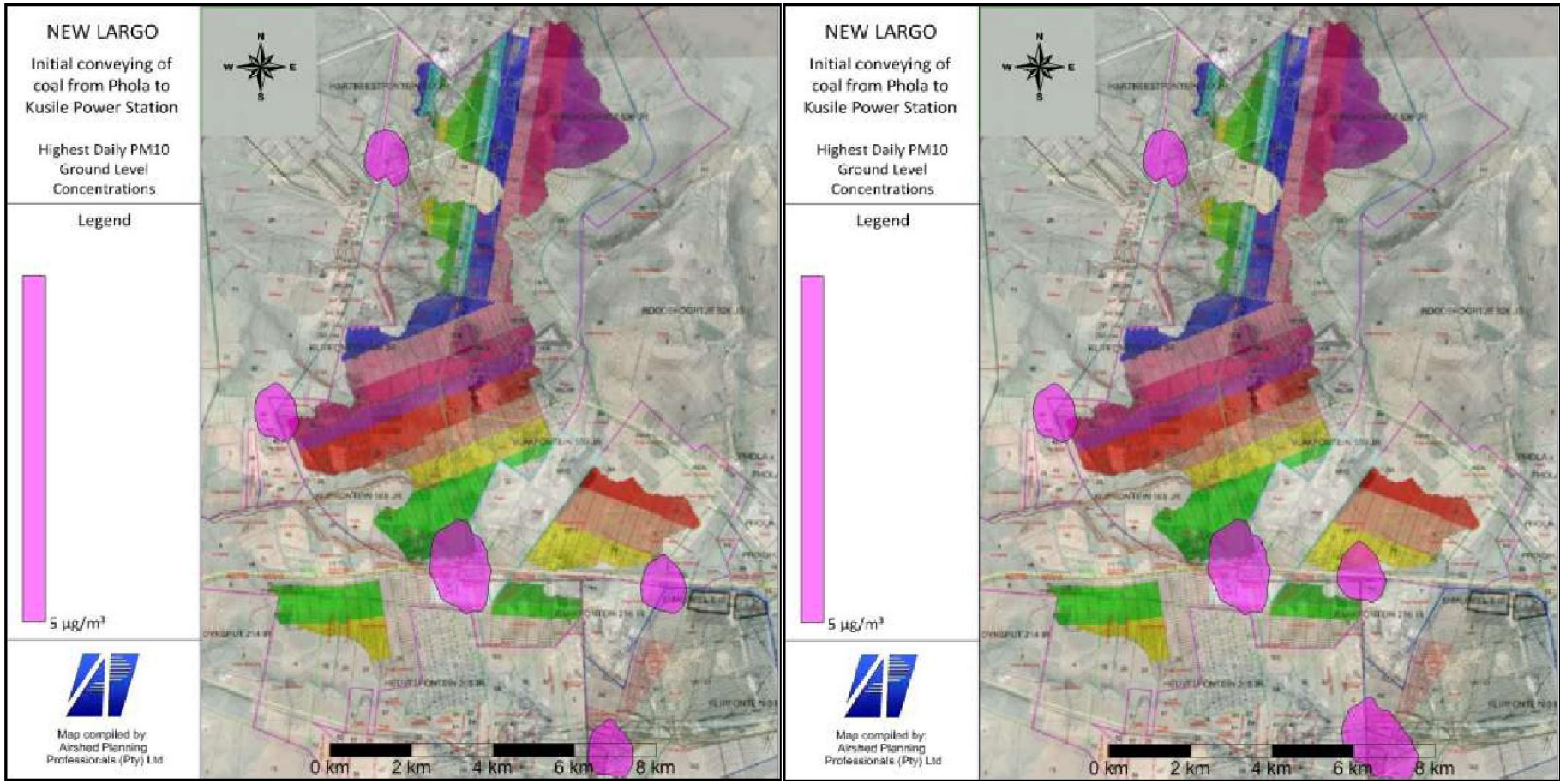

Figure 7-1: Quality Impact Zones (unmitigated), illustrated for two route alternatives (routes shown are those with transfer stations closest to built-up areas)

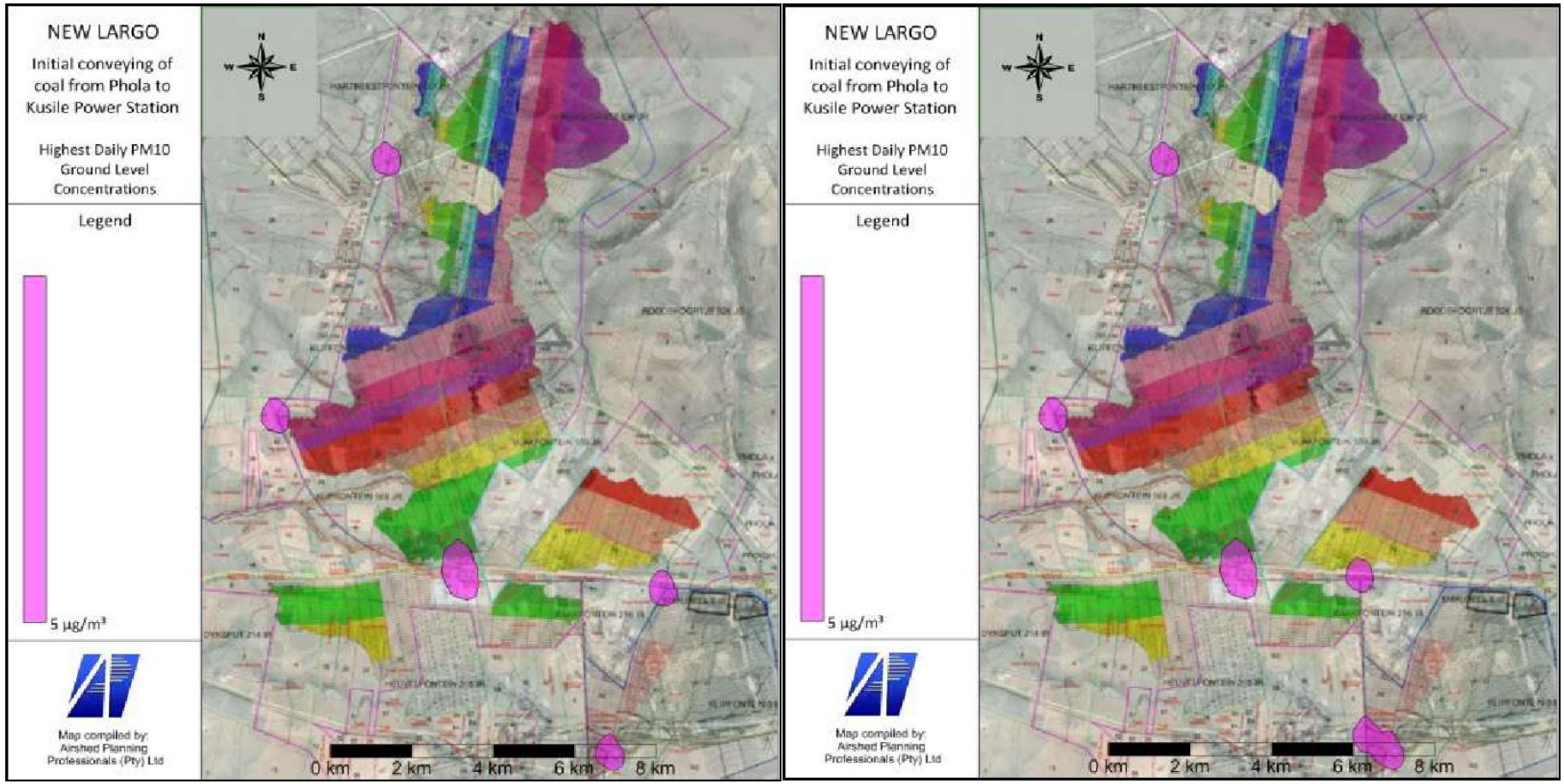

Figure 7-2: Air Quality Impact Zones (mitigated through design criteria adopted in the design of the proposed conveyor transfer stations), illustrated for two route alternatives (routes shown are those with transfer stations closest to built-up areas)

7.3.1.3 Ground Water

Synthesis of Baseline / Existing Impacts

There are old underground mine workings to the east of the proposed conveyor route, within the centre of the proposed New Largo Colliery mining area. The workings are flooded and excess mine water currently decants to the surface and/or is pumped into the nearby pan on Farm Klipfontein 566 JR.

Based on groundwater monitoring conducted between 2006 and 2011, it is estimated that ~1.5 Mℓ/day of water is generated in the old underground workings (pers. Comm. Jaco van den Berg, JMA groundwater specialist responsible for the ground water monitoring programme for AAIC, see Appendix G).

Surface water monitoring results clearly indicated that the water quality of the pan and downstream areas are negatively affected (Section 5.1.6.1).

Impact Sources

Existing Impact Sources

- Existing old underground mine workings negatively impact on current ground water quality.
- Existing decant from old underground mine workings negatively impact on surface water quality in the pan on Farm Klipfontein 566 JR and in Klipfonteinspruit.
- Existing agricultural activities.
- Nearby sand mining and coal washing plant.

Project Impact Sources

- Risk of hydrocarbon and other hazardous substances spilling during construction.
- Coal spills and spillage of water containing coal fines during the operation of the conveyor.
- Brine and gypsum storage facilities at the proposed mobile water treatment works.
- Borehole water abstraction.
- Water use and consumption.
- Treatment of water decanting from old underground mine workings.

Description and Synthesis of Impacts

Construction phase risks can be effectively controlled through the implementation of management measures contained in the EMP. Impacts during construction are considered to be insignificant.

With the control measures that have been adopted into the Phola-Kusile Coal Conveyor design, in place, the risk to groundwater during the operational phase of the conveyor will be low.

The volume of water abstracted from the old underground mine workings will be controlled to avoid unwanted drawdown of water and an increase in the risk of spontaneous combustion. There will be a marked positive impact on groundwater due to the installation of the mobile water treatment plant and the release of treated water will also have a positive impact on downstream surface water.

The water used as part of the development is fairly low and has no marked impact on the availability of groundwater in the study area.

The overall impacts on groundwater will be positive.

Environmental Management Programme Framework

The following management measures have been incorporated into the design of the project and will mitigate risks to groundwater:

- Stream crossings will be provided with environmental gantries – specially designed conveyor sections on pillars and bridging across streams and wetlands raised higher than the 1:100 year floodline and provided with a roof, partial side screens (for minimizing fugitive wind blown coal dust from conveyor), as well as an impervious floor to capture coal spills, coal fines, drip-off and wash-down water. During conveyor shut-down, spilled coal can be picked up from the gantry floor and put back onto the conveyor.

- The conveyor will be equipped with scrapers at transfer stations, and there will be belt turn overs to avoid coal fines spilling and falling to the ground along the conveyor and into hillslope seepage wetlands that are not equipped with environmental gantries.

- The service road crossings are to be engineered so that the flow of the water through the wetlands (hydrological continuity) is not significantly disrupted and so that impacts on wetland function are minimised and erosion risks are minimised.

- Each transfer station will be equipped with a bunded area for the capturing of coal spills, dirty water dripping from the conveyor due to dust control sprays, and dirty water when the area is washed down or during rain. The bunded areas will drain towards a silt trap and an evaporation dam. The bunded area, silt trap and evaporation dams will be lined to avoid seepage and will be equipped with a sump.

- The conveyor will have a metal cover (called ‘doghouse sheeting’), which will prevent rainwater coming into contact with the coal on the conveyor, prevent contamination of clean rain water, and reduce the amount of water washing down / dripping down at the transfer stations.

- The metal cover will be placed in accordance to the prevailing wind direction and will act as mitigation to reduce windblown coal dust from entering streams and wetlands along the conveyor route.

Measures to avoid and minimise groundwater impacts and risks have been incorporated into EMP Sections on Management of Transfer Stations, Emergency Preparedness and Response, Water Courses and Wetlands, Waste Management, and Water Use and Consumption (Appendix B).

In addition, a standalone Integrated Water and Waste Management Plan has been put in place to management potential impacts on water resources.

Cumulative Impacts

Improvement in water quality due to the planned treatment of water and release of a portion of the treated water.

No-Go / Alternative Development

With the no-go development or the development of an alternative transportation option there will be no improvement in water quality as the mobile water treatment plant will not be installed.

The no-go development will have high negative impacts on the cost and timing of coal supply to Kusile Power Station, delivery of electricity to the national grid, and associated impacts on national economy. It is therefore assumed that if the proposed Phola-Kusile Coal Conveyor is not allowed to be developed, an alternative coal supply and transportation of that coal supply will have to be found.

The development of any alternative coal transportation option to supply coal to Kusile Power Station, will pose its own risks to groundwater.

7.3.1.4 Surface Water

Synthesis of Baseline / Existing Impacts

The current water quality in the Wilge River sub-catchment has not been impacted to a large extent and generally is within the water quality objectives for the area. The only exception is the Klipfonteinspruit where an impact associated with the decant of mine water from underground workings has been observed. The poor quality water in the Klipfonteinspruit is however diluted with good quality water from reaches further upstream, resulting in water quality further downstream which is generally in the order of the water quality objectives for the area.

There has been a steady deterioration in the water quality in the Wilge River downstream of the proposed conveyor system, the proposed New Largo Mine and the Kusile Power Station. The levels of sulphate, chloride, calcium and magnesium are approaching the interim RWQO set for the management unit. Any further contribution of salt load into the system can therefore not be tolerated.

Impact Sources

Existing Impact Sources

Water Quality:

- Existing decant from old underground mine workings negatively impact on surface water quality in the pan on Farm Klipfontein 566 JR and in Klipfonteinspruit.
- Existing agricultural activities.
- Nearby sand mining and coal washing plant.

Project Impact Sources

Water Quality:

- Risk of hydrocarbon and other hazardous substances spilled during construction.
- Stripping of topsoil.
- Construction of water management infrastructure, conveyor and transfer stations.
- Construction of stream crossings (conveyor and service road).
- Construction of conveyor and service road in wetlands.
- Excavations of material from borrow pits.
- Coal spills and spillage of water containing coal fines during operation of the conveyor.
- Brine and gypsum storage facilities at the proposed mobile water treatment works.

- Release of treated water decanting from old underground mine workings.
- Coal transported via the conveyor system crossing streams and wetlands.
- Collection of dirty runoff at transfer stations in evaporation dams.
- Cleaning, repair and maintenance activities along the conveyor.
- Cleaning, repair and maintenance of silt traps, dams and service road.

Water Quantity (Catchment Yield):

- Abstraction from spring and farm dams for use during construction.
- Water use and consumption.
- Rainwater falling within the footprint of the bunded areas, evaporation dams, brine disposal and gypsum disposal facilities will no longer contribute to runoff

Flood Levels:

- The conveyor will bridge streams, with pillars in the floodplain but the conveyor belt and environmental gantries will be outside the 1:100 floodline, with allowance for freeboard.

Description and Synthesis of Impacts

Construction Phase

Impact on surface water quality relating to potentially increased suspended solids and some risk of erosion. Hazardous spillages may also affect water quality.

Operation Phase

The development of the conveyor can impact on water quality, catchment yield (water quantity) and flood levels.

