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PROJECT 2010/26

SPECIALIST STUDY: HERITAGE SCOPING (BASIC ASSESSMENT) REPORT: INPUT INTO EIA, IWWMP AND IWULA FOR THE PROPOSED KUYASA IPP POWER GENERATION PLANT ON PORTIONS OF THE FARMS HAVERGLEN 269 IR AND HAVERKLIP 265 IR NEAR DELMAS, MPUMALANGA PROVINCE



PREPARED FOR

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KUYASA IPP HIA JULY 2010

TABLE OF CONTENTS

EXECUTIVE SUMMARY	1
1. REPORT CONTEXT.....	6
1.1 GENERAL NOTES.....	6
1.2 PURPOSE OF THE REPORT	6
1.3 TERMS OF REFERENCE	7
1.4 HISTORY OF THE REPORT.....	7
1.5 LEGAL CONTEXT OF THE REPORT	8
1.6 STRATEGIC PLANNING CONTEXT OF THE PROJECT.....	8
1.7 DEVELOPMENT CRITERIA IN TERMS OF SECTION 38 OF THE NHRA	8
1.8 PROPERTY DETAILS.....	8
1.9 PROPERTY OWNERSHIP	9
1.10 DEVELOPER	9
1.11 ENVIRONMENTAL PRACTITIONER	9
1.12 HERITAGE ASSESSMENT PRACTITIONERS	9
2. DEVELOPMENT CONTEXT	10
2.1 DEVELOPMENT SITE/AREA LOCATION AND BOUNDARIES	10
2.2 DESCRIPTION OF DISTINGUISHING REGIONAL FEATURES	11
2.2.1 <i>Environmental features</i>	11
2.2.2 <i>Heritage features</i>	12
2.2.3 <i>Site descriptions</i>	12
2.2.4 <i>Surrounding environment</i>	15
2.3 DEVELOPMENT DESCRIPTION.....	15
3. HERITAGE IMPACT CONTEXT	19
3.1 CULTURAL LANDSCAPE EVIDENCE	19
3.2 DETERMINING LEVELS OF SENSITIVITY AND POTENTIAL IMPACTS	21
3.3 DETERMINING POTENTIAL IMPACTS.....	21
3.4 EXPECTED IMPACT SIGNIFICANCE.....	22
4. HERITAGE IMPACT ASSESSMENT	23
4.1 APPROACH.....	23
4.1.1 <i>Definitions and assumptions</i>	23
4.1.2 <i>Limiting/Restricting factors</i>	23
4.1.3 <i>Field work</i>	24
4.1.4 <i>Desktop study</i>	24
4.1.5 <i>Verbal information</i>	24
4.2 GENERAL ISSUES OF SITE AND CONTEXT.....	24
4.2.1 <i>Context</i>	24
4.2.2 <i>Property features and characteristics</i>	25
4.2.3 <i>Heritage resources on the property</i>	25
4.2.4 <i>Property history and associations</i>	25
4.3 SUMMARISED IDENTIFICATION AND SIGNIFICANCE ASSESSMENT OF HERITAGE RESOURCES.....	26
4.4 IMPACT ASSESSMENT	27
4.4.1 <i>Haverklip cemetery</i>	27
4.4.2 <i>Haverklip homestead ruin</i>	29
4.4.3 <i>Haverglen farmstead ruin</i>	29
4.4.4 <i>Summarised impact assessment</i>	31
4.5 SOCIAL AND ECONOMIC BENEFITS	31
4.6 CONSULTATION WITH AFFECTED COMMUNITIES	32
4.7 IDENTIFICATION OF OTHER RISK SOURCES.....	32
4.8 KEY MITIGATION AND ENHANCEMENT MEASURES BEFORE AND DURING CONSTRUCTION.....	32
4.9 CONSIDERATION OF ALTERNATIVES	32
4.10 SUMMARISED FINDINGS AND RECOMMENDATIONS	32
APPENDIX 1: SOCIO-CULTURAL HISTORY OF DEVELOPMENT AREA	34
<i>Early Stone Age</i>	34
<i>Middle Stone Age</i>	34
<i>Late Stone Age</i>	35

<i>Early Iron Age occupation</i>	35
<i>Late Iron Age occupation</i>	36
<i>Colonial settlement</i>	36
<i>Coal mining</i>	38
APPENDIX 2: INFORMATION SOURCES USED IN THIS REPORT	40
DATABASES	40
LITERATURE	40
MAPS	40
AERIAL PHOTOS.....	40
OTHER INFORMATION.....	40
APPENDIX 3: GLOSSARY OF TERMS	41

DRAFT

LIST OF FIGURES

FIGURE 1: GENERAL LOCATION OF THE STUDY AREA	10
FIGURE 2: PORTION OF 2628 BB KENDAL (1995) INDICATING THE ASH DISPOSAL SITE (TOP), THE PREFERRED POWER PLANT SITE 1 (RIGHT) AND THE NORTHERN PORTION OF THE PREFERRED POWER PLANT SITE 2 (LEFT) – NOTE THAT THE COLLIERIES DID NOT EXIST AT THE TIME WITH THE EXCEPTION OF SMALL PITS (ARROW)	10
FIGURE 3: GOOGLE EARTH IMAGE (2004) OF THE THREE SITES (YELLOW) THAT WERE INVESTIGATED WITH IDENTIFIABLE HERITAGE CHARACTERISTICS	11
FIGURE 4: GOOGLE EARTH IMAGE (2004) OF THE LANDFILL SITE (YELLOW)	13
FIGURE 5: GOOGLE EARTH IMAGE (2004) OF THE PREFERRED SITE 1 (YELLOW)	14
FIGURE 6: GOOGLE EARTH IMAGE (2004) OF THE PREFERRED SITE 2 (YELLOW)	14
FIGURE 7: THE DEVIATED WILGE RIVER THAT FORMS THE WESTERN BOUNDARY OF PREFERRED SITE 1 – NOTE THE DUMPS IN THE BACKGROUND	16
FIGURE 8: GENERAL VIEW OF THE PROPOSAL LANDFILL (ASH DISPOSAL) SITE	16
FIGURE 9: VIEW OF THE PREFERRED SITE 1 LOOKING WEST – THE TREES IN THE DISTANCE INDICATE THE SMALL CEMETERY AND HOMESTEAD RUIN	17
FIGURE 10: THE ABANDONED COLLIERY ON PREFERRED SITE 1	17
FIGURE 11: ANOTHER VIEW OF THE PREFERRED SITE 1 SHOWING THE LOCATION OF THE SMALL CEMETERY (ARROW)	18
FIGURE 12: GENERAL VIEW OF THE PREFERRED SITE 2 LOOKING EAST	18
FIGURE 13: GOOGLE EARTH IMAGE (2004) OF THE THREE SITES (YELLOW) THAT WERE INVESTIGATED WITH IDENTIFIABLE HERITAGE CHARACTERISTICS	27
FIGURE 14: GOOGLE EARTH IMAGE (2004) INDICATING THE LOCATION OF THE CEMETERY (TOP) AND HOMESTEAD RUIN (BOTTOM) ON THE PREFERRED SITE 1	28
FIGURE 15: THE CEMETERY ON THE PREFERRED SITE 1, WHICH CONTAINS TWO GRAVES	28
FIGURE 16: HAVERKLIP HOMESTEAD RUIN	29
FIGURE 17: GOOGLE EARTH IMAGE (2004) OF A PORTION OF THE PREFERRED SITE 2 (THE YELLOW LINE IS THE WESTERN BOUNDARY) INDICATING THE LOCATION OF THE HAVERGLEN FARMSTEAD RUIN	30
FIGURE 18: THE HAVERGLEN FARMSTEAD RUIN WITH THE HAWERKLIP GRAIN ELEVATOR IN THE FAR DISTANCE	30
FIGURE 19: SURVEY DIAGRAM (1923) OF THE FARM HAVERKLIP	37

LIST OF TABLES

TABLE 1: IDENTIFICATION OF HERITAGE FEATURES, IMPACTS AND MITIGATION MEASURES	3
TABLE 2: APPLICABLE CATEGORY OF HERITAGE IMPACT ASSESSMENT STUDY AND REPORT	7
TABLE 3: ENVIRONMENTAL FEATURES	11
TABLE 4: HERITAGE FEATURES	12
TABLE 5: CULTURAL LANDSCAPE CLASSIFICATION	19
TABLE 6: RELATIONSHIP BETWEEN CULTURAL LANDSCAPE CLASSES AND LEVELS OF SENSITIVITY	21
TABLE 7: CATEGORIES OF DEVELOPMENT TYPES	21
TABLE 8: EXPECTED IMPACT SIGNIFICANCE MATRIX	22
TABLE 9: IDENTIFICATION AND SIGNIFICANCE ASSESSMENT OF HERITAGE FEATURES	26
TABLE 10: IDENTIFICATION OF HERITAGE FEATURES, IMPACTS AND IMPACT MANAGEMENT MEASURES	31

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EXECUTIVE SUMMARY

This report contains a heritage scoping (basic assessment) investigation (heritage specialist study) in accordance with the provisions of Sections 38(1) and 38(3) of the *National Heritage Resources Act* (NHRA) (25/1999) for purposes of informing the location and implications thereof in connection with the construction and operation of the proposed power generation plant to be constructed and operated by the Kuyasa Independent Power Provider. This investigation forms part of the process of conducting the required EIA, IWWMP and IWULA that will inform the feasibility (and eventually also the final sites and Site Development Plans) with regard to the proposed project.

This heritage impact assessment investigation contains the following elements and outcomes as required in terms of the NHRA:

- A main HIA report (this report) that includes a historic built environment investigation: Farmstead and other ruins
- An archaeological impact assessment report (AIA): Investigation of any Stone and Iron Age finds (none found) and burial sites (small cemetery on Preferred Site 1, large cemetery outside development areas)

The project comprises the construction and operation of a 600 MW mine-mouth power generation facility with possible future expansion to 2400 MW, coal to be provided from the former Delmas (now Ikhwezi) Colliery. The proposed power generation facility will be owned and managed by Kuyasa as power provider independent from ESKOM.

The investigation focused on the preferred plant site (two possible locations) as well as the proposed landfill site to dispose of ash. The site is located approximately 20km southeast of Delmas, 15km northeast of Devon and 85km east of Johannesburg. The site is currently used as agricultural land and for mining activity and is located on portions of the farms Haverghlen 269 IR and Haverklip 265 IR within 4 km of the former Delmas (now Ikhwezi) Colliery (operated by Kuyasa Mining). The site is approximately 210ha comprising three rectangular parcels owned by Kuyasa (Ikhwezi Colliery (Pty) Ltd. Site topography is sloping from the southeast corner of the site to the northwest corner with the deviated Wilge River as the most recognisable natural element. The site is accessed by the R-50 running east-west along the northern boundary. It is bordered on the west by an asphalt road running north-south from the R-50 as well as by a gravel road running north-south from the R-50. The distance to the asphalt road is about 900m.

This heritage impact assessment investigation contains the following elements and outcomes as required in terms of the NHRA

- A main HIA report that includes a historic built environment investigation: Recent features associated with quarrying and farming
- An archaeological investigation: Isolated scatters of Stone Age artefacts
- Comments on palaeontology: Evidence of fossils and trace fossils¹

As a cultural landscape this environment can be classified as a combination of a historic farming landscape and a relic mining landscape, exhibiting the following recognisable heritage features:

- Tracks and fences
- Tree lanes
- Crops
- Grazing areas
- Power lines
- Ruins of farming structures, farmsteads and homesteads
- Graves
- Abandoned open-cast mine workings

The corner co-ordinates of the three land parcels are:²

¹ Comments by Roger Price (Council for Geoscience) on potential for fossils in coal mining areas of Witbank/Steenkoolspruit, August 2009

Landfill site (ash disposal site):

LF-1 26°13'45.41"S 28°50'8.13"E
LF-2 26°13'46.22"S 28°51'7.65"E
LF-3 26°14'12.63"S 28°51'4.69"E
LF-4 26°14'12.57"S 28°50'5.46"E

Preferred power plant site 1:

S1-1 26°14'13.03"S 28°51'12.33"E
S1-2 26°14'10.98"S 28°52'11.36"E
S1-3 26°14'58.37"S 28°52'13.23"E
S1-4 26°14'57.69"S 28°51'24.49"E

Preferred power plant site 2:

S2-1 26°14'34.34"S 28°50'6.51"E
S2-2 26°14'34.41"S 28°51'5.78"E
S2-3 26°15'27.82"S 28°51'5.72"E
S2-4 26°15'27.76"S 28°50'6.44"E

The intended development comprises the development and operation of the Kuyasa IPP facility and this provided the following "triggers" for an HIA:

- Development larger than 5000 square meters (about 210 hectares)
- Linear development longer than 300 meters (grid connections)
- The region is known for old farmsteads, old collieries and cemeteries

The general aim of any heritage impact assessment investigation and report is to ensure that the needs of socio-economic development are balanced by the needs to preserve significant heritage resources.

The purpose of this report is to identify and assess features of heritage significance, identify possible impacts and propose management measures to manage possible negative impacts. This information must enable the relevant heritage authority to authorise the proposed development as required in terms of Section 38 of the NHRA.