Water Quality:

With the control measures that have been adopted into the Phola-Kusile Coal Conveyor design, in place, the risks to surface water quality during the operational phase of the conveyor will be low.

Water Quantity (Catchment Yield):

There will be a small loss in yield due to the presence of the conveyor system components where rainwater will be effectively captured and the consumptive use of water for dust suppression, fire protection and for domestic use by personnel. The impacts on catchment yield will be low.

Flood Levels:

The conveyor will bridge streams, with pillars in the floodplain but the conveyor belt and environmental gantries will be outside the 1:100 floodline, with allowance for freeboard. For this project, the gantries will be above the 1:200 year floodline so as to not encroach into the wetlands and the riparian zone, and to prevent ponding of water and flooding.

Environmental Management Programme Framework

The following management measures have been incorporated into the design of the project and will mitigate risks to surface water, streams and wetlands:

- Stream crossings will be provided with environmental gantries – specially designed conveyor sections on pillars and bridging across streams and wetlands raised higher than the 1:100 year floodline and provided with a roof, partial side screens for minimizing fugitive wind blown coal dust from conveyor, and an impervious floor for capturing coal spills, coal fines, drip-off and wash-down water. During conveyor shut-down, spilled coal can be picked up from the gantry floor and put back onto the conveyor.

- The conveyor will be equipped with scrapers at transfer stations and there will be belt turn overs to avoid coal fines spilling and falling to the ground along the conveyor and into hillslope seepage wetlands that are not equipped with environmental gantries.

- The service road crossings to be engineered so that the flow of the water through the wetlands (hydrological continuity) is not significantly disrupted, that impacts on wetland function is minimised and erosion risks are minimised.

- Each transfer station will be equipped with a bunded area for capturing of coal spills, dirty water dripping from the conveyor due to dust control sprays, and dirty water when the area is washed down or during rain. The bunded areas will drain towards a silt trap and an evaporation dam. The bunded area, silt trap and evaporation dams will be lined to avoid seepage and equipped with a sump.

- The conveyor will have a metal cover (called ‘doghouse sheeting’), which will prevent rainwater coming into contact with the coal on the conveyor and contamination of clean rain water, and reduce the amount of water washing down / dripping down at the transfer stations.

- The metal cover will be placed in accordance to the prevailing wind direction and will act as mitigation to reduce windblown coal dust from entering streams and wetlands along the conveyor route.

Measures to avoid and minimise surface water impacts and risks have been incorporated into EMP Sections on Management of Transfer Stations, Emergency Preparedness and Response, Water Courses and Wetlands, Waste Management, and Water Use and Consumption (Appendix B).

In addition, a standalone Integrated Water and Waste Management Plan has been put in place to management potential impacts on water resources.

Cumulative Impacts

Improvement in water quality due to the planned treatment of water and release of a portion of the treated water.

No-Go / Alternative Development

With the no-go development or the development of an alternative transportation option there will be no improvement in water quality as the mobile water treatment plant will not be installed.

The no-go development will have high negative impacts on the cost and timing of coal supply to Kusile Power Station, delivery of electricity to the national grid, and associated impacts on national economy and it is therefore assumed that if the proposed Phola-Kusile Coal Conveyor is not allowed to be developed, an alternative coal supply and transportation of that coal supply will have to be found.

The development of any alternative coal transportation option to supply coal to Kusile Power Station, will pose its own risks to surface water.

The two alternative conveyor corridors, that were investigated during the scoping phase, impacted on more extensive wetland areas and a larger number of stream crossings. These routes were also notably longer than the AAIC proposed route and would have created a longer barrier in the landscape. Impacts associated with the AAIC preferred route are thus less than those of the alternative routes. There are no feasible routes for the conveyor between the Phola Coal Processing Plant and Kusile Power Station that would not cross a number of streams and wetlands.

7.3.1.5 Soils

Soils are discussed in Section 7.3.3.1 under the heading Soils and Land Capability.

7.3.2 Biological Environment

7.3.2.1 Ecology and Biodiversity

This section represents the results of a integrated assessment by a team of specialists ranging from terrestrial flora, terrestrial fauns, and aquatic fauna and flora specialists, namely Willem de Frey, (EkoInfo CC), Dewald Kamffer (Ecocheck), Samuel Laurence and Luke Verburgt (Enviro-Insight) and Michiel Jonker and Gina Walsh (Ecotone), see details of team in Table 2-4 and in Appendix D). The team included an evaluation of wetland as habitats and biodiversity units. Impacts on wetlands were assessed separately a wetland specialist (see Section Wetlands7.3.2.2 below).

Synthesis of Baseline / Existing Impacts

The most prevalent land cover along the proposed route alternatives are cultivated land and unimproved (natural) grassland (see Table 7–3). Natural habitats in the area have been fragmented by roads and highways, agriculture, development of Kusile Power Station in the north and residential developments in the south. Impacts are associated with agriculture, mining, residential and infrastructure development.

Table 7-3: Overview of the land cover categories along the AAIC Proposed Conveyor Route

Land Cover 2000 Description	Hectares	Percentage
Transformed/ Degraded Areas		
Bare Rock and Soil (erosion : dongas / gullies)	1	1
Cultivated, temporary, commercial, dry land	22	31
Mines & Quarries (surface-based mining)	1	1

Natural Areas		
Thicket, Bush land, Bush Clumps	10	14
Unimproved (natural) Grassland	37	53
Grand Total	70	100
Transformed/ Degraded Areas		**33**
Natural Areas		**67**

The ecological survey found evidence of medium sized mammals such as antelope (Duiker, Steenbok) and medium sized (meso) predators (Jackal, Caracal, Brown Hyena) which are still active in the landscape, implies that the remaining natural habitat still provide feeding and breeding potential for these predators and their prey species.

The western drainage lines (Wilge River and associated tributaries) are more intact than the eastern drainage lines on the Saalboomspruit and associated tributaries. The western draining tributaries show limited signs of mining impacts, and thus are susceptible to impacts from the proposed conveyor or other new developments.

Project Impact Sources

The AAIC proposes conveyor route was chosen over two other route corridors investigated during the scoping phase (Section 4.2). These two alternative corridors involved more extensive wetland and river crossings and were eliminated in an attempt to minimise impacts on wetland and aquatic ecosystems. There are no feasible routes for the conveyor between the Phola Coal Processing Plant and Kusile Power Station that would not cross a number of streams and wetlands.

Terrestrial Ecology and Biodiversity

- The conveyor system will traverse some natural grasslands as well as a number of rivers/streams and wetland systems.
- Footprint area of 30 metre wide servitude, in which the conveyor, service road and power lines will be located.
- Footprint area of infrastructure associated with transfer stations and mobile water treatment plant.
- Dust generation.
- Coal dust fallout from the conveyor system.
- Conveyor belt, service road and servitude fencing creating a barrier to the movement of the remaining wildlife found in the area.

Aquatic Ecology and Biodiversity

- Alteration of hydrological regime and continuity and three stream crossings and wetland areas. The following issues affect the hydrological continuity of the aquatic ecosystems:
    - Degradation or aggradation of river bed.
    - Alteration in natural sediment transport ability of system.
    - Restricted and complicated aquatic organism movement.
    - Weakening of the structural integrity of conveyor system crossing.
    - Scouring and erosion.
    - Excessive velocities or hydraulic jumps can occur when the conveyor system crosses the river/stream at an inappropriate section or angle.

- Areas between the in-channel support structures may become clogged by woody debris, leaves and other material and result in the following issues:
  - Ponding resulting from the back-up of water upstream of the crossing. This may occur throughout the year, during seasonal high water or floods or when crossings become clogged.
  - Persistent ponding may lead to loss and fragmentation of lotic habitat. Bank erosion could occur due to preferential flows caused by the increased flow velocities.

Description and Synthesis of Impacts

Terrestrial Ecology and Biodiversity

The removal of natural vegetation will reduce the availability of grazing land for livestock, which will result in increased pressure on the remaining grassland areas to replace the grazing land affected by the conveyor. This could result in a change in the species composition as well as in an increased risk of erosion. The impact is long term and negative.

There may be Red Data populations within the areas which need to be cleared. The loss of a few individuals will not necessarily be significant because they could re-colonise the area once the disturbance is gone. Populations located in small, isolated areas will be destroyed by the conveyor servitude, and the impact will be significant as no individuals will be present in the area to re-colonise it once the disturbance is gone. An ecological specialist will conduct pre-construction ecological surveys, preferably from December to February, and will recommend the best approach to deal with the specific sensitive areas and species on a case by case basis.

The conveyor servitude will be fenced, which will limit the potential for off-road driving. Destruction of vegetation, and subsequent erosion on steep slopes and on duplex soils and in wetlands associated with off-road driving outside the conveyor servitude should therefore be minimal. Measures to control off-road driving and measures to control erosion and to reinstate disturbed areas are incorporated into the EMP.

Fire is a natural phenomenon, however too frequent fires or the lack of fire will result in species composition change, as certain species are sensitive to fires while others require fire to propagate. Fire protection and control measures have been incorporated into the EMP and the impact of the project due to changes to the fire regime should therefore be insignificant.

Alien invasive species are present within the study area, and spreading of such species should be prevented. The EMP covers measures for monitoring and control alien and invasive species.

The harvesting of plants, including medicinal plants and protected plants, may occur. The EMP includes measures to control the movement of vehicles and people on foot, as well measures to control the removal of plants, plant material and fire wood. This impact is therefore not seen as significant.

The footprint area occupied by the project is about 70 hectares in size of which 37 hectares where indicated as grasslands. Within this area, habitats will be cleared and there will be an increase in the risk of predation due to lack of cover.

Tramping of animals, particularly of amphibians and reptiles, were identified as a potential problem by the ecological team. Construction vehicles will be present for about 12 months and thereafter, there will be minimal vehicle movement along the conveyor route. It is estimated that the conveyor will be inspected on a daily basis. The EMP includes measures to control vehicle speeds and to create awareness of areas where animal movement can be expected. Speeds on construction sites are generally much lower than on public and farm roads.

The main concern raised with regards to the construction of the conveyor system is the barrier effect it will have in the landscape. Fencing off of the conveyor is done for public safety and security reasons, but it will decrease the permeability of the landscape for any fauna that cannot fit through the gaps in the fence, for the length of the conveyor. The environmental gantries that bridge the three stream crossings along the conveyor route provide the only migration routes across the 23 km long conveyor route. AAIC will investigate the use of large-diametre fencing that would allow for small animals to move through, but the gaps in the fence must still be small enough to prevent small children fitting through and gaining access to the conveyor servitude, and the hazards associated with a moving conveyor belt.

The construction of the conveyor could infringe on and destroy sensitive habitats such as rocks and logs. Animals, including mammals, will be disturbed by the increased noise due to the presence of the conveyor and could become entangled in the fence while trying to find food or escape a predator.

Aquatic Ecology and Biodiversity

Fine coal (coal dust) washing or blowing into wetlands and streams will result in a decrease in productivity of nearby aquatic macrophytes and an increase in water turbidity. As described under the Hydrology and Air Quality sections, various measures to prevent this from happening have been incorporated into the design of the conveyor.

High-velocity water may scour natural substrates downstream of the stream crossings, degrading habitats for fish and other wildlife. Scouring and erosion are most problematic at crossings that are undersized. Issues associated with scouring and flooding at an undersized crossing include the ponding of water upstream of crossing, which could then overtop and destroy the conveyor system. High velocity water may weaken the structural integrity of the conveyor system, while sediments in the water may result in undercutting of the in-channel supports structures. Impacts such as erosion and siltation could be aggravated due to unstable banks at stream crossings.

As described under the Hydrology section, various measures to prevent these impacts from occurring have been incorporated into the design of the conveyor, most notably, the environmental gantries provided at the three stream crossings will be elevated to above the level of the 1:200 year floodline so as to not encroach into the wetlands and the riparian zone and to prevent ponding of water, and flood damage to the conveyor. The elevated conveyor system will be supported by concrete pillars and the service road will cross the streams in the form of drifts (low water bridges where the road surface follows the contours of the river bed), thereby minimising restrictions on water flow. Sub-surface drains are provided to ensure hydrological continuity. Scour protection and erosion control measures have been incorporated into the design of the conveyor. However, during the final detailed design phase, the design of all stream and wetland crossings will be discussed with the ecological and wetland specialists to ensure that impacts on animal movements are hydrological continuity are minimised and the composition of streambed substrates are appropriate. The final design will take into account specific terrain attributes that influence stability and the risk of sedimentation impacts at each crossing.

The span between pillars will be such that that will not create a barrier to the migration of fauna and so that they do not get clogged during floods. The EMP allows for measures to monitor and remove debris and material potentially clogging the stream channels at the conveyor crossings.

Local fish embark on seasonal migration associated with stimulus events (rainfall, increase in levels of inundation, decrease in electrical conductivity and increase in food supply). Breeding migrations usually occurs soon after the first rains of spring and summer. The ideal would be to limited construction activities within the stream beds to the drier months of the year. Where construction has to take place in the wetter months of the year, site specific measures should be adopted in order to establish the risk associated with seasonal migration activities and to limited the activities to the shortest amount of time possible.

Environmental Management Programme Framework

Measures to mitigate impacts on ecology, biodiversity and aquatic ecosystems at stream crossings have been incorporated into EMP Sections on Water Courses and Wetlands, Alien and Invasive Species, Natural Habitat Management, Soil Management and Erosion Protection, and Rehabilitation (Appendix B).

Cumulative Impacts

The conveyor will increase the impacts in an area which are already impacted on by roads and highways, agriculture, development of Kusile Power Station in the north and residential developments in the south. Further habitat destruction and fragmentation, and the restrictions of the movement of animals across the landscape (due to servitude fence) will result. The further restriction of movement of medium-sized to large sized mammals would cause potential genetic isolation and the potential for certain species that are currently found in the area to disappear from the local area, whether due to a natural (disease, drought, fire) or anthropogenic induced (feral animals, alien invasive plants, inbreeding, pollution incident) impacts.

No-Go / Alternative Development

If coal is not transported to Kusile, the existing pressures on ecosystems and biodiversity will remain and the additional impacts due to the presence of the conveyor will be avoided.

The no-go development will have high negative impacts on the cost and timing of coal supply to Kusile Power Station, delivery of electricity to the national grid, and associated impacts on national economy and it is therefore assumed that if the proposed Phola-Kusile Coal Conveyor is not allowed to be developed, an alternative coal supply and transportation of that coal supply will have to be found.

Any alternative transportation option or alternative route for the conveyor will result in impacts on ecosystems and biodiversity.

The two alternative conveyor corridors that were investigated during the scoping phase impacted on more extensive wetland areas and a larger number of stream crossings. These routes were also notably longer than the AAIC proposed route and would have created a longer barrier in the landscape. Impacts of the AAIC preferred route is thus less than the alternatives routes. There are no feasible routes for the conveyor between the Phola Coal Processing Plant and Kusile Power Station that would not cross a number of streams and wetlands.

7.3.2.2 Wetlands

Impacts on wetlands were assessed by Dr Allan Batchelor, Wetland Consulting Services (Appendix E).

Synthesis of Baseline / Existing Impacts

Wetlands along the proposed conveyor as delineated by the wetland specialist are indicated on Figure 3–1 and Figure 5–5. The wetlands delineation utilised information provided through site surveys of the conveyor route by both the wetland and soils specialists (Appendix E and Appendix H).