The investigation was conducted as follows:

- Desktop study, including perusal of existing archaeological reports, completed heritage impact assessment reports, historic maps, cadastral diagrams and general publications about the broader area
- Field survey in June 2010

Heritage impacts are categorised as:

- Neutral (no impact)
- Direct or physical impacts, implying alteration or destruction of heritage features within the project boundaries
- Indirect impacts, e.g. restriction of access or visual intrusion concerning the broader environment
- Cumulative impacts that are combinations of the above

The predicted heritage impacts on the development are as follows:

- Proposed landfill site: Neutral (no significant heritage features)
- Preferred power plant site 1: Low negative (small cemetery and ruin of old farmstead that will be affected)
- Preferred power plant site 2: Neutral (no significant heritage features)

² Based on co-ordinates provided by the client

Visual impacts are of less importance because the wider study area has already been extensively transformed by coal-mining and farming. The landscape horizon is characterised by power lines, railway lines, structures and dumps of collieries and grain elevators.

Heritage impacts can be managed through one or a combination of the following measures:

- Mitigation (minimising adverse impacts through further documentation and research before a place is altered or destroyed)
- Avoidance
- Compensation (balancing of making good the destruction of one heritage feature by the preservation of another one)
- Enhancement (positive impacts on heritage features)
- Rehabilitation (re-use of preserved heritage features)
- Interpretation (providing information on heritage features)
- Memorialisation (retaining the memory of important heritage features that have been destroyed)
- No action
- Relocation (historic equipment, graves)
- Alternatives

Of the above measures, “no action”, mitigation and relocation apply in the case of this project.

This report complies as follows with the provisions of Section 38 (3) of the *National Heritage Resources Act* (Act 25 of 1999):

(a) Identification and mapping of heritage resources

(b) Cultural significance

(c) Predicted impacts

(f) Impact management measures

See Table 1 (below).

TABLE 1: Identification of heritage features, impacts and mitigation measures

S 3(2) NHRA heritage resource	(a) Identification		(b) Significance	(c) Impact		(d) Recommended impact management
	Site	GPS		Study area	Impact type, certainty and significance	
Buildings, structures, places and equipment of cultural significance	Homestead ruins	26°13'57.28"S 28°51'16.48"E	Medium local	Outside	Neutral	No action: Remains of homesteads - outside development areas
	School ruin	26°14'2.77"S 28°51'28.39"E	Low local	Outside	Neutral	No action: Ruin of Haverklip farm school – outside development areas
	Haverklip homestead ruin	26°14'45.58"S 28°51'39.63"E	Low local	Preferred Site 1	Definite destruction – low negative impact	Mitigation: Demolition permit (the place is older than 60 years) including documentation(before destruction)
	Haverglen farmstead ruin	26°14'51.03"S 28°50'3.96"E	Low local	Just outside Preferred Site 2	Possible destruction – low negative impact	No action – the place is younger than 60 years and no demolition permit is needed
	Abandoned open-cast collieries	-	Low local	Preferred Site 1 and 2	Unknown	No action – the collieries are of recent origin
Areas to which oral traditions are attached or which are associated with intangible heritage	None	-	-	-	-	-
Historical settlements and landscapes	None	-	-	-	-	-

S 3(2) NHRA heritage resource	(a) Identification		(b) Significance	(c) Impact		(d) Recommended impact management
	Site	GPS		Study area	Impact type, certainty and significance	
Landscapes and natural features of cultural significance	None	-	-	-	-	-
Geological sites of scientific or cultural importance	None	-	-	-	-	-
Archaeological and palaeontological sites	Chance finds	Unknown	Low local?	Preferred Site 1 and 2	Unknown	Mitigation: Report and evaluate any graves or archaeological features and artefacts when found during site preparation work
Graves and burial sites	Haverklip farm cemetery (2 graves)	26°14'36.12"S 28°51'39.54"E	Medium local	Preferred Site 1	Definite destruction	Relocation of graves
	Farm workers' cemetery	26°13'57.68"S 28°51'17.11"E	Medium local	Outside	Neutral	No action: Large cemetery associated with homestead remains
Features associated with labour history	None	-	-	-	-	
Movable objects	None	-	-	-	-	

(d) Social and economic benefits

The development will have no direct benefits related to the conservation of heritage resources (structures) since none of significance have been identified, with the exception of the small Haverklip farm cemetery.

The latest ISEP (October 2005) has identified the need for increased base load electricity supply by the year 2010. The National Energy Regulator of South Africa (NERSA) is the regulatory authority responsible for the electricity supply industry in South Africa. In its National Integrated Resource Plan (INIRP), NERSA has determined that, while various alternative and renewable electricity generation options should be continually investigated, coal should still provide the main fuel source in South Africa. Accordingly, coal-fired power stations will be required for generation capacity expansion during the next 20 years. In 2003, the South African government decided that the future power generation capacity would be divided between ESKOM (70%) and Independent Power Producers (IPP) (30%).

(e) Public consultation

This is part of the environmental scoping process.

(g) Mitigation during construction

Except for monitoring of any further chance finds (graves, archaeological and palaeontological features) during site preparation and construction work, no mitigation measures apply.

Findings and recommendations

The areas proposed for the Kuyasa IPP are located in a cultural landscape classified primarily as a combination of historic farmland and a relic mining landscape. This class of landscape is of very low heritage sensitivity because it is able to absorb new development with without many adverse effects.

The predicted physical impact on the proposed landfill site for ash is neutral since this area consists almost entirely of fields with crops, without any recognisable heritage features. **The use of this area as a landfill for ash disposal is therefore supported.**

The predicted physical impact on the Preferred Site 1 for the power plant is low to medium negative since it will adversely affect a homestead ruin (for which a demolition permit will be required due to its age of 60 years and older) and a small cemetery with two graves (that must be exhumed and relocated). **The use of this area for the power plant is therefore not supported.**

The predicted physical impact on the Preferred Site 2 for the power plant is neutral since this area mainly consists of old fields without any recognisable heritage features. The Haverglen farmstead ruin could be affected. It is located just outside the periphery) but due to its condition, age and significance the impact will be neutral and no further action is necessary. **The use of this area for the power plant is therefore supported.**

Visual intrusion as an indirect impact is not an important issue since the proposed development will be located in an environmentally degraded area (abandoned collieries, dumps, degraded parcels of farm land) and is bordering on land that has been transformed by housing, mining and infrastructure. Noise, dust, pollution and restrictions of access patterns as indirect impacts are also not issues.

From a historic built environment perspective no features of real heritage significance were identified and those features that are extant (the Haverklip homestead ruin) are typical of many others in the region.

From an archaeological perspective no finds were identified.

The nature and significance of what has been found in terms of heritage is not of such importance that the proposed ash disposal site's location should be changed or that other alternatives should be considered.

The nature and significance of what has been found in terms of heritage may imply negative impacts regarding the construction and operation of the power plant on Preferred Site 1 and therefore Preferred Site 2 is supported as a more suitable alternative.