Project Impact Sources

- Construction of bridges (environmental gantries) over three steams, with pillars located at intervals in the streambed.
- Construction of the service road over three streams in the form of drifts (low water bridge where the road surface follows the contours of the river bed), thereby minimising restrictions on water flow. Sub-surface drains are provided to ensure hydrological continuity. The majority of the impacts on wetlands relates to the construction of the service road rather than the conveyor.
- Clearing and grubbing associated with constructing the servitude, conveyor and service road and gantry support pillars.
- Replacement of the natural substrate (soil) that occurs within the wetlands and streambeds with compacted dump rock associated with engineering solutions to prevent erosion and provide scour protection at drifts and around the pillars. Engineering solutions may include gabion structures and reno-mattresses as well as the foundations required for the pillars to support the conveyor.
- Dust generated by construction activities, eroded sediments, leaked hydrocarbons from construction vehicles, litter, and small amounts of construction materials can all find their way into the systems, polluting the affecting water quality and impacting on wetlands.

Description of Project Impacts

No pristine wetlands were found to occur within the study area, with all of the wetlands on site having undergone a degree of degradation due to changes in land use and other anthropogenic activities. All of the wetlands on site have been exposed to impacts associated with agricultural activities such as, intrusion of cultivation and an increase in sediment transported into wetlands, livestock overgrazing which is increasing the risk of erosion, incorrect and too frequent burning regimes, and building of farm dams resulting in erosion due to changing the hydrological regime of wetlands and leading to flow concentration. These impacts have resulted in the present ecological status (PES) of wetlands on site being in a moderately modified condition (C) as reflected in Table 7-4 below.

In terms of ecological importance and sensitivity (EIS), most of the wetlands on site are considered to be of moderate importance and sensitivity, with only those wetlands that have undergone extensive degradation being considered of low importance according to the wetland specialist. It is however important to point out that all wetlands, irrespective of their state of degradation, are considered as sensitive landscapes and reflect the movement of water through the landscape.

Table 7-4: PES Impact scores and EIS determined ecological management classes for the Hydro-geomorphic (HGM) units affected by the proposed conveyor (Figure 3–1 and Figure 5-5)

HGM Unit	Description of Wetland Types	Overall PES	EIS
HGM 1	Hillslope seepage wetland	C/D	C
HGM 2	Hillslope seepage wetland	C/D	C
HGM 3	Hillslope seepage wetland	B	B
HGM 4	Hillslope seepage wetland	E	D
HGM 5	Channelled valley bottom wetland	D	C
HGM 6	Hillslope seepage wetland	D/E	C
HGM 7	Channelled valley bottom wetland flanked by hillslope seepage wetlands	D	D
HGM 8	Channelled valley bottom wetland flanked by hillslope seepage wetlands	C	C
HGM 9	Hillslope seepage wetland	E	C
HGM 10	Hillslope seepage wetland	E	D
HGM 11	Channelled valley bottom wetland flanked by hillslope seepage wetlands	C	B
HGM 12	Hillslope seepage wetland	D	C
HGM 13	Channelled valley bottom wetland	D	C

The two alternative conveyor corridors that were investigated during the scoping phase (Figure 1–2) impacted on more extensive wetland areas and a larger number of stream crossings. Impacts of the AAIC preferred route impacts on a smaller number and area of wetlands than the alternatives routes.

There are no feasible routes for the conveyor between the Phola Coal Processing Plant and Kusile Power Station that would not cross a number of streams and wetlands. The conveyor routes investigated during the EIA phase crosses wetlands between 11 and 12 times depending on the option selected (Figure 1-1, Figure 3–1 and Figure 5–5). The difference between the alternatives is therefore not significant.

The AAIC proposed route presents an re-alignment to avoid HGM 2. The wetland specialist suggested further re-alignments of the conveyor route near HGM 3 and HGM 5, and the ecological specialists suggested re-alignments near HGM 3 and HGM 10 & 11 to minimise impacts on these wetlands. In a meeting between the AAIC and the wetland specialist, AAIC explained the restrictions with re-alignment of the conveyor in these areas, which relates mainly to the sterilisation of coal resources. At the meeting, it was concluded that the majority of the impacts on wetlands were associated with the construction of the service road and it was noted that a good mitigation measure at the affected wetlands would be to incorporate minor re-alignments of the service road where possible. The purpose of the service road is to provide access for maintenance and as such, the minor-re-alignments will still have to allow for people, equipment and spare parts to reach the conveyor at strategic locations.

It was agreed that during the detailed design phase, the design of stream crossings and wetlands will be finalised with input from the ecologists and wetland specialist to ensure that impacts on the natural substrate are minimised, that hydrological continuity is maintained as best as possible without compromising scour protection, erosion control and the integrity of the conveyor and its support pillars.

Synthesis of Impacts

Loss of vegetation in wetlands will be a direct consequence of clearing and grubbing associated with constructing the conveyor. The natural substrate (soil) be altered, impacting negatively on existing vegetation, due to the placement of dump rock to facilitate access to service the conveyor as well as to support the gantry. The vegetation structure and height will have to be managed in a way to avoid interfering with the conveyor as well as to reduce the fire risk. The significance of the impact is expected to be moderate.

Although the replacement of the natural substrate that occurs within the wetland, especially in rivers, with dump rock could provide a local barrier to the movement of aquatic fauna, it is expected that water will continue to flow over the placed material ensuring that the movement of most aquatic fauna is not impeded. The significance of the impacts on the interruption of free movement of aquatic fauna is expected to be low.

Interruption of hydrology will occur where wetland soils will be replaced with compacted dump rock associated with the access road, the gabion structures, and reno-mattresses as well as the foundations required to support the conveyor pillars. Temporary and partial diversion of the stream may be required to facilitate the construction of the conveyor pillars in the streambeds and to prevent flooding of the construction activities. The relationship between the flow direction and its interception by the conveyor will differ if the crossing is perpendicular or horizontal/tangential to the flow. Where the conveyor crosses wetlands obliquely or parallel with the contours, it ensures that water can move unhindered across the servitude. Owing to the relatively small cross sectional area of conveyor, it is unlikely that that the conveyor will have a significant impact on the behaviour of water where the conveyor crosses or approaches wetlands at right angles to contours, with the exception of perhaps concentrating rainfall intercepted on the conveyor roofing. This will form a drip line which could increases the erosion risk on the hillslope seeps because of the combination of slope and the fact that the soils are likely to saturate rapidly converting infiltration into runoff. The significance of unmitigated impacts on the disruption of hydrology is rated as moderate, and the mitigated impact is low.

Dust generated by construction activities, eroded sediments, leaked hydrocarbons from construction vehicles, litter, and small amounts of construction materials can all find their way into the systems, polluting the affecting water quality. Support pillars be constructed in at least one of the systems, which will require access to the construction site, excavation of in situ material and its subsequent replacement with suitable material, casting of concrete etc. This will undoubtedly result in an increase in turbidity. Diversion of the stream may be required to facilitate the construction. During the operational phase coal fines and dust are likely to find their way into the wetlands and water courses. Where transfer stations occur in wetlands the excavation of cut off trenches/drain will simply create a cone of depression around the affected site. This will lower the groundwater levels in the immediate vicinity of the site, and possibly cause reverse flow from within the bunded area to the groundwater. The significance of unmitigated impacts on the contamination of water from dust or spills are rated as low to moderate, and the mitigated impact as low.

Environmental Management Programme Framework

EMP Section on Water Courses and Wetlands (Appendix B).

Cumulative Impacts

The conveyor will increase impacts in an area which is already impacted on by mining, agriculture and infrastructure. Streams within the study area are already polluted and impacted upon by the surrounding activities. Further degradation of water courses and wetland habitats.

No-Go / Alternative Development

Existing impacts on wetlands will remain. Additional impacts due to the presence of the conveyor will be avoided.

The no-go development will have high negative impacts on the cost and timing of coal supply to Kusile Power Station, delivery of electricity to the national grid, and associated impacts on national economy and it is therefore assumed that if the proposed Phola-Kusile Coal Conveyor is not allowed to be developed, an alternative coal supply and transportation of that coal supply will have to be found.

The two alternative conveyor corridors that were investigated during the scoping phase impacted on more extensive wetland areas and a larger number of stream crossings. These routes were also notably longer than the AAIC proposed route and would have created a longer barrier in the landscape. Impacts of the AAIC preferred route is thus less than the alternatives routes. There are no feasible routes for the conveyor between the Phola Coal Processing Plant and Kusile Power Station that would not cross a number of streams and wetlands.

Any alternative transportation option or alternative route for the conveyor could result in impacts on wetlands.

7.3.3 Social and Economic Environment

7.3.3.1 Soils and Land Capability

Synthesis of Baseline / Existing Impacts

Soils found along the proposed conveyor route are a group of sensitive to highly sensitive wet based soils, and in places more structured soils that are associated with riparian zones and relic land forms. These soils are associated with water bodies, with a variety of basal conditions. Riparian zones are generally regarded as highly sensitive. Soil sensitivity along the proposed conveyor route is indicated on Figure 5-4.

Project Impact Sources

- Wind and water erosion of unprotected soils.
- Removal of soil during construction and for use in other activities.
- Possible spillage of hydrocarbons, reagents and coal.
- Use of dirty water as an irrigation source.
- Dust generation due to vehicles movement.
- Coal dust fallout from the conveyor system.
- Disturbance of the soils and potential loss of nutrient and organic carbon stores through infiltration and de-nitrification of the materials by rainfall.

- Compaction of areas adjacent to the constructed facilities.
- Damage to soil horizons, especially the underlying ferricrete horizon that acts as a barrier to surface and groundwater infiltration.

Description and Synthesis of Impacts

The underlying ferricrete horizon acts as a barrier to surface and soil water infiltration. This feature within the vadose zone (unsaturated zone above the water table). This zone is considered important for the biodiversity and ecological balance of this sensitive environment, and is probably responsible for soil water and surface water being retained in a position close to surface were it can be used. This will in almost all cases be destroyed and possibly removed from the system, particularly in the case of the bridge pillar foundations and any foundations associated with the transfer stations and related infrastructure.

The loss of the utilisation of the soil resource will impact the land use practice of moderate intensity grazing and commercial farming. These activities are perceived to be of great economic benefit to the local economy and land owners, and although the argument that the food security in Southern Africa is unbalanced due to too much maize produced, the need to protect deep soils is essential.

The following are potential impacts on soils and land capability:

- Sterilisation and loss of soil area and use of utilisable resource within the footprint area of the conveyor servitude and infrastructure associated with the project footprint area of ~70 hectares. The agricultural specialist study estimated income for agricultural land as R2 440 per hectare per annum.
- Soil contamination due to construction activities (as also described in section on Surface Water).
- Potential for compaction of soils at construction areas and compaction of stockpiled soils.
- Potential for erosion (wind and water – dust and suspended solids) over unprotected areas.
- Impact on soil structure and soil water balance.

Synthesis of Impacts

- Loss of utilisable resources due to sterilisation and erosion; compaction and contamination during construction.

- Net loss of soil volumes and utilisation potential due to change in physical and chemical material status and loss of nutrient base; and positive aspects due to rehabilitation, re-nutrification and stabilisation through re-vegetation during decommissioning and closure.

The significance ranking will be reduced from high (unmitigated) to moderate-high (mitigated) if the management measures set out in the Environmental Management Plan is effectively implemented.

Environmental Management Programme Framework

EMP Section on Soil Management and Erosion Protection, Spill Prevention, Response and Clean-Up and Rehabilitation (Appendix B).

Cumulative Impacts

The conveyor will increase impacts in an area which is already impacted on by mining, agriculture and infrastructure. Loss of soil volumes and utilisation potential due to the change in physical and chemical material status and loss of nutrient base. However positive aspects include rehabilitation, re-nutrification and stabilisation through re-vegetation.

No-Go / Alternative Development

With the no-go development, existing impacts on soils, land capability and land use will remain and additional impacts due to the presence of the conveyor will be avoided. However, erosion risks and impacts on soils are not severe and do not justify enforcement of the no-go development option.

The no-go development will have high negative impacts on the cost and timing of coal supply to Kusile Power Station, delivery of electricity to the national grid, and associated impacts on national economy and it is therefore assumed that if the proposed Phola-Kusile Coal Conveyor is not allowed to be developed, an alternative coal supply and transportation of that coal supply will have to be found.

Any alternative transportation option or alternative route for the conveyor will result in impacts on ecosystems and biodiversity.

The two alternative conveyor corridors that were investigated during the scoping phase impacted on more extensive wetland areas and a larger number of stream crossings. These routes were also notably longer than the AAIC proposed route and would have larger footprint area of impact on land use and lad capacity.

There are no feasible routes for the conveyor between the Phola Coal Processing Plant and Kusile Power Station that would not cross a number of streams and wetlands.

7.3.3.2 Roads, Traffic and Infrastructure

Synthesis of Baseline / Existing Impacts

The road network around the proposed project site is being used by various companies for the transportation of coal by road. The current impact of coal trucks on the road network, traffic safety and travel patterns were highlighted as an important issue for I&APs.

Impact Sources

- Conveyor crossing the N12 highway (use of old unused Transnet rail culvert underneath the N12). Transnet consent for the use of the culvert is place.
- Conveyor crossing the D686 (extension of R545 to the south of the N12).
- No transport of coal will occur by means of truck on the public roads.
- Conveyor crossing pipelines, including petroleum pipelines.
- Conveyor crossing mining / prospecting areas.
- Conveyor crossing farm roads and paths used by people living along the conveyor route.

Description and Synthesis of Impacts

Public Roads

The proposed Phola-Kusile conveyor will not have an impact on the existing road network, other than short term traffic management and control during construction where the proposed conveyor will cross public roads, and during transportation of construction materials, equipment and personnel.

For the road crossing at the N12, an existing unused railway line culvert under the N12 highway will be used. The conveyor will be constructed through this culvert and the N12 and traffic on the N12 will therefore not be affected.

Farm Roads, Mining Haul Roads and Other Paths

AAIC is in discussions with prospecting / mining right holders, i.e. BECSA and AEMFC, regarding the provision of haul road crossings along sections of the conveyor where access to current and future mining areas will have to be provided. The provision and details of these haul road crossings as well as the location and design of pedestrian and farm vehicle / livestock crossings will be dealt with on a case by case basis and in consultation with the affected land owners, occupiers of the land and prospecting / mining right holders. The provision of crossings will provide adequate mitigation of impacts.

Infrastructure

There are a number of pipelines, including petroleum pipelines, and power lines in the vicinity of the Phola-Kusile Coal Conveyor routes. AAIC is in ongoing discussions with the various infrastructure owners to discuss and finalise arrangements for protection of the infrastructure during the construction and operation of the conveyor and the avoid service interruptions. The appropriate measures and precautions can be taken to provide adequate mitigation of impacts.

Environmental Management Programme Framework

Final design and construction traffic management and control at the bridge over the D686 to be approved by the Mpumalanga Department of Public Works, Roads and Transport (DPWRT).

SANRAL and the Mpumalanga Department of Public Works, Roads and Transport (DPWRT) to be consulted regarding construction activities near the N12 and the old unused railway culvert. Letters of consent to be put in place as required.

Provision of haul road crossings, pedestrian crossings, and farm vehicle / livestock crossings based on discussions with affected parties. Letters of consent to be put in place as required.

Appropriate measures and precautions to avoid damage to infrastructure such as pipelines and power lines in close proximity to the proposed conveyor route and associated construction activities. Letters of consent to be put in place as required.

EMP Section on Machinery, Equipment, Vehicle Movement and Roads (Appendix B).

Cumulative Impacts

The project will not impact on roads and traffic other than short-term impacts during construction. The rating of cumulative impacts are thus based on the existing impacts of coal transportation.

No-Go / Alternative Development

Existing impacts of coal transportation will remain with the no-go development option.

The no-go development will have high negative impacts on the cost and timing of coal supply to Kusile Power Station, delivery of electricity to the national grid, and associated impacts on national economy and it is therefore assumed that if the proposed Phola-Kusile Coal Conveyor is not allowed to be developed, an alternative coal supply and transportation of that coal supply will have to be found.

This could result in a need to transport of the coal from the Phola Coal Processing Plant to Kusile via road or rail. Road transport option will result in high impacts on the local road network, traffic safety and travel patterns. The development of any alternative coal transportation option to supply coal to Kusile Power Station, will pose its own risks and impacts.

7.3.3.3 Social Impacts

Synthesis of Baseline / Existing Impacts

The social impacts listed below can be regarded as cumulative impacts, which are added to the impacts already experienced or perceived due to current and new mining developments, road construction, pipeline construction, power line construction, Kendal power station, the Phola Coal Processing Plant, as well as the construction of Kusile.

Impact Sources

- In-migration of people and presence of construction workers.
- Conveyor crossing mining / prospecting areas.
- Conveyor crossing agricultural land.
- Conveyor located close to third-party residences.
- Conveyor crossing services and infrastructure.
- Change in land use due to development of the proposed conveyor.

Description and Synthesis of Impacts (Cumulative Impacts)

The project will contribute and add to the cumulative affect of development in the area and existing impacts as already experienced and perceived by the local community.

- Safety of people and property may be compromised. An increase in people moving around and strangers entering their properties are concerns to local residents. People who will have construction activities on or near their land are seen as especially vulnerable. Farm attacks are a reality in South Africa, and local farmers are concerned about the presence of strangers on their farms.

- Concerns about the increase in the incidence of sexually transmitted diseases, HIV and AIDS, and pregnancies ascribed to the presence of construction workers in the area.

- Lack of services and impact on services and infrastructure.

- Uncertainty regarding contractual agreements with AAIC (people leasing land from AAIC).

- Disruption to daily activities (change in movement patterns and maintenance of servitude).
- Construction employment.
- Changes to sense of place (due to noise, dust, visual impacts).
- Sterilisation of coal resources.
- Sterilisation of agricultural resources.
- Impact on commercial activities.
- Loss of productive farm land.
- Positive as well as negative impacts on livelihoods.
- Creation of employment and economic opportunities.
- Community unrest due to perceived unfair recruitment practices and labour source areas.
- Impact on the movement patterns of the farming community and livestock.
- Farmers expressed concerns about the possibility of fires starting on the conveyor system.
- There are high levels of unemployment in the area. A large number of the population are semi-literate or illiterate and have limited skills. Issues surrounding employment can have positive or negative social impacts in the study area. Construction will be done by specialist contractors that will bring in a number of their own staff given the specialist nature of the work. Opportunities for local labour will therefore be limited to work that does not require specialised skills. It must be acknowledged that there is some skilled labour available in the area due to industrial projects that have been implemented in the past. The work opportunities during the construction period will be short-term.

When considering the social impacts of the proposed conveyor system, the importance of the project on a national scale must be considered. Electricity supply is a critical issue in South Africa at the moment and the proposed project will add to the stability of the service. From a greater societal perspective the project will thus have a positive impact.

The proposed project will take place in an area surrounded by industrial development, and many of the impacts are already taking place and stakeholders are well-informed about impacts associated with coal transportation, construction and coal mining. A small number of stakeholders will bear the majority of impacts of a project that is in the interest of the country at large. These impacts can be mitigated and managed. Long-term management is crucial to enhance AAIC's social 'licence to operate' and to minimise impacts on affected parties. The largest number of impacts will result from a change in land use. Due to the long life of the conveyor, it will affect stakeholders for all or a big portion of their economic active years.

Social impacts often occur as a result of bad communication processes, and positive relationships can go a long way in dealing with issues. The way in which issues are approached is a crucial aspect in the success with which it can be dealt with.

Due to the cumulative nature of the social impacts, some impacts are difficult to mitigate on a project level, as proper mitigation would require input from government or other agencies outside the project area. It would not be practical for a project proponent to manage impacts that occur in a greater societal context. Another aspect to consider is that all the impacts described in this section are existing impacts, and the project will cumulatively add to these impacts. The mitigation of these impacts is therefore not the sole responsibility of the proponent, but other industries that contribute to these impacts should also contribute to their mitigation. Although there is a possibility that the construction workers associated with the proposed conveyor belt may have an impact on the services, this impact is deemed as insignificant and major mitigation is not required. It will be important to use local service providers to ensure workers already have accommodation in the area and no addition pressure will be placed on services.

Environmental Management Programme Framework

EMP Sections on Public Relations, Public Health, Public Safety And Security, Labour Recruitment And Relations, Complaints Register And Management, and Dispute Resolution.

Cumulative Impacts

Social impacts associated with the project added to the impacts already experienced or perceived due to current and new mining developments, road construction, pipeline construction, power line construction, Kendal power station, the Phola Coal Processing Plant, as well as the construction of Kusile.

No-Go / Alternative Development

Any alternative transportation option or alternative route for the conveyor will result in social impacts.

7.3.3.4 Land Use Change (Impact of Existing Land Uses)

Synthesis of Existing and Project Impacts

Change in land use is a geographic process that affects the land use patterns of the local community.

The key land uses along the conveyor are agriculture, mining, and power generation (Kusile and surrounding land owned by Eskom). Impacts on these land uses are discussed in Section 7.3.3.5.

Other land uses includes major roads (i.e. the N12 and the R545 (D686) as well as various power lines, pipelines and other linear infrastructure. Impacts on these land uses are discussed in Section 7.3.3.2.

Environmental Management Programme Framework

AAIC is in discussions with prospecting / mining right holders, i.e. BECSA and AEMFC, regarding compensation for impacts on their coal reserves. The quantification of the sterilisation of coal resources will have to be assessed on a case by case basis and would depend on the coal resources.

Implementation of EMP Sections on Public Relations, Complaints Register and Dispute Resolution.

Cumulative Impacts

Added impacts to existing impacts of new road, mining and power station development in the area.

No-Go / Alternative Development

Any alternative transportation option or alternative route for the conveyor will result in impacts on land use.

7.3.3.5 Economic Activities

Synthesis of Baseline / Existing Impacts

The area earmarked for the Phola-Kusile Conveyor is currently used for cultivation, grazing, mining and future power generation (area where Kusile is being constructed). The majority of the properties are owned by either AAIC or Eskom – AAIC is the custodian of the project and Eskom is the beneficiary to whom the coal is supplied.

Agriculture

The conveyor will affect about 70 hectares of land along its servitude and at transfer stations. An estimated 22 hectares is under cultivation and it is expected that the majority of the 37 hectares natural grasslands (Table 7-3) is actually used for grazing.

There will be an immediate impact in lost agriculture production as soon as construction of the conveyor starts. This negative impact on agriculture land is permanent, but limited to the affected 22 hectares cultivated land and 37 hectares of potential grazing land.

Although the production of agriculture products is of the utmost importance, anticipated improvement in technology in this sector could help to increase yields of cultivars and to off-set impacts over time. This does not mean that agricultural land can be used and rezoned for other uses, but only that over time, the small loss in agriculture production as a result of the conveyor development could be made up with technological advances.

The conveyor is mostly located on farm boundaries and this reduces the negative impact. In addition, it is located along existing 132 kV power lines and the N12 highway.

Tourism

No Tourism activity is located within the conveyor servitude area and as a result no impact is expected on tourism activity.

Mining

A small portion of mining land will have to be crossed by the conveyor. AAIC is in consultation with third-party affected mining / prospecting holders (AEMFC and BECSA) regarding compensation.

Impact Sources

- Capital and operational expenditure.
- Job creation.
- Conveyor crossing agricultural land.
- Conveyor crossing mining / prospecting right areas.

- Supply of coal to Kusile.

Description and Synthesis of Impacts

Economic Benefits

During the construction phase of the proposed conveyor, business sales with reference to certain products and professional services will increase.

- October 2011 Estimate of Capital Investment and Employment
  At the time of the draft EIA report (October 2011), it was estimated that there will be a capital investment of R1.4 billion and that 200 to 300 people will be employed during construction. The economic specialist impact assessment (Appendix O) was based on these figures.

- February 2012 Capital Investment and Employment based on AAIC's Feasibility Study
  AAIC refined the capital costs of the project as part of their feasibility study for the project. The latest figures available indicates a capital investment of R2.6 billion.

  Due to the urgent and short time available for construction (in order to avoid delays to coal supplies to Kusile), AAIC is now proposing to use multiple construction teams. As a result, AAIC has increased the construction figures to an estimated 800 to 1400 people.

The actual economic benefits of the project are therefore expected to be more beneficial than was stated in the economic specialist impact assessment (Appendix O) and the draft EIA Report. Since these are positive high impacts, there were no need to redo the economic modelling. The impacts are discussed below therefore represents a conservative view of the economic benefits.

Based on the October 2011 capital investment of R1.4 billion, there would be R1.4 billion direct additional business sales, R 8.6 million indirect business sales (larger area and country), resulting in an induced impact of R 554 million business sales. Overall, the total value of additional business sales leveraged by the capital investment amounts to R1.968 billion. With updated figures available at the time of this final EIA report, AAIC is estimating that the capital investment will be R2.6 billion. Based on this updated figure, the economic benefits will be more.

During the construction phase, certain goods and services will be produced or provided within the specific geographic area. Based on the October 2011 capital investment of R1.4 billion, there would be the creation of additional Gross Geographic Product (GGP) – R785 million direct additional GGP, R 3.6 million indirect additional GGP and R85 million additional induced GGP. In total the capital investment will contribute to the leverage of R874 million additional GGP within the country. With updated figure of R2.6 billion for capital investment, the benefits will be more.

The construction phase of the project will be relatively labour intensive, resulting in the creation of a number of temporarily employment opportunities. Based on the original capital investment quoted in the draft EIA report of R1.4 billion, the economic specialist estimated that there will be a creation of 1 500 direct employment opportunities, 100 indirect and 1 100 induced employment opportunities and this would have resulted in a total of 2 700 temporarily additional employment opportunities. With the updated capital investment figure of R 2.6 billion, the employment creation figures is likely to be higher, with more positive impacts.

The investment geared to improve electricity supply in South Africa would create economic opportunity such as additional employment and related downstream opportunities in the local and national economy. In this regard the conveyor on its own does not create huge economic benefits, although technical professionals would have to do periodic maintenance to the line, which could create some new jobs. The benefit is evident in the additional economic activities that would be generated from the conveyor development.

Food Security

The Mpumalanga Province is regarded as one of the main areas within South Africa where maize production takes place. Together with the Free Sate and North West provinces, it provides for the bulk of maize production in the country.

The Mpumalanga Province contributes approximately 22% to the total maize production of South Africa (2009/2010). Maize is regarded as one of the staple food types within the country, especially within the poorer communities. As a result of the importance of maize, especially its role in the national economy as staple food to poor communities, these areas that provide maize should be protected as far possible.

The Phola-Kusile Coal Conveyor project falls within an area that is used for maize production, which will directly affect the volume of maize production in the area and the province. The conveyor has a footprint of ~70 hectares that be lost to agriculture production.

Food security in the world has reached its lowest level in over 50 years. Huge demand for cleaner energy pulls important food sources like maize and soybeans into the production of bio-fuels.

Property Values

Properties owned by Eskom and Anglo will have a lower economic impact loss compared to the private and other land owners of the affected area. For the owner of the land, in this instance Anglo and Eskom, it is a case of opportunity cost i.e. a loss in rent income but a gain in production of coal.

In the case of private land users the economic activity will reduce, implying a loss in production for the land owner, implying a higher economic loss impact.

The value of properties is directly affected by the production that takes place on the land. As a result of the direct correlation it can broadly be stated that the impact of a conveyor development on the property value would impact on the production of the land. Table 3.4 shows the expected impact on property values and production on agriculture for the study area. The impact is only relevant on affected properties.

Table 7-5: Impact on production and land value on agricultural property

Type of activity	Typical quantified impact on production	Typical impact on land value	Exceptions
Maize - dry land	0-3%	0-3%	Pivot Irrigation (3-5%)
Sunflower - dry land	0-3%	0-3%	Pivot Irrigation (3-5%)
Soya - dry land	0-3%	0-3%	Pivot Irrigation (3-5%)
Livestock	0-3%	0-3%	Pivot Irrigation (3-5%)
Dry-beans - dry land	0-3%	0-3%	Pivot Irrigation (3-5%)
Groundnuts - dry land	0-3%	0-3%	Pivot Irrigation (3-5%)

Forestry	5-20%	5-20%	

The above table lists the main types of agricultural activities encountered within the study area. Although the type of cultivation differs from year to year depending on market prices, supply and demand and natural occurrences the activities listed in the table present the largest crop types.

The impacts are classified in five categories:

Low:	Where the impact is less than 0-3%
Medium-Low:	Where the impact is between 3-5%
Medium:	Where the impact is between 5 – 10%
Medium-High:	Where the impact is between 10-15%
High:	The impact is more than 15%

Mining Areas

The development of a conveyor will have no negative impact on mining activity when located in an area where the coal has already been extracted.

AAIC is in discussions with prospecting / mining right holders, i.e. BECSA and AEMFC, regarding compensation for impacts on their coal reserves. The quantification of the sterilisation of coal resources will have to be assessed on a case by case basis and would depend on the coal resources.

Synthesis of Impacts

The following figure conceptually illustrates the economic impact that the proposed development could have on the local economy in terms of additional GGP.