Cultmatrix states that there are no compelling reasons not to proceed with the proposed project and that it should be allowed to continue as follows:

- Use of proposed landfill site for disposal of ash
- Use of Preferred Site 2 for the construction and operation of the power plant since it has no features of heritage significance and is also located closer to the source of coal than the Preferred Site 1

The following measures are to be adopted as heritage management mechanisms:

1. Should any hidden human remains (highly unlikely) be disturbed, exposed or uncovered during site clearing and excavations (for foundations etc), these should immediately be reported to an archaeologist. Burial remains should not be disturbed or removed until inspected by an archaeologist.
2. Site preparation activities must be monitored for the occurrence of any hidden archaeological material (Stone Age tools) and similar chance finds (such as historic middens and foundations) and if any are exposed, this should be reported to an archaeologist so that an investigation and evaluation of the finds can be made. The small pans and the drainage line are potential places where such finds may occur.
3. Site preparation activities must be monitored for the occurrence of any hidden fossils and trace fossils and if any are exposed, this should be reported to a palaeontologist so that an investigation and evaluation of the finds can be made.



RC DE JONG
Public Officer and Principal Investigator

Date: 21 July 2010

1. REPORT CONTEXT

1.1 General notes

1. The structure of this report is based on the following generally accepted standards for heritage scoping and impact assessment investigations:
 - SOUTH AFRICAN HERITAGE RESOURCES AGENCY, Heritage Impact Assessment: Notification of intent to develop (form)
 - DEPARTMENT OF ENVIRONMENTAL AFFAIRS AND DEVELOPMENT PLANNING, PROVINCIAL GOVERNMENT OF THE WESTERN CAPE, 2005, Guideline for involving heritage specialists in EIA processes (document)
 - DEPARTMENT OF ENVIRONMENT AFFAIRS AND TOURISM, Integrated Environmental Management Guidelines
 - SOUTH AFRICAN HERITAGE RESOURCES AGENCY, 2006, *Minimum standards: Archaeological and palaeontological components of impact assessment reports* (unpublished).
 - PROVINCIAL HERITAGE RESOURCES AUTHORITY GAUTENG, 2010, *Report requirements for HIA reports* (unpublished).
 - WORLD BANK, *Environmental Assessment Sourcebook Update No 8, September 1994: Cultural Heritage in Environmental Assessment*.
 - Best-practice HIA reports submitted by Cultmatrix and other heritage consultants
2. This report is informed by the *National Heritage Resources Act (25/1999)* (NHRA) and is consistent with the various ICOMOS charters for places of cultural significance.
3. Recommendations contained in this application do not exempt the applicant from complying with any national, provincial and municipal legislation or other regulatory requirements, including any protection or management or general provision in terms of the NHRA.
4. Rights and responsibilities that arise from this report are those of the applicant and not that of Cultmatrix cc. Cultmatrix cc assumes no responsibility for compliance with conditions that may be required by SAHRA in terms of this report.
5. Cultmatrix assumes no responsibility whatsoever for any loss or damages that may be suffered as a direct or indirect result of information contained in this application. Any claim that may however arise is limited to the amount paid to Cultmatrix for services rendered to compile this report.

1.2 Purpose of the report

The purpose of this report is to identify and assess features of heritage significance, identify possible impacts, propose management measures to mitigate negative impacts and recommend which of the two preferred sites for the proposed power plant is the most suitable from a heritage perspective. This information must enable the relevant heritage authority to comment on the proposed development as required in terms of Section 38 of the NHRA.

The below table lists and describes the three general categories of heritage impact assessment studies and reports, which offices are involved (i.e. to which offices reports should be submitted) and which type of response is required from these offices.

It is envisaged that the offices will respond as follows:

- Either comment and decide to approve the proposed development subject to the conditions
- Or comment and reserve the decision to approve until a full Heritage Impact Assessment report (based on the final Site Development Plans for the power plant, ash disposal site and associated infrastructure for both) has been prepared and submitted

TABLE 2: Applicable category of heritage impact assessment study and report

Type of study and report	Aim	Office involved	Requested response
Screening: Not this report	The aim of the screening investigation is to provide an informed heritage-related opinion about the proposed development by an appropriate heritage specialist. The objectives of this investigation are to screen potential heritage issues through a site inspection, to develop a broad understanding of heritage policy-related context, to review any existing data on the history and heritage significance of the site, to check if the site has any formal heritage status, to discuss the proposed development with heritage contacts and to scan the development proposals. The result of this investigation is a brief statement indicating potential heritage impacts/issues and the need for further investigation.	-	-
		-	-
		-	-
Scoping (basic assessment): This report	The aim of the scoping investigation is to analyse heritage issues and how to manage them within the context of the proposed development. The objectives are to assess heritage significance (involving site inspections and basic desktop and archival research); to identify the need for further detailed inputs by heritage specialists, to consult with local heritage groups and experts, to review the general compatibility of the development proposals with heritage policy and to assess the acceptability of the proposed development from a heritage perspective. The result of this investigation is a heritage scoping report indicating the presence/absence of heritage resources and how to manage them in the context of the proposed development.	Mpumalanga Provincial Heritage Resources Authority	Comments and approval
		SAHRA Archaeology, Palaeontology and Meteorites Unit	Comments
		SAHRA Burial Grounds and Graves Unit	Comments
Full HIA: Not this report	The aim of the full HIA investigation is to analyse and recommend heritage management mitigation measures and monitoring programmes. The objectives are to analyse heritage issues, to research the chronology of the site and its role in the broader context, to undertake a comprehensive assessment of heritage significance, to analyse the nature and scale of the proposed development, to consult with local heritage groups and experts as part of the broader EIA stakeholder engagement process, to establish the compatibility of the proposed development with heritage and other statutory frameworks and to assess alternatives in order to promote heritage conservation issues.	-	-
		-	-
		-	-

1.3 Terms of reference

- To survey the proposed ash disposal site and the two preferred sites (for the power plant) as well as the surrounding environment
- To identify and map heritage resources that may be affected directly
- To assess the cultural significance of these heritage resources
- To assess the predicted impact of the development on these heritage resources
- To assess the benefits of conserving these heritage resources in relationship to the socio-economic benefits of the development
- To provide the public with an opportunity to comment on the heritage aspects of the proposed development
- To consider alternatives if heritage resources will be affected in a negative manner
- To determine methods to mitigate negative impacts before, during and after construction activities

1.4 History of the report

This report is the first draft report and has not been preceded by other reports for this particular project.