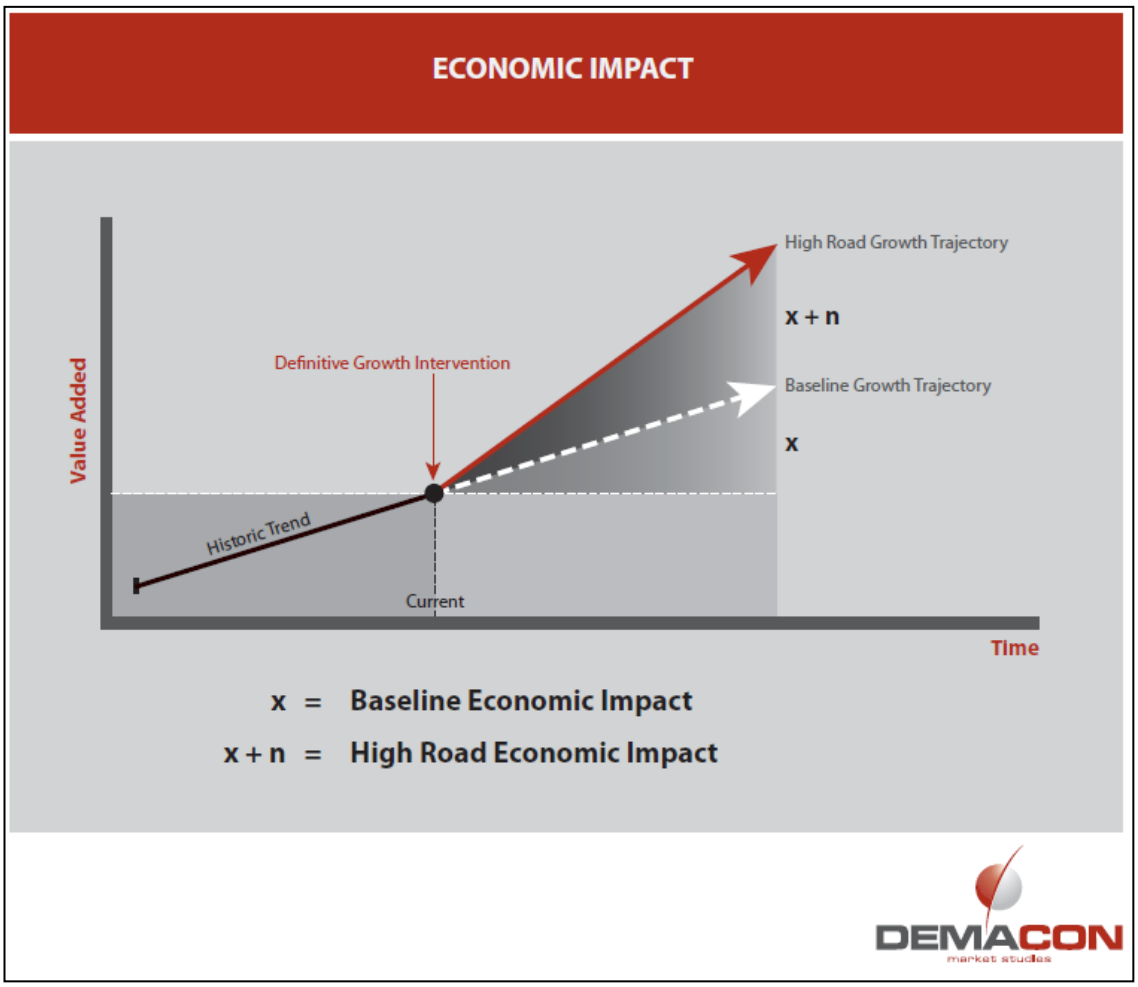

Figure 7-3: Economic Impact of the Development

The input-output model depicted in the figure above shows economic relationships between different components of an economy by identifying monetary flows (expenditures, receipts) between various units. The relationship between the initial spending and the total effects generated by the spending is known as the multiplier effect (X + N) of the sector, or more generally as the impact of the sector on the economy as a whole.

Impacts are measured in terms of the following:

- **Business Sales** refers to the value of new business sales (turnover) generated in the economy as a result of the proposed new development.
- **GGP** refers to the value of all final goods and services produced during a one year period within the boundaries of a specific area as a result of the proposed new development.
- **Total employment** reflects the number of additional jobs created by economic growth due to the proposed new development. Note that the public costs of attracting these employment opportunities, as well as the quality thereof, are not necessarily reflected.

The economic specialist based the capital expenditure on the figures available at the time of the study in October 2011, which was then estimated at R1.4 billion. This figure represents the base input for the impact modelling exercise: CAPEX to estimate the once-off impact of the construction phase of the project. With the updated capital investment figures received from AAIC in February 2012, the positive economic impacts are expected to be more.

The anticipated economic impacts (direct, indirect and induced) that will result from the construction phase of the conveyor project is indicated below. It is important to note that these impacts are once off and not sustained annual impacts. The impacts will fade away after the construction of the conveyor.

Table 7-6 summarises the findings of the impacts of the construction phase of the conveyor based on the original lower capital investment figure of R1.4 billion. The calculations assume the development of the full spectrum of existing and proposed rights. Note: New Business Sales (NBS), Gross Geographic Product (GGP) and Employment (Empl).

Table 7-6: Economic Impacts of Capital Investment. NBS and GGP (figures based on the original capital investment figure of R1.4 billion as modelled in the Economic Specialist Impact Assessment)

VARIABLE	DIRECT IMPACT	INDIRECT IMPACT	INDUCED IMPACT	TOTAL IMPACT
Additional Business Sales	R 1 406 022 000	R 8 579 000	R 554 264 000	R 1 968 865 000
Additional GGP	R 785 279 000	R 3 688 000	R 85 073 000	R 874 040 000
Additional Employment	1 500	100	1 100	**2 700**

VARIABLE	CAPITAL EXPENDITURE	TOTAL IMPACT
Additional Business Sales	R1.406 billion	R1.968 billion
Additional GGP		R874 million
Additional Employment		2 700 jobs

Source: Demacon Economic Impact Model, October 2011 (based on

The positive impact in terms of the construction phase as indicated in the table above is based on the October 2011 capital investment figure of R1.4 billion as quoted in the draft EIA. With the February 2012 updated capital investment figure of R 2.6 billion, the employment creation figures are likely to be higher.

Gross Value Added (GVA) and Employment

According to the agriculture impact assessment (Appendix P) the loss in net farming income (NFI) as a result of the conveyor development for the specific portion of the farm affected (i.e. not the entire farm but only a portion) is estimated at R2 440 per ha, this translates into a farming income loss of R183 000 per annum.

According to the national accounts the coefficient for NFI to gross value added (GVA) is 1.74. Therefore a loss of R 183 000 NFI is estimated to be a R318 309 loss in GVA for the agriculture sector. This translates in an employment loss of approximately 5 jobs. The estimated permanent jobs created by the conveyor during the operational phase are 16.

The continued supply of electricity is important for an economy to produce long term growth. The planned conveyor development would ensure inputs are provided to generate electricity and contribute towards the sustained supply of electricity needed for economic growth and development.

The Accelerated and Shared Growth Initiative for South Africa (Asgisa) targets has been put at 6% growth for the South African economy meaning that growth in the utilities sector is non-negotiable in order to sustain economic growth within the national economy.

The long term benefit would off-set the small decrease in the available arable land for agriculture production in the study area.

Environmental Management Programme Framework

Final agreements to be put in place with affected landowners and mining / prospecting right holders along conveyor route.

Cumulative Impacts

The economic impact as described above can be added to that of developments in the area, most notably the Kusile power station development.

No-Go / Alternative Development

The no-go development will have high negative impacts on the cost and timing of coal supply to Kusile Power Station, delivery of electricity to the national grid, and associated impacts on national economy. It is therefore assumed that if the proposed Phola-Kusile Coal Conveyor is not allowed to be developed, an alternative coal supply and transportation of that coal supply will have to be found.

7.3.3.6 Noise

Synthesis of Baseline / Existing Impacts

The results of the baseline monitoring survey showed that ambient noise climate is homogeneous over the largest part of the project area. Night-time levels vary between 37 and 43 dBA, which is in good agreement with the typical level (40 dBA) expected in accordance with SANS 10103 guidelines for the area. The exception to this are the areas found within 500 m from the N12 and 100 m from the R545, which are affected by traffic. Monitoring of these areas affected by these two roads showed night-time levels of between 46 and 48 dBA.

Average baseline noise levels for the study area are tabled below:

Table 7-7: Baseline outdoor ambient noise levels derived from field surveys rounded to the nearest nominal rating in 5 dB steps in accordance with SANS 10103 system

Area	Baseline ambient noise level L_{Aeq} (dBA)	
	Day-time L_d	Night-time L_n
All areas except locations close to the N12 and R545	50	40
Locations within 500 m from the N12	55	45
Locations within 100 m from the R545 main road	55	45

Main Noise Impact Sources

Construction:

- The construction phase will involve low intensity, short-term activities and singular vehicle movements with little or no consequence.

Operation:

- A conveyor constitutes a line noise source characterised by medium to low-frequency audible content with a relatively wide physical footprint, depending on the design of the rollers and conveyor belt.

- The primary noise generator in a conveyor is the idler (roller) and the idler-belt combination which generate noise as a result of idler rotation, as well as continuous belt and idler excitation by impulsive belt-idler impact. Conveyor noise is for all practical purposes generated by the rollers and by belt-roller impact.

- The main components contributing to the overall conveyor noise are the conveyor itself, coal transfer stations and start-up alarms. Although transfer stations appear to be noisier when judged from a short distance (a few metres from the source), by far the greatest contributer to the noise heard at distances comes from the conveyor itself.

- Conveyor noise radiation characteristics used in the noise model and in the calculation of the unmitigated noise footprint of the Phola-Kusile conveyor are based on actual emission levels measured on the Anglo Zibulo conveyor stated to be of exactly the same design and construction as the Phola-Kusile conveyor. Conveyor design and operating parameters relevant to noise emission are as follows:

Idler type:	Standard steel
Roll diameter:	200 mm
Idler spacing:	4,5 m
Conveyor speed:	4,2 m/s
Canopy:	Conventional dog-house
Noise level at 3 m:	74 dBA

Description of Impacts

In terms of the old national noise regulations, a disturbing noise means a noise that causes the ambient sound level to increase by 7 dB or more above the designated zone level, or if no zone level has been designated, the ambient sound level measured at the same point. Noise regulations also require that the measurement and assessment of ambient noise comply with the guidelines of SANS 10103.

An increase of 5 dB is significant and an increase of 7 dB can be expected to evoke widespread complaints from the community. Noise impact are within legal limits if the noise impact is prevented from exceeding 7 dB but this would not prevent a community from being disturbed and to complain about the noise.

It is advised the target be set much lower at 3 dB. The 4 dB margin is required as a matter of good planning and to maintain good relations with neighbours. It also brings the assessment in line with World Bank guidelines. Once in operation, an appropriate limit in noise monitoring of the actual levels would be an excess of 5 dB, which is still 2 dB below the legal limit.

Daytime intrusive noise levels created by distant industrial noise sources such as the proposed Phola-Kusile Overland Coal Conveyor are as a general rule, substantially lower than the levels created by the same sources at night. The reason is that typical daytime meteorological conditions result in skyward refraction of sound propagation, in contrast with downward diffraction caused by typical night-time temperature profiles (vertical gradients). During the day, most of the noise emitted by a large source does not reach the ground, while at night, both direct sound and a portion of the energy radiated skywards are focussed back to earth. This contrast between day and night levels is further accentuated by a considerable drop at night in the residual ambient level due to a decline in road traffic and human activity noise. As a consequence, not only are the levels of intrusive noise from distance sources much higher at night, but the sensitivity of the environment increases sharply, as well.

It follows that for continuous noise from a 24-hour operation, such as opencast mining, conveyors, processing plant operation and truck movements, maximum impact will occur at night and that for all practical purposes, provided the night-time impact is contained to acceptable levels, the daytime impact would not be of any consequence or concern at all.

A significant impact on properties bordering the Phola-Kusile Overland Coal Conveyor Project area is deemed to occur if the specific level of an intrusive noise exceeds the existing ambient rating by 5 dB or more. For the main study area this implies that up to 40 dBA is still considered an acceptable level for specific noise generated by the project, while 45 dBA is deemed to be a disturbing noise resulting in a significant impact.

For zones within 100 m from the R545 main road and within 500 m from the N12 highway, the corresponding night-time limits are 45 dBA (acceptable) and 50 dBA (significant impact), respectively.

Construction activities along the coal conveyor corridor will occur mainly during daytime. In terms of noise generation, it will involve low intensity activities and singular vehicle movements with negligible or no noise consequences. Should construction take place at night, it could result in short-term disturbance at localised positions along the conveyor route.

Depending on the time of day or night and on meteorological conditions in particular, noise levels produced by industrial sources over long distances vary by a considerable margin. Noise contours were derived from calculations intended to investigate probable worst-case conditions (Night-time levels and Concawe model Meteorological Category 6). On average, typical levels are expected to be lower. “Probable worst-case” in the context of this study refers to levels that are higher than typical levels. Although less probable than typical levels, they are expected to occur from time to time during the course of the year, sometimes possibly for several days on end. Occurrence of worst-case conditions is not simplistically related to weather conditions and not limited to any particular season of the year.

Confidence in the predictions is high. Conveyor modelling and noise calculations are based on appropriately scaled data obtained in numerous conveyor studies and measurements conducted by the author to investigate the dependence of conveyor noise on design features such as conveyor type, speed, canopy design, structural stiffness and roller type. It should nevertheless be cautioned that predicted noise levels and contours are not to be taken as absolute. Noise maps must be interpreted with caution. Although the confidence level in the acoustic model is high, predicted levels are valid for the assumptions made in respect of meteorological and other conditions. Since meteorological conditions in particular are highly variable, levels produced at a distance by a source at a constant acoustic output will vary considerably, even during the course of a single day-time or night-time period. Variance in noise level due to changes in atmospheric conditions increases with distance from the source. It should also be borne in mind that noise propagation is not only affected by distance and wind, but by temperature gradients in the atmosphere as well. The contours represent best estimates of continuous project activity noise levels averaged over a relatively long duration, in this case the nominal night-time period of 8 hours.

Rather than taking only the prevailing wind direction into account, it is assumed in the calculation of noise contours presenting the findings of this noise study, that Meteorological Category 6 atmospheric propagation conditions prevail at night. Although this worst-case condition may occur when the recipient is situated down-wind relative to the source of noise, it is not uniquely related to wind direction, or to one specific state of weather conditions. It also transpires in the absence of wind, when (typically at night) a positive temperature gradient develops in the lower atmosphere. This is a common occurrence on cloudless nights following sunny days, when strong radiation and cooling of the earth results in an increase in temperature with height.

Although both down-wind and a positive temperature profile will result in an increase in noise levels, the effects of the two phenomena differ in one important respect: Downwind conditions causes the noise level to increase in one direction only, while the effect of temperature gradient is omni-directional, i.e. the noise level is increased in all directions.

The operational noise footprint of the Phola-Kusile Overland Coal Conveyor system is presented with the aid of noise contour maps. In an area where the background ambient noise level is more or less homogeneous, the effect of a new development can be effectively demonstrated with a noise map showing a contour of the total noise calculated at a level corresponding to a significant impact. This only works when the background ambient level can be assumed to be relatively homogeneous, so that a significant impact occurs at the same level. In the Phola-Kusile Conveyor system study area this is not the case. Although the ambient level is more or less the same over the largest part of the study area, there is a marked increase in the proximity of the N12 highway. This complicates the reading of a noise map showing a contour of the total level, because the level of significant impact rises steadily towards the highway.

For this reason, instead of the total level, noise maps in this report show the increase in the (dBA) level of ambient noise as a result of additional noise expected to be generated by the proposed conveyor. These noise contours represent the actual impact (increase in ambient level) and were calculated taking into account the rise in background ambient level in a zone parallel with the N12 highway, the degree depending on the distance from the highway. This greatly simplifies reading of the maps.

The 5 dB contour shown on the noise maps defines the significant noise impact footprint of conveyor, including the transfer stations. Outside the zone demarcated by the 5 dB contour, the noise impact is deemed insignificant and the noise level gradually declines with distance and converges to the background ambient level.

To elucidate the significance of the 5 dB contour, it is noted first of all that if the specific level of conveyor noise at an observation point rises to the point where it equals the background level, the ambient level will rise by 3 dB above its initial level. This represents a noise impact of 3 dB, which is still acceptable in terms of noise regulations and SANS 10103 criteria. A significant impact is deemed to occur (See SANS 10103 criteria in Table 5-10) if the ambient level is exceeded by 5 dB or more.

It should be borne in mind that the noise levels and the impacts calculated for noise from continuous operations such as the conveyor under consideration are long-duration (e.g. 8-hour night-time) averages.

Although it may cause a noise disturbance, transient noises of brief duration will not necessarily affect the long-term calculated or measured average level. One such a source of noise is the start-up alarm on conveyors which produce a high level pure-tone noise. The actual level at a distance is lower than that of a conveyor running at full speed, but can be particularly audible and disturbing because it starts at a time when the conveyor is standing still and continuous for a period while the conveyor starts up and picks up speed. Although the distance at which it causes a disturbance is less than the noise footprint of a conveyor of conventional design running at full speed, it does become a problem when conveyor noise is mitigated through design aspects discussed below. Impacts will be further assessed on a case by case basis once the final conveyor route and other mitigation measures have been determined.

Conveyor noise footprints for the proposed conveyor route, mitigated and unmitigated, are illustrated on Figure 7-1, with the location of buildings and structures which are found in the vicinity of the proposed conveyor route indicated (HH1 to HH45). Further information on these buildings and structures are provided in Table 7-2.

Unmitigated Noise Impact (Conventional Conveyor Design)

The unmitigated impact zone has been plotted for a conveyor of conventional design on Figure 7–4. The impact on any specific property or recipient of interest, as well as the relative merits of the various routes will be assessed by inspection of the noise maps of the location of sensitive receptors within this zone and property ownership. Most of the properties along the proposed conveyor route is owned by AAIC and as such, the impacts on third-party owned land is already minimised.

Over most of the study area (more than 500 m away from and outside the noise influence sphere of the N12 highway), a conveyor of conventional design is expected to have a significant noise impact footprint (5 dB increase in the ambient level) extending to a distance of approximately 1 250 m from the conveyor. Inside the 5 dB zone, conveyor noise will be clearly audible at night and disturbing.

In the vicinity of the N12, higher background ambient levels resulting from traffic noise on the highway will serve to effectively mask conveyor noise, resulting in a reduced elevation in conveyor noise impact. The closer the conveyor to the highway, the less audible its noise will become and the smaller the impact.

Transfer station noise, although loud at source, is not showing in the overall result (transfer stations appear to be noisier when judged from a short distance (a few metres from the source) but the greatest contribution to the noise heard at distances comes from the conveyor itself). Mitigation, where required, should in the first place focus on the conveyor as the primary source of noise.

Mitigated Noise Impact (AAIC Proposed Conveyor Design)

AAIC is confident that the design of the rollers and conveyor belt used fort the Phola-Kusile Coal Conveyor will result in significantly reduced noise output compared to that of conventional conveyors used in the past. The design of the Phola-Kusile Coal Conveyor will be similar to that used at the recently constructed Zibulo conveyor that transports coal to the Phola Coal Processing Plant.

Low-noise HDPE5 instead of standard steel idlers on conveyors gives a substantial reduction in conveyor noise. Reductions of 15 to 20 dB have been achieved in controlled tests and on existing lines where noise problems had been experienced. In the case of the Zibulo model, replacement of steel rollers with HPDE rollers can be expected to yield a noise reduction of 6 dB.

Noise contours for a conveyor equipped with low-noise rollers, with a conventional canopy shows that the significant noise impact footprint contracts from roughly 450 to 250 m and where the conveyor route is located near the N12 highway, the footprint is reduced to less than 100 m.

Should the reduced noise footprint still include noise-sensitive receptors, the construction of a noise screen or barrier may have to be considered. The design of such a screen is a specialised task for which the services of an acoustical engineer should be employed.

Mitigated Noise Impact (Noise Screens)

The use of a metal cover (called ‘doghouse sheeting’) is often mistakenly seen to help screen off noise but has little effect on the ‘closed’ side, while amplifying the noise on the ‘open’ side. The use of a single row of trees also offer virtually no noise screening effect.

Properly designed noise screens can, however, be effectively used in areas where there are significant noise impacts at third-party owned properties along the proposed conveyor route. Any application of noise screening must be done based on recommendations by a noise specialist to ensure the effectiveness of the screening.

Synthesis of Impacts

Most of the land along the conveyor belongs to AAIC and or Eskom. There are a number of residences, either owned by or occupied by third-parties (owners, tenants and farm workers), along the route, these are listed and described on
Figure 7-4 and Table 7-1.

A conveyor of conventional design will have a significant noise impact within a zone of up to 1 250 m around the conveyor. Inside this zone noise levels will increase with up to the 5 dB and the conveyor noise will be disturbing and clearly audible at night.

Environmental Management Programme Framework

Detailed Design / Pre-Construction:

- Noise survey to be carried out shortly before commissioning of the conveyor to measure noise levels at reference points in the area most likely to be effected (as per recommendations by noise specialist).

Construction:

- Construction noise will be of low intensity and will be largely restricted to daytime hours. No specific mitigation is required.

Operation:

- Follow up noise survey immediately after commissioning of the conveyor to measure noise levels at reference points in the area most likely to be effected (as per recommendations by noise specialist).

Implementation of EMP Section on Noise Management (Appendix B).

Cumulative Impacts

The noise impact zone as defined considered ambient noise levels as well as noise generated by the Phola-Kusile Coal Conveyor.

No-Go / Alternative Development

The no-go development will avoid noise impacts associated with the conveyor.

The no-go development will have high negative impacts on the cost and timing of coal supply to Kusile Power Station, delivery of electricity to the national grid, and associated impacts on national economy. It is therefore assumed that if the proposed Phola-Kusile Coal Conveyor is not allowed to be developed, an alternative coal supply and transportation of that coal supply will have to be found.

If the conveyor is not developed, transportation of the coal could be via road. Noise generated by the large number of truck required at regular intervals along the existing or new haul roads will likely result in noise impacts exceeding that of the conveyor. The development of any alternative coal transportation option to supply coal to Kusile Power Station, will pose its own risks and impacts.

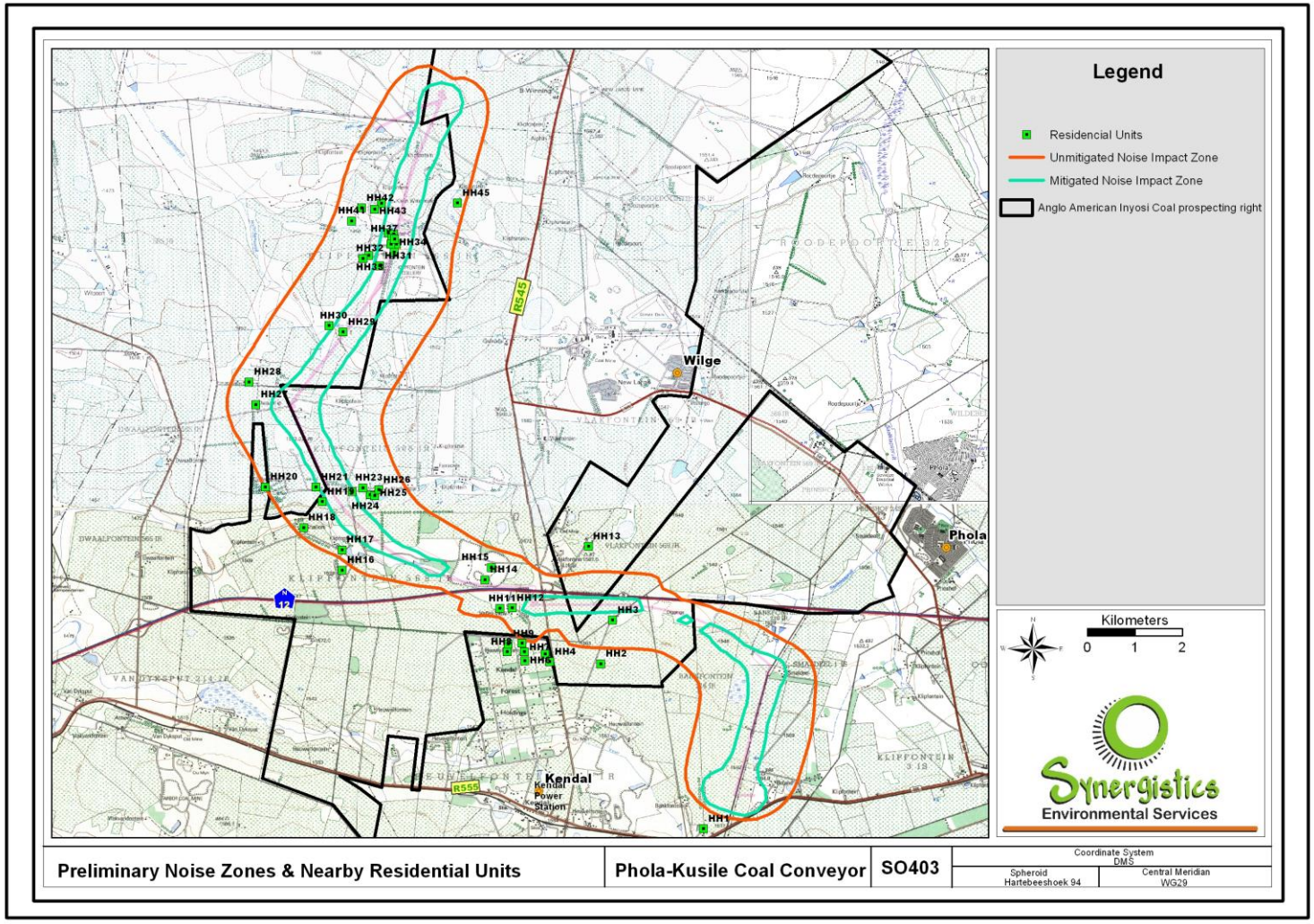

Figure 7-4: Buildings and Structures (Potential Sensitive Receptors) along the AAIC proposed conveyor route, showing potential noise impact zone represents the area where noise levels will be raised with 5 dB or more. The unmitigated impact zone is for conventional conveyor design, while the mitigated impact zone is for a conveyor where technology has been applied to reduce noise output as proposed by the noise specialist (Appendix K).

7.3.3.7 Visual Impacts

Baseline / Existing Impacts

The visual character of the study area is largely cultivated land and pockets of remaining natural grasslands with concentrations of manmade features along roads and in the settlements of Wilge, Phola and Kendal Forest Holdings. Other manmade activities include roads, power lines, sand mining, coal mining, and the Phola Coal Processing Plant and infrastructure associated with the various farmsteads and agricultural land uses. Two power stations, Kusile and Kendal, form prominent features in the landscape.

The western section of the study area consists primarily of agricultural land and grassland, mainly used for grazing. The landscape is flat to rolling and includes a valley, which has a disturbed visual character. The area includes a chicken farm, sand quarry and brickworks. Kusile Power Station is located in the north-west (at the end point of the proposed conveyor) and will become a major feature in the landscape.

The eastern section of the study site includes the settlements of Wilge and Phola. The area is flat to rolling and includes valleys and pans. Most of the land in this section is used for agriculture and grazing. The eastern section includes a sand quarry and brickworks. The R545 runs past the Wilge Village and remnants of the old New Largo underground mine and the Wilge Power Station. This area includes the old power station ash dump and foundations of the demolished power station cooling towers.

The southern section of the proposed study area is situated just south of the N12. From a visual viewpoint, the southern section consists primarily of agricultural land and the dominant landform is the flat agricultural lands but various coal mines exist in this area. This section includes the Kendal Forest Holdings and Kendal Power Station, a prominent feature in the landscape.

Landscapes with greater diversity or containing distinctive features are generally classified as having a higher scenic value than landscapes with low diversity, few distinctive features, or more ‘common’ elements. Generally, the greater the diversity of form, line, texture and colour in a landscape unit or area, the greater the potential for high scenic value.

Scenic quality classifications are as follows:

- High - distinctive landscape and strong sense of place
- Moderate - common landscape
- Low - minimal landscape and weak sense of place

Land types, each with its dominant landscape characteristic, sense of place and aesthetic value within the study area, have been identified as follows:

Rivers and Streams

The *highest* current scenic value is assigned to the rivers and streams. The combinations of natural features, characteristic of these areas, stand out within the context of the region and evoke distinct and unique images to produce a strong sense of place. However, most of these areas have already been compromised by the presence of farming infrastructure, industries and power lines. Effectively, this results in this landscape type being awarded a *moderate* value.

Built Up Areas and Settlements

The landscape type with the *lowest* current scenic quality rating is the built up areas associated with the settlements of Phola, Kendal Forest Holdings and Wilge Village.

Disturbed Grasslands and Remnants

The remainder of the study area, spatially the largest component, comprises disturbed grasslands and agricultural lands. This landscape type has a ***moderate to low*** aesthetic value.

The vast, flat, undisturbed areas and the presence of distinctive natural landscape elements (hills and stream valleys) generally create a setting for expansive panoramic views, albeit from low vantage points. Views of the conveyor would be most prominent when crossing either the N12 or both the N12 and current alignment of the R545.

Main Impact Sources

- Presence of conveyor in the landscape.
- Vegetation removal, fire breaks, service road and fencing along the conveyor servitude.
- Transfer stations and associated infrastructure.
- Lighting, mainly associated with the transfer stations.

Description and Synthesis of Impacts

Views from residences and farmsteads are typically more sensitive of the conveyor since views from a residence are considered to be frequent and of long duration. Residences and farmsteads are regarded as high sensitivity viewpoints. The visual impact from farmsteads would depend on the use of the farmstead, the distance from the residence to the conveyor, as well as the absence of visual obstructions between the conveyor and residence and direction of the main views. A final assessment will be done on a case by case basis with input from the affected parties along the final route alignment.

Other viewpoints, such as those from the N4, N12 and R545 and local farm roads dispersed throughout the study area, are considered moderate sensitivity viewpoints.

The ‘zone of potential influence’ i.e. the distance beyond which views to the project sites would not be greatly influenced by the presence of its proposed structures, was set at 3000 m. Visual exposure relates directly to the distance of the view. The significance of visual exposure diminishes with distance between the source of the impacts and the receptor.

For the proposed conveyor, significance of impacts is as follows:

- Infrastructure within 800 m from receptor: High visual exposure
- Infrastructure within 800 m to 1500 m from receptor: Moderate visual exposure
- Infrastructure within 1500 m to 3000 m from receptor: Low visual exposure
- Infrastructure more than 3000 m from receptor: Insignificant visual exposure

Figure 7-5 illustrates the areas from where the conveyor will be visible. The conveyor would potentially be visible from over half the zone of potential influence (area with a 3000 m radius around the conveyor route), resulting in a high visibility. However, views are partially obstructed by vegetation and other existing structures and consequently the visibility would be moderate to high. Moderate visibility means the proposed conveyor would potentially be visible from less than half the zone of potential influence. Views from the identified farmsteads / residences as well as from the N12, would mostly appear in the foreground and thus would result in a high visual exposure.