1.5 Legal context of the report

ACT	COMPONENT	IMPLICATION	RELEVANCE	COMPLIANCE
NHRA	S 34	Impacts on buildings and structures older than 60 years	Haverklip homestead ruin	Demolition permit
	S 35	Impacts on archaeological and palaeontological heritage resources	None of significance identified	Monitor during site preparation work
	S 36	Impacts on graves	Haverklip cemetery	Exhume and relocate with the necessary permits
	S 37	Impacts on public monuments	None present	-
	S 38	Developments requiring an HIA	Development is listed activity	Heritage scoping
NEMA	EIA Regulations	Activities requiring an EIA	Development is subject to an EIA	HIA is part of EIA
Other	-	-	-	-

1.6 Strategic planning context of the project

The key enablers behind this project include:

- SA Government's initiative to introduce Independent Power Producers (IPPs) into South Africa's generation arena through Eskom's Multi-Site Baseload IPP program.
- SA Government's initiative to introduce clean Renewable Energies into South Africa's generation mix through NERSA's REFIT program.
- Intensive Energy User's initiative to enhance their security of supply and in doing so, participate in assisting SA Government by adding extra capacity to the Grid.

1.7 Development criteria in terms of Section 38 of the NHRA

1.7	Development criteria in terms of Section 38(1)	Yes/No details
1.7.1	Construction of road, wall, power line, pipeline, canal or other linear form of development or barrier exceeding 300m in length	Yes
1.7.2	Construction of bridge or similar structure exceeding 50m in length	No
1.7.3	Development exceeding 5000 sq m	Yes
1.7.4	Development involving three or more existing erven or subdivisions	No
1.7.5	Development involving three or more erven or divisions that have been consolidated within past five years	No
1.7.6	Rezoning of site exceeding 10 000 sq m	Yes
1.7.7	Any other development category, public open space, squares, parks, recreation grounds	No

1.8 Property details

1.8	Property details	
1.8.1	Name and location of property	Kuyasa Independent Power Provider Project
1.8.2	Erf or farm numbers	Portions of Haverklip 265 IR and Haverghlen 269 IR
1.8.3	Magisterial district	Delmas
1.8.4	Closest town	Delmas
1.8.5	Local authority	Victor Khanye Local Municipality
1.8.5	Current use	Crops, vacant
1.8.5	Current zoning	Agriculture, mining
1.8.5	Predominant land use of surrounding properties	Farming, mining
1.8.9	Total extent of properties	Not available

1.9 Property ownership

1.9	Property owners	
1.9.1	Farms	Portions of Haverklip 265 IR and Haverghen 269 IR
1.9.2	Name and contract address	Not available
1.9.3	Telephone number	-
1.9.4	Fax number	-
1.9.5	E-mail	-

1.10 Developer

1.10	Developer	
1.10.1	Name and contact address	Kuyasa Mining (Pty) Ltd
1.10.2	Telephone number	
1.10.3	Fax	
1.10.4	E-mail	

1.11 Environmental practitioner

1.11	Environmental Specialist	
1.11.1	Name and contact address	Lizet Vermaak, Jones & Wagener Consulting Civil Engineers, PO Box 1434, Rivonia 2128
1.11.2	Telephone number	(011) 519-0200
1.11.3	Fax	(011) 519-0201
1.11.4	E-mail	Vermaak@jaws.co.za

1.12 Heritage assessment practitioners

1.12	Specialist (1)	
1.12.1	Name and contact address	Dr RC de Jong (Principal Member: Cultmatrix cc), PO Box 12013, Queenswood 0121, Pretoria
1.12.2	Qualifications and field of expertise	PhD (Cultural History) UP (1990), Post-Graduate Museology Diploma UP (1979), generalist heritage management specialist with experience in museums and heritage since 1983
1.12.3	Relevant experience in study area	HIAs for mining projects in the Ogies area and for regional landfill sites at Dryden near Delmas
1.12.4	Telephone number	(082) 577-4741
1.12.5	Fax number	(086) 612-7383
1.12.6	E-mail	cultmat@iafrica.com

Specialist 2		
1.12.1	Name and contact address	Dr AC van Vollenhoven, Archaetnos Culture and Cultural Resource Consultants
1.12.2	Qualifications and field of expertise	BA, BA (Hons), DTO, NDM, MA (Archaeology) [UP], MA (Culture History) [US], DPhil (Archaeology) [UP], Man Dip [TUT], DPhil (History)[US], ASAPA accredited archaeologist
1.12.3	Relevant experience in study area	Archaeological studies for HIAs in the broader area as well as grave relocations
1.12.4	Telephone number	083 291 6104
1.12.5	Fax number	086 520 4173
1.12.6	E-mail	antonv@archaetnos.co.za

2. DEVELOPMENT CONTEXT

2.1 Development site/area location and boundaries

The site is located approximately 20km southeast of Delmas, 15km northeast of Devon and 85km east of Johannesburg.

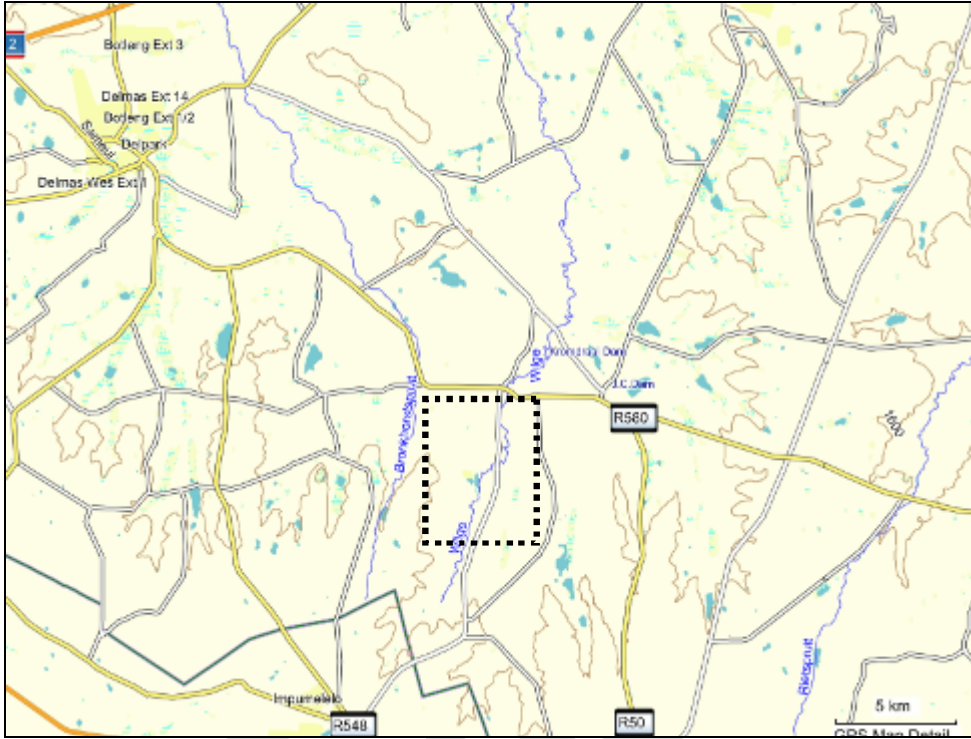


FIGURE 1: General location of the study area

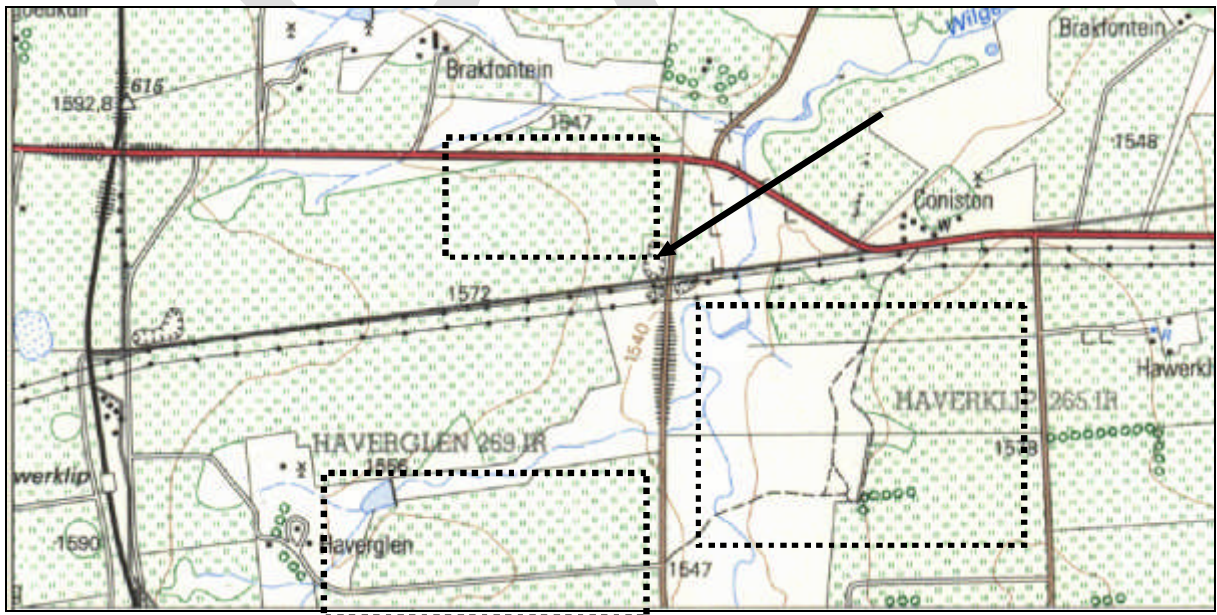


FIGURE 2: Portion of 2628 BB Kendal (1995) – note that the collieries did not exist at the time with the exception of small pits (arrow)

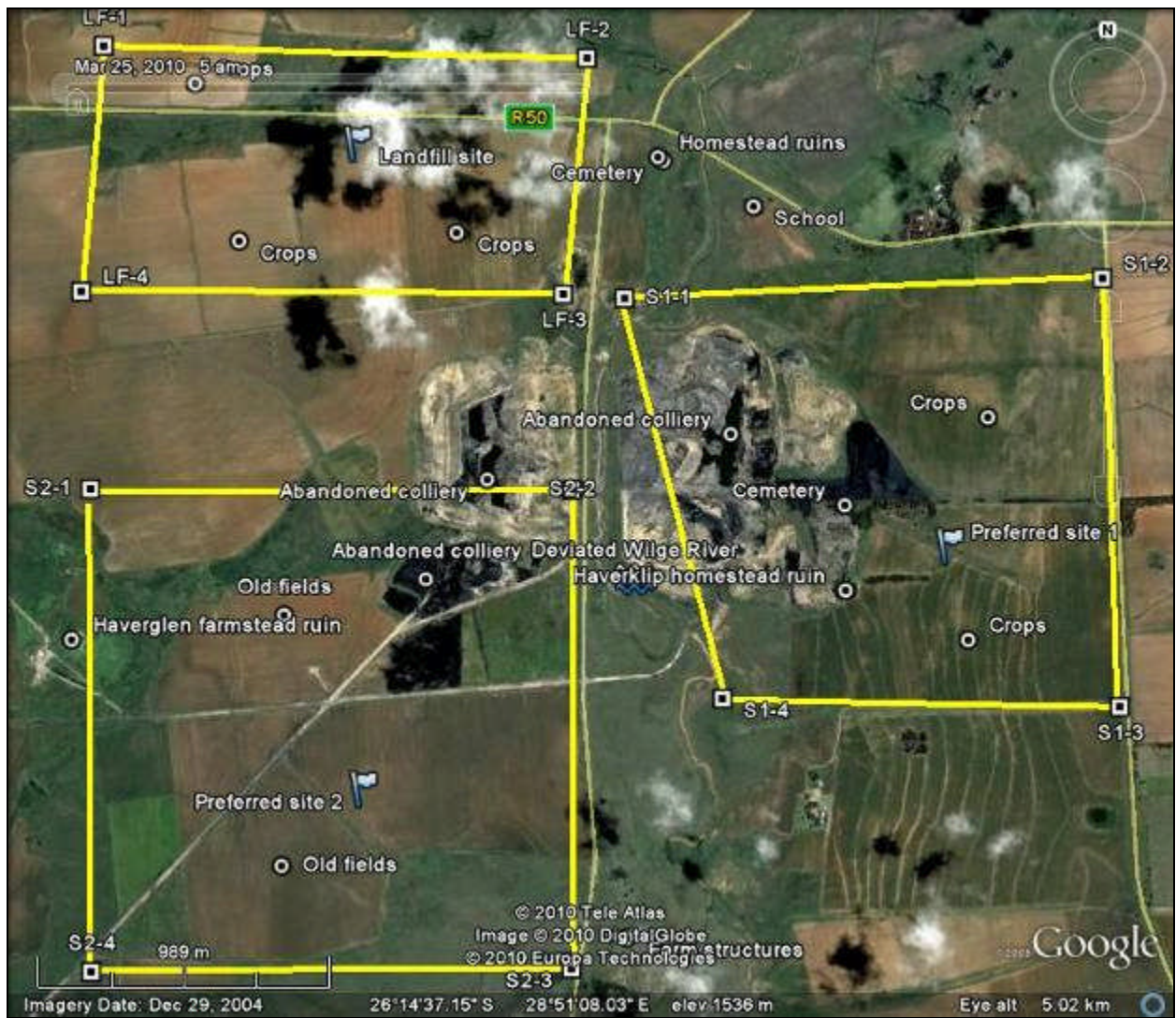


FIGURE 3: Google Earth image (2004) of three of the sites (yellow) that were investigated with identifiable heritage characteristics

2.2 Description of distinguishing regional features

2.2.1 Environmental features

TABLE 3: Environmental features

COMPONENT	DESCRIPTION
Acocks veld type	Turf Highveld
Geological and mining	Abandoned open-cast collieries
Geology	Arenite
Hydrology	Wilge River (deviated) and small tributary (on ash disposal site)
Land cover	Mines, quarries, cultivated land, unimproved grassland
Land use	Farming and mining
Vegetation	Moist Sandy Highveld Grassland
Landscape sensitivity index	0-1 (low)
Slope	0-9%
Terrain morphology	Slightly irregular undulating plains
Wetlands	Wilge River zone