Although visibility is high, the aesthetic value of the landscape had been rated as moderate to low. The most dramatic change to the existing scene would be where the conveyor would pass in the foreground to middle ground of the existing farmsteads and residences. The visual specialist rated the impact on farmsteads and residences in the zone of potential influence as moderate and the impact on travellers along the N12 as low.

The feature that would have the greatest visual impact is the impact of the project at night. The lights associated with the activities at the proposed transfer stations would contribute to the already prevalent light pollution generated by existing mining activities.

The severity of the impact with regards to the farmsteads and residences would be rated as moderate due to the introduction of elements that may be prominent but may not necessarily be considered to be substantially uncharacteristic when set within the attributes of the receiving landscape. For travellers along the N12 the severity would be rated as low due to the conveyor only causing a minor loss or alteration to the characteristic of the baseline environment.

Environmental Management Programme Framework

Once the conveyor route has been finalised, the need for mitigation measures at sensitive receptors will be assessed on a case by case basis, in consultation with affected parties.

Implement the EMP Section on Aesthetics, Housekeeping and Visual Impacts.

Cumulative Impacts

The project will contribute to the cumulative impacts on the sense of place of the study area. The presence of mining and processing activities, two power stations, villages, roads, agricultural activities and associated buildings and infrastructure, power lines and other linear infrastructure contributes to the current sense of place and aesthetic characteristics for the study area. The proposed new conveyor will therefore have a negative impact on the visual quality of the study area but to a far lesser degree than would have been the case if the area had a more natural and less manmade aesthetic character.

No-Go / Alternative Development

With the no-go development, impacts associated with the proposed conveyor will be avoided but there will be impacts associated with alternative options to supply coal to Kusile.

The no-go development will have high negative impacts on the cost and timing of coal supply to Kusile Power Station, delivery of electricity to the national grid, and associated impacts on national economy. It is therefore assumed that if the proposed Phola-Kusile Coal Conveyor is not allowed to be developed, an alternative coal supply and transportation of that coal supply will have to be found. The use of an alternative transport option will result in its own set of impacts. Road or rail transport will result in the presence of trucks and dust that would impact on the landscape character and sense of place of affected areas.

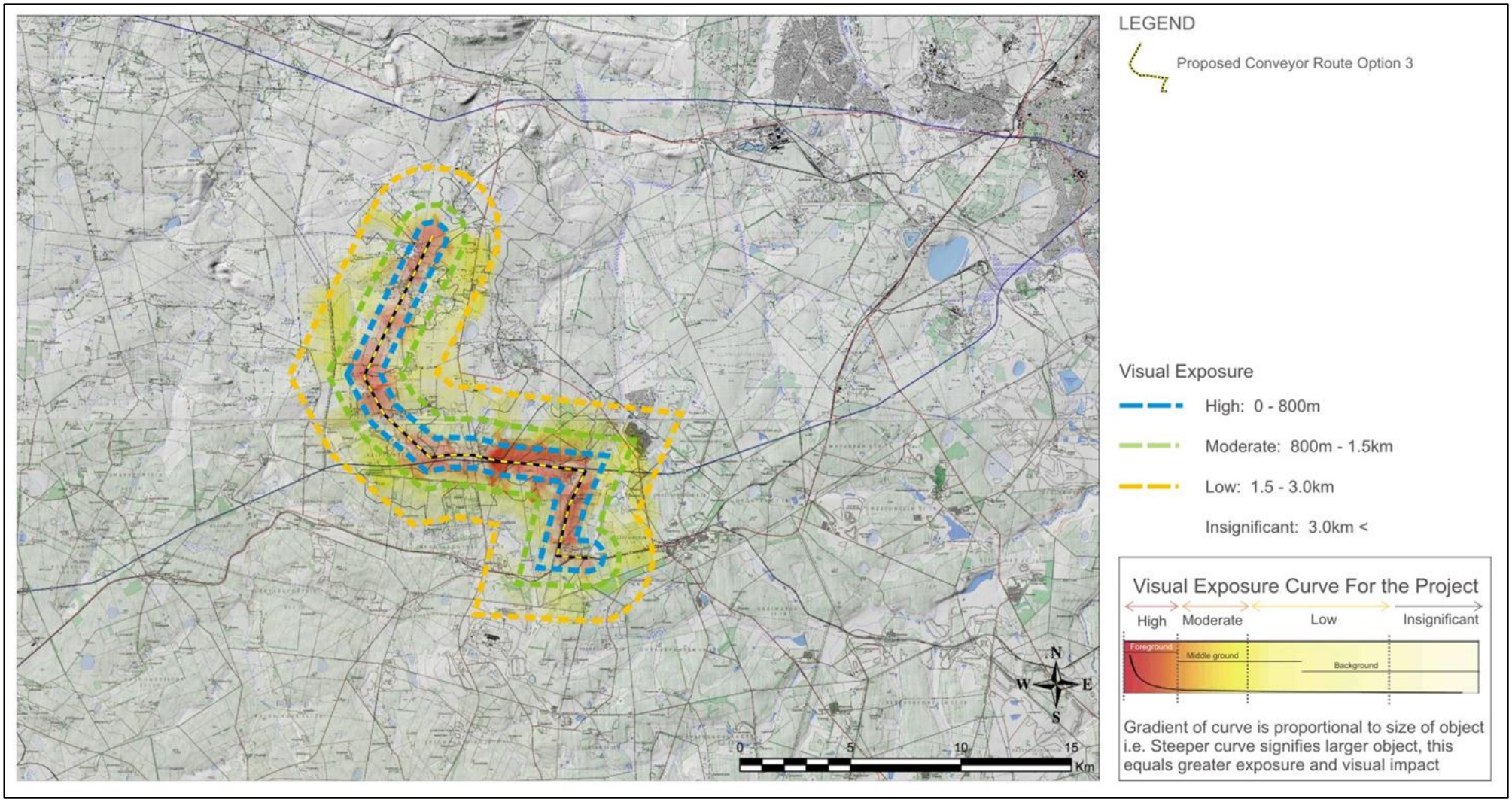

Figure 7-5: Viewshed Analysis (The viewshed as depicted was defined prior to the selection of the AAIC proposed conveyor route, the viewshed for the proposed route is similar to the one depicted but has a slightly lower impact along the N12.

7.3.4 Cultural and Heritage Resources

Synthesis of Baseline / Existing Impacts

Large parts of the conveyor servitude have been under cultivation, which would have destroyed any heritage resources that could have existed previously in the cultivated areas.

No sites, features or objects dating to the Stone Age were identified in the study area.

No sites, features or objects dating to the Iron Age were identified in the study area.

Some grave sites have been identified within 200 m from the proposed Phola-Kusile Coal Conveyor route.

Impact Sources

- Vegetation clearing, grading and earthworks during construction.

Description and Synthesis of Impacts

Depending on the final route alignment, some of the graves that were identified along the conveyor route is expected to fall outside the fenced conveyor servitude and impact can therefore be avoided, but graves falling within the conveyor route will require mitigation and relocation, after consultation with family and other affected parties and the necessary permits have been obtained from the police, Department of Health, Provincial Department of Local Government. Relevant Local Municipality as well as SAHRA.

It should be noted that graves are notoriously difficult to notice in tall grass. Once the conveyor alignment has been finalised, the route will be walked to identify graves that may have been missed in previous surveys. Unmarked graves may be exposed during construction work. With the implementation of appropriate mitigation, the impacts on cultural and heritage resources will be very low.

Once construction activities have ceased and the servitude has been fenced, there should be no impact on heritage resources.

Environmental Management Programme Framework

Measures to protect cultural and heritage resources and to manage the discovery of heritage resources during construction have been incorporated into the EMP Section on Heritage Resources (Appendix B).

Cumulative Impacts

Each new development that take place in the area, contributes to the cumulative impacts on cultural and heritage resources.

No-Go / Alternative Development

The no-go development will result in no further impacts on cultural and heritage resources.

The development of any alternative coal transportation options to supply coal to Kusile Power Station would have impacts on heritage resources if it involves the development of new linear infrastructure such as roads or rail or overland conveyors along a different route.

7.4 Assessment of Impacts during Decommissioning

The conveyor will be in operation for 60+ years. For this project, the impacts as well as the mitigation measures associated with the decommissioning phase are very similar to that of the construction phase. None of the specialist studies identified impacts that are notably different or more severe during the decommissioning phase than the construction phase. No issues associated with decommissioning were identified that would in any way affect decision making about the environmental acceptability of the project.

For decision-making, it would suffice to ascribe the negative impacts associated with construction to the decommissioning phase. However, there will be positive impacts on soils, land use, movement patterns, etc. due to the removal of the conveyor structures from the landscape. Due to the long time horizon, it is not possible to ascertain how future land uses, agricultural practices, and affected parties would benefit from the removal of the conveyor infrastructure. Eventual decommissioning of the conveyor will be dealt with in a future EIA and EMP amendment.

8. Environmental Impact Statement

8.1 Project Motivation and Location

Anglo American Inyosi Coal (Pty) Ltd (AAIC) is proposing to construct an overland conveyor system, the Phola-Kusile Overland Coal Conveyor, to transport coal from the Phola Coal Processing Plant (Phola CPP) to Eskom's Kusile Power Station (Kusile) in the Mpumalanga Province, to meet the demand for coal at the Kusile Power Station.

8.2 Project Need and Desirability

The majority of South Africa's electricity is generated from coal. The Kusile Power Station forms part of the **South African National Government strategy** to supply much needed electricity to the South African national electricity grid. Eskom has made a multi-billion rand investment to construct the new Kusile Power Station.

The Ministry of Energy and Eskom maintain that:

> *"In the absence of Kusile there will not be enough power into the South African electricity grid"* (Ministry of the Energy spokesperson Bheki Khumalo[1]).
>
> *"Without the additional power from Kusile from 2014, there could be constraints on South Africa's economic growth"* (Eskom's Finance Director, Paul O'Flaherty[9]).

Eskom has identified the **middlings coal from the Phola Coal Processing Plant** to be an **important future source of coal to be fed to the Kusile Power Station**.

8.3 Summary of Impacts

A summary of the impacts as assessed in Section 7 is provided in Table 8-1 below.

Table 8-1: Summary of Environmental Impacts

	Impact	Existing Impact	Incremental Project Impact		Cumulative Impact		No-Go / Alternative Development
			Unmitigated	Mitigated	Unmitigated	Mitigated	
A	**Physical Environment**						
A1	Climate and Greenhouse Emissions.	Neg Low	Neg Low	Neg Low	Neg Low	Neg Low	Neg Low
A2	Air Quality.	Neg Moderate	Neg Moderate	Neg Low	Neg Moderate	Neg Moderate	Neg Moderate
A3a	Groundwater Quality.	Neg Moderate	Neg Moderate	Pos Moderate	Neg Moderate	Pos Moderate	Neg Moderate
A3b	Groundwater Quantity (Yield).	Neg Low	Neg Moderate	Neg Low	Neg Moderate	Neg Low	Neg Low
A4a	Surface Water Quality.	Neg Moderate	Neg Low	Pos Moderate	Neg Moderate	Pos Moderate	Neg Moderate
A4b	Surface Water Quantity (Catchment Yield).	Neg Low	Neg Moderate	Neg Low	Neg Moderate	Neg Low	Neg Low

[9] Media release compiled by the Government Communication and Information System, 26 Aug 2010. http://www.buanews.gov.za/rss/10/10082611151001

	Impact	Existing Impact	Incremental Project Impact		Cumulative Impact		No-Go / Alternative Development
			Unmitigated	Mitigated	Unmitigated	Mitigated	
A4c	Surface Water - Flood Levels.	Neg Low	Neg Moderate	Neg Low	Neg Moderate	Neg Low	Neg Low
B	**Biological Environment**						
B1a	Ecology and Biodiversity (Terrestrial Habitats).	Neg High	Neg High	Neg Moderate	Neg High	Neg High	Neg High
B1b	Ecology and Biodiversity (Aquatic Habitats).	Neg Moderate	Neg High	Neg Moderate	Neg High	Neg Moderate	Neg Moderate
B1c	Wetlands (Biodiversity and Water).	Neg High	Neg Moderate	Neg Moderate	Neg High	Neg High	Neg High
C	**Social and Economic Environment**						
C1	Soils and Land Capability.	Neg Moderate	Neg High	Neg Moderate	Neg High	Neg Moderate	Neg Moderate
C2	Roads, Traffic and Infrastructure.	Neg Moderate	Neg Moderate	Neg Low	Neg Moderate	Neg Moderate	Neg Moderate
C3	Social Impacts.	Neg Moderate	Neg Moderate	Neg Low	Neg Moderate	Neg Moderate	Neg Moderate
C4	Land Use Change (Impact on Existing Land Uses).	None	Neg Moderate	Neg Low	Neg Moderate	Neg Low	None
C5a	Economic Impacts of Coal Supply to Kusile.	Neg High	Neg Very High	Pos Very High	Neg High	Neg Moderate	Neg Very High
C5b	Benefits of Conveyor Development versus Loss of Existing Economic Activities.	Pos Moderate	Neg Moderate	Pos Moderate	Neg Moderate	Pos Moderate	Pos Moderate
C6	Noise Impacts.	Neg Moderate	Neg Moderate	Neg Low	Neg Moderate	Neg Moderate	Neg Moderate
C7	Visual Impacts.	Neg Moderate	Neg Moderate	Neg Moderate	Neg Moderate	Neg Moderate	Neg Moderate
D	**Cultural and Heritage Resources**						
D1	Cultural and Heritage Impacts.	Neg Low	Neg Low	Neg Low	Neg Low	Neg Low	Neg Low

8.4 Development Alternatives

Alternative transportation options were considered (road, rail and overland conveyor) and **the conveyor was found to be the proposed transportation option**. Road and rail transportation and the no-go development option would have more significant impacts than the proposed conveyor transport option.

The purpose of the proposed overland conveyor is to **ensure a timeous and secure supply of coal to Kusile** and therefore electricity to the national electricity transmission grid. In order to prepare the Kusile Power Station for commercial operations, delivery of the first coal via the Phola-Kusile Coal Conveyor is planned for October 2013.

Should the Phola-Kusile Coal Conveyor not be approved, **coal will have to be supplied to the power station** via other means, such as road transport, which was found to have far more significant environmental and economic impacts, and there will also be a significant loss to Eskom and the country, as the construction of Kusile Power Station was a strategic development to assist with the electricity shortages of South Africa and if coal cannot be supplied consistently, the power station will not be able to operate.

Three alternative conveyor corridors were assessed during the scoping phase (Figure 1-3), of which two were eliminated at the end of scoping, mainly due to the fact that more streams and wetlands as well as third-party mining areas were affected. Various route options along the preferred corridor were investigated during the EIA phase Figure 1–2). **The alternative routes were evaluated and a proposed route was identified and optimised, based on an integrated assessment of all environmental components**. The location of the proposed route for the Phola-Kusile Coal Conveyor is presented in Figure 1-1.