2.2.2 Heritage features

TABLE 4: Heritage features

S 3(2) NHRA heritage resource	DESCRIPTION
Buildings, structures, places and equipment of cultural significance	Tracks, fences, old roads, quarries, collieries, cemeteries, ruins, planted vegetation (crops and tree lanes)
Areas to which oral traditions are attached or which are associated with intangible heritage	None
Historical settlements and landscapes	None
Landscapes and natural features of cultural significance	None
Geological sites of scientific or cultural importance	None
Archaeological and palaeontological sites	Broader area is known for Early, Middle and late Stone Age artefacts as well as Iron Age artefacts
Graves and burial grounds	Two cemeteries
Areas of significance related to labour history	Farm workers' homestead remains
Movable objects	None

2.2.3 Site descriptions

The site is currently used as agricultural land and for mining activity and is located on portions of the farms Haverghen 269 IR and Haverklip 265 IR within 4 km of the former Delmas (now Ikhwezi) Colliery (operated by Kuyasa Mining). The site is approximately 210ha comprising three rectangular parcels owned by Kuyasa (Ikhwezi Colliery (Pty) Ltd. Site topography is sloping from the southeast corner of the site to the northwest corner with the deviated Wilge River as the most recognisable natural element. The site is accessed by the R-50 running east-west along the northern boundary. It is bordered on the west by an asphalt road running north-south from the R-50 as well as by a gravel road running north-south from the R-50. The distance to the asphalt road is about 900m.

The corner co-ordinates of the three land parcels are:³

Landfill site (ash disposal site):

LF-1 26°13'45.41"S 28°50'8.13"E

LF-2 26°13'46.22"S 28°51'7.65"E

LF-3 26°14'12.63"S 28°51'4.69"E

LF-4 26°14'12.57"S 28°50'5.46"E

Preferred power plant site 1:

S1-1 26°14'13.03"S 28°51'12.33"E

S1-2 26°14'10.98"S 28°52'11.36"E

S1-3 26°14'58.37"S 28°52'13.23"E

S1-4 26°14'57.69"S 28°51'24.49"E

Preferred power plant site 2:

S2-1 26°14'34.34"S 28°50'6.51"E

S2-2 26°14'34.41"S 28°51'5.78"E

S2-3 26°15'27.82"S 28°51'5.72"E

³ Based on co-ordinates provided by the client

S2-4 26°15'27.76"S 28°50'6.44"E

The landfill (ash disposal) site consists predominantly of cultivated lands (crops). A small tributary of the Wilge River cuts across the north-western corner, bordered by unimproved grassland. According to the site co-ordinates, the R 50 road seems to cut across the northern portion of this site, but it is unclear if the road will be deviated.

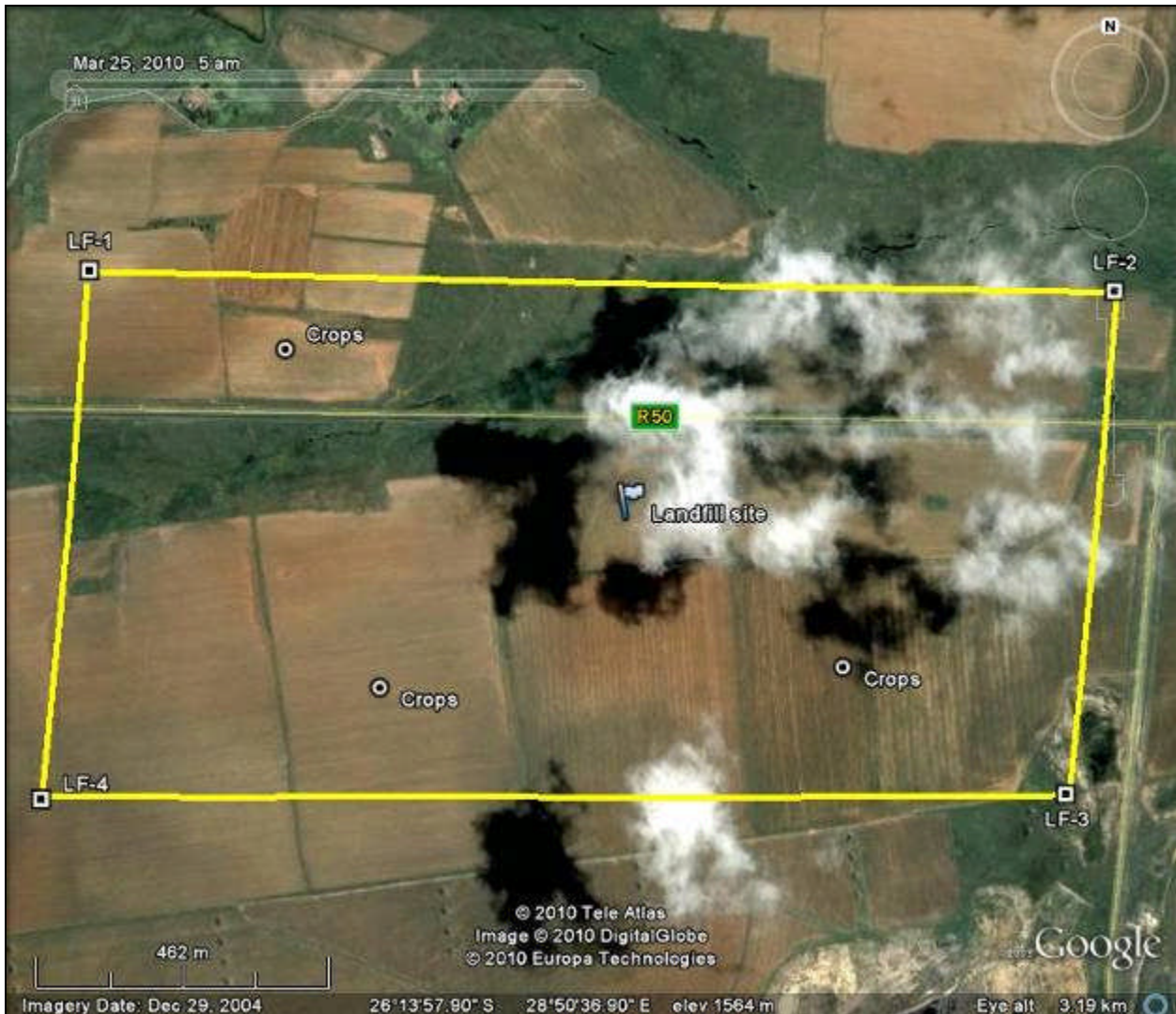


FIGURE 4: Google Earth image (2004) of the landfill site (yellow)

The Preferred Power Plant Site 1, on which the small Haverklip cemetery and homestead ruin occur, consists of an abandoned open-cast colliery and cultivated fields (crops). Access is via the original farm road. Planted vegetation (eucalyptus trees) demarcates the location of the original farmstead.