8.5 No-Go Development

The no-go development will have high negative impacts on the cost and timing of coal supply to Kusile Power Station, delivery of electricity to the national grid, and associated impacts on national economy and it is therefore assumed that if the proposed Phola-Kusile Coal Conveyor is not allowed to be developed, an alternative coal supply and transportation of that coal supply will have to be found.

The Environmental Assessment Practitioner is of the opinion that the transportation options (Section 4.1) and the alternative conveyor corridors investigated during scoping phase (Section 4.2) will have impacts equal to or more significant than those of an overland coal conveyor along the proposed route.

The two alternative conveyor corridors that were investigated during the scoping phase impacted on more extensive wetland areas and a larger number of stream crossings. There are no feasible routes for the conveyor between the Phola Coal Processing Plant and Kusile Power Station that would not cross a number of streams and wetlands.

8.6 Outstanding Issues

The Environmental Assessment Practitioner for this project is of the opinion there are no notable uncertainties and knowledge gaps that could affect decision making.

The following issues were outstanding in the draft EIA report but have been addressed as follows:

- A great deal of the properties affected by the conveyor belongs to AAIC. All other landowners, except Eskom, have signed consent letters approving the conveyor servitude on their property. AAIC provided Eskom with a servitude agreement and is await feedback from Eskom in this regard. AAIC is also negotiating with Mr Truter, who owns a number of properties along the conveyor route. Outstanding servitude agreements should be in place at the time when construction commences.

- AAIC and Synergictsics endeavoured to contact all affected landowners on an individual basis to discuss the specific impacts on their properties. Consultation is summarised in Table 7-1.

- The locations of the conveyor crossings have been finalised. The majority of the crossings are located on Mr Truter's properties and the remainder on AAIC properties. Mr Truter was taken to these locations by AAIC whereafter he gave verbal approval.

8.7 Conclusions, Key Findings and Recommendations

A project of the scale and nature of the proposed Phola-Kusile Coal Conveyor will obviously impact on the environment – one of the more significant impacts associated with this project, is the impact at stream and wetlands crossings. A study of the area between the Phola Coal Processing Plant and the Kusile Power Station, the area over which a route for the conveyor had to be found, revealed that the area is traversed by various streams and wetlands, as illustrated in Figure 3–1. Various conveyor route corridors were evaluated during the scoping phase and it was found that all potential routes would have to cross streams and wetlands. Selection of a route corridor also had to take in consideration existing infrastructure such as roads, pipelines, built-up areas, land owned by third-parties and not by AAIC, as well as existing and future mining areas.

The conveyor route corridor that was selected at the end of the scoping phase was the one that impacted on the smallest number of stream and wetland crossings – but it still requires three stream crossings associated with valley bottom wetlands as well as a number of hillslope seepage wetlands depicted on Figure 5-5. The design of the conveyor includes various measures to protect streams and wetlands and to avoid flooding of the conveyor, which could result in coal washing down the steams. Key mitigation measures incorporated into the design, to minimise the impacts on streams and wetlands, include:

- Stream crossings will be provided with environmental gantries – specially designed conveyor sections on pillars and bridging across streams and wetlands raised higher than the 1:100 year floodline and provided with a roof, partial side screens for minimizing fugitive wind blown coal dust from conveyor, and an impervious floor for capturing coal spills, coal fines, drip-off and wash-down water. During conveyor shut-down, spilled coal can be picked up from the gantry floor and put back onto the conveyor.

- The conveyor will be equipped with scrapers at transfer stations and there will be belt turn overs to avoid coal fines spilling and falling to the ground along the conveyor and into hillslope seepage wetlands that are not equipped with environmental gantries.

- The service road crossings to be engineered so that the flow of the water through the wetlands (hydrological continuity) is not significantly disrupted, that impacts on wetland function is minimised and erosion risks are minimised.

- Each transfer station will be equipped with a bunded area for capturing of coal spills, dirty water dripping from the conveyor due to dust control sprays, and dirty water when the area is washed down or during rain. The bunded areas will drain towards a silt trap and an evaporation dam. The bunded area, silt trap and evaporation dams will be lined to avoid seepage and equipped with a sump.

- The conveyor will have a metal cover (called ‘doghouse sheeting’), which will prevent rainwater coming into contact with the coal on the conveyor and contamination of clean rain water, and reduce the amount of water washing down / dripping down at the transfer stations.

- The metal cover will be placed in accordance with the prevailing wind direction and will act as mitigation to reduce windblown coal dust from entering streams and wetlands along the conveyor route.

In addition to the impact on streams and wetlands, a wide spectrum of impacts were assessed by the various specialists and then integrated into the impact assessment section of this report (Section 7). The various specialists made suggestions and recommendations for mitigation measures, which were all considered and evaluated by the Environmental Assessment Practitioner and, where found appropriate to the project and the affected environment, incorporated into the EMP (Section 12).

The EIA process as described in this report found that, with appropriate mitigation measures as proposed on the EMP in place, potential significant impacts can be mitigated to be within acceptable levels.

The EIA report, EMP and the various specialist reports (appended) contains all information that is necessary for:

- MDEDET to make an informed decision about the environmental impacts of the Phola-Kusile Coal Conveyor and to issue an environmental authorisation for the project.

- DWA to make an informed decision about the impacts associated with water uses in terms of the NWA and waste activities in terms of the NEMWA. Read in conjunction with the following reports, the DWA would have sufficient information to evaluate and issue a decision on the water use license application for the project.
    - Phola-Kusile Overland Coal Conveyor: Integrated Water and Waste Management Plan (draft, February 2012).
    - Phola-Kusile Overland Coal Conveyor: Integrated Water Use Licence Application Report (draft, February 2012).

It is deemed that the environmental process followed to date meets the requirements of the applicable legislation and that this report (volume 1 to 4) presents all relevant information needed for the competent authorities to make an informed decision on the environmental acceptability of the project.

8.8 Environmental Assessment Practitioner Recommendations

It is recommended that the development be authorised along the route as proposed by AAIC, that management and mitigation measures identified in the EMP be implemented.

9. Consultant Declaration

Synergistics Environmental Services is an independent environmental consultancy that was established in South Africa in 2004.

Mari Wolmarans, the project leader for this report, is certified as an Environmental Assessment Practitioner by the Interim Certification Board in South Africa. She has 20 years' experience in the field of environmental consulting, particularly in the mining and infrastructure development sectors.

The undersigned herewith declares that this EIA report represents an objective and complete assessment of the environmental impacts associated with the proposed Phola-Kusile Coal Conveyor. Issues and impact were identified and assessed through professional judgement and consultation with interested and affected parties and authorities.

The EIA process followed for the project is deemed to comply with relevant legislation, best practices and principles of integrated environmental management.

The Environmental Assessment Practitioner has also signed the consultant's declaration attached to the MDEDET standard application form (Appendix C9).

Mari Wolmarans
BL Arch, MSAIE&ES, EAPSA Certified
Environmental Advisor
Project Leader and Independent Environmental Assessment Practitioner

Marline Medallie
M.Sc Botany (Molecular Systematics)
Environmental Advisor
Synergistics Environmental Services

10. Specialist Team Declarations of Independence

All the specialists involved with the EIA for the Phola-Kusile Coal Conveyor have signed declarations of independence on the MDEDET form. These forms have been attached to the back of each specialist report (Appendix D to Appendix P).

11. References

Anglo Coal South Africa. 2007. Baseline Report For The Proposed New Largo Open Cast Coal Mine, Mpumalanga Province.

De Frey, W.H. 2010. Specialist Report: Ecological Assessment (Flora, Fauna, Aquatic) for the New Largo Coal Development - Mpumalanga EkoInfo

Kamffer, D. T. Mostert. 2007. New Largo Faunal Study. Faunal Species Incorporated.

Mpumalanga Provincial Government Department of Agriculture and Land Administration. 2005. Integrated Resource Information Report Emalahleni. Resource Management and Land use Planning.

Oryx Environmental. 2007. Surface Water Inputs To The EMPR For New Largo Opencast Mine. Jones and Wagener.

Van Schalkwyk, J., 2006. Heritage Impact Scoping Assessment for the Proposed New Largo Mining Development, Witbank Area, Mpumalanga. National Cultural History Museum

Vermaak, P.S; Jones, I.P.C. 2006. New Largo Project Baseline Soils and Land Capability Survey. Earth Science Solutions.

Von Gruenewaldt, R.G.; H. Liebenberg-Enslin. 2010. Air Quality Baseline Assessment For The Proposed New Largo Opencast Coal Mine In The Kendal Area. Airshed Planning Professionals.

Young, G. 2007. Visual Assessment for New Largo Open Cast Coal Mine in the Kendal/Balmoral Area.. Newtown Landscape Architects.

Phola-Kusile Coal Conveyor EIA Specialist Studies (as appended).

12. Draft Environmental Management Plan (EMP)

12.1 EMP for Construction of the Phola-Kusile Coal Conveyor

The EMP is provided as a stand alone report section in Appendix B. Items highlighted under Column D applies to the construction phase.

The EMP is a live document which will be updated based on the findings of environmental audits and inspections. During construction, EMP updates will be conducted as dictated by the environmental issues and conditions of the construction site and surroundings. The EMP has been designed to manage the environmental aspects associated with the following project activities and facilities during construction.

Table 12-1: Key Activities Managed by the EMP during Construction of the Phola-Kusile Coal Conveyor

Project Phase	Activity / Project Areas	Sub-Activities / Facilities
Construction	Pre-Construction.	Project optimisation. Agreements and contracts. Final route alignment. Detailed design.
	Site Preparation and Earthworks.	Vegetation removal. Topsoil stripping and storage. Grading and earthworks. Sourcing of construction materials. Borrow pits. Stormwater management (clean and dirty water separation). Development of construction environmental management procedures.
	Transportation and materials handling.	Movement of equipment, material and people. On-site transportation. Off-site transportation. Use of public roads. Material handling.
	Supporting infrastructure.	Haul roads. Fuel supply. Ablutions and sewerage treatment. Workshops. Offices and administration. Storage and laydown areas. Security. Waste management. Water management. Pollution control.
	Engineering work.	Building / assembly of conveyor and transfer station components. Construction of drifts (low water bridges). Construction of watercourse and wetland crossings. Construction of erosion control, pollution control and storm water management infrastructure.

Project Phase	Activity / Project Areas	Sub-Activities / Facilities
	Rehabilitation and stabilisation.	Revegetation and reinstatement of areas disturbed during construction. Borrow pits. Erosion control. Dust control. Monitoring and maintenance of disturbed areas. Alien vegetation control.

Refer Appendix B for detailed EMP (items highlighted under Column D).

12.2 EMP for Operation of the Phola-Kusile Coal Conveyor

The EMP is provided as a stand alone report section in Appendix B. Items highlighted under Column E applies to the operational phase.

The EMP is a live document which will be updated based on the findings of environmental audits and inspections. During operation, the EMP will be reviewed every two years and then be updated required by the findings of the review. The EMP has been designed to manage the environmental aspects associated with the following project activities and facilities during operation.

Table 12-2: Key Activities Managed by the EMP during Operation of the Phola-Kusile Coal Conveyor

Project Phase	Activity / Project Areas	Sub-Activities / Facilities
Operation	Environmental Management	Development of operational phase environmental management procedures.
	Transportation and materials handling	Loading of coal onto conveyor at the Phola Coal Processing Plant. Transportation of coal on conveyor belt. Transfer of coal between conveyor flights and from last conveyor to Kusile Power Station. Material handling. Movement of equipment, material and people. On-site transportation. Off-site transportation and use of public roads.
	Supporting infrastructure.	Service road and drifts. Offices, administration, control room. Security. Ablutions and sewerage treatment. Workshops. Waste management. Water management. Pollution control. Water treatment. Fire protection. Servitude fence. Pedestrian and farmers crossings. Inspections and monitoring. Cleaning, repair and maintenance of conveyor. Cleaning, repair and maintenance of silt traps, evaporation dams and environmental gantries.

Refer Appendix B for detailed EMP (items highlighted under Column E).

12.3 EMP for Decommissioning of the Phola-Kusile Coal Conveyor

The draft EMP for construction comprehensively covers impacts and activities associated with decommissioning and are therefore regarded as adequate to pre-empt management measures to be implemented during future decommissioning. Due to the fact that the Kusile Power Station will be in operation for ~60 years with the Phola-Kusile Conveyor servicing, it is deemed appropriate that the final EMP for decommissioning will be developed in the future to be applicable to future land use, developments and the environmental practices in place at that time.

The EMP is provided as a stand alone report section in Appendix B. Items highlighted under Column D (construction and decommissioning) may apply to the future decommissioning phase.

The EMP will manage the environmental aspects associated with the following project activities during decommissioning.

Table 12-3: Key Activities to be Managed by the EMP for Decommissioning

Project Phase	Activity / Project Areas	Sub-Activities / Facilities
Decommissioning and Closure	Rehabilitation and Stabilisation.	Demolition / dismantling and removal of buildings, structures, and other project components (similar areas and activities to construction phase). Reinstatement of areas affected by project (as per areas measures for reinstatement of areas affected during construction). Monitoring and maintenance of disturbed areas (similar to construction phase).
	Transportation and materials handling.	Movement of equipment, material and people. On-site transportation. Off-site transportation. Use of public roads. Material handling (demolition rubble and scrap).

List of Appendices

Appendix A and B are bound into the main EIA report

EIA Volume 1 (Main Report, Appendix A and B)

Appendix A: Detailed Environmental Impact Rating (Proposed Development Option)

Appendix B: Environmental Management Programme

EIA Volume 2 (Appendix C: Public Participation)

Appendix C: Public Consultation Documentation

C1. Correspondence to Landowners
C2. Interested and Affected Parties Database
C3. Proof of Newspaper Placements and Site Notices
C4. Background Information Document
C5. Response to Issues and Concerns raised by Interested and Affected Parties
C6. Records of Public Information Meetings (24 & 25 November 2010; 22 & 23 March 2011; and 1 November 2011)
    - Presentations for the Meetings
    - Copy Questionnaires
    - Attendance Registers for the Meetings
    - Records of Issues captured at the Meetings
C7. Correspondence to Interested and Affected Parties
C8. Correspondence from Interested and Affected Parties
C9. Copy of the application forms submitted to MDEDET.
C10. Record of Focus Group Meetings
    - Meeting with AEMFC (14 Jan 2011)
    - Meeting with MDEDET (17 Nov 2010)
    - Meeting with DWA (25 Nov 2010)
C11. Servitude Agreement / Consent Letters
    - SANRAL
    - Transnet
    - Truter Boerdery

EIA Volume 3 (Appendix D to H: Specialist Studies)

Appendix D: Ecology and Biodiversity Specialist Assessment

Appendix E: Wetland Delineation Specialist Assessment

Appendix F: Surface Water Specialist Study

Appendix G: Groundwater Specialist Opinion

Appendix H: Soil Specialist Assessment

EIA Volume 4 (Appendix I to P: Specialist Studies)

Appendix I: Air Quality Specialist Assessment

Appendix J: Traffic Specialist Opinion

Appendix K: Noise Specialist Assessment

Appendix L: Heritage Resources Specialist Assessment

Appendix M: Visual Specialist Assessment

Appendix N: Social Specialist Assessment

Appendix O: Economic Specialist Assessment

Appendix P: Agricultural and Land Use Potential Specialist Assessment