The Preferred Power Plant Site 2, which is subdivided through a number of gravel roads and a conveyor belt to the Delmas Colliery, consists of an abandoned open-cast colliery and cultivated fields (crops) with patches of unimproved grassland.

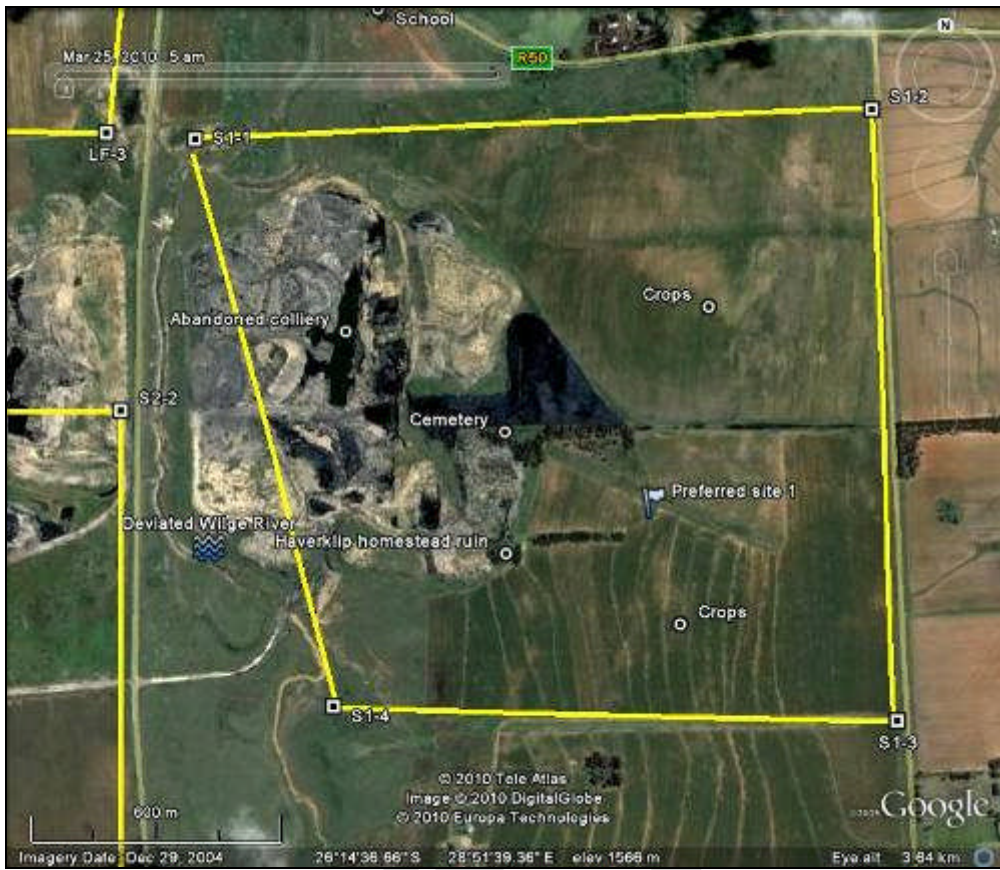


FIGURE 5: Google Earth image (2004) of the Preferred Site 1 (yellow)

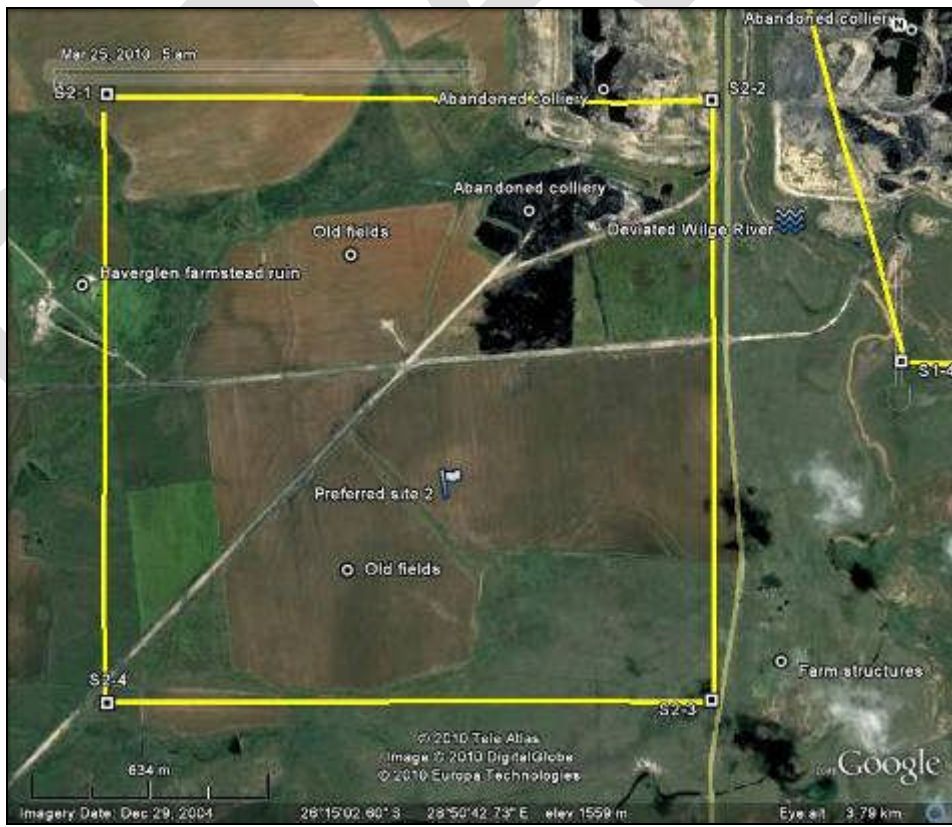


FIGURE 6: Google Earth image (2004) of the Preferred Site 2 (yellow)

2.2.4 Surrounding environment

AREA	DESCRIPTION
East	Road and farm land
North	R 50 road and farm land
West	Farm land, Haverklip grain elevator, Delmas Colliery
South	Farm land

2.3 Development description

2.3	Development description	
2.3.1	Nature of proposed development	See below
2.3.2	Predicted impacts on heritage value of site and contents	With the exception of the small Haverklip cemetery and the Haverklip homestead ruin there will be no adverse impacts
2.3.3	Structures older than 60 years affected by proposed development	Haverklip homestead ruin
2.3.4	Rezoning or change of land use	Yes
2.3.5	Construction work	Yes
2.3.6	Total floor area of proposed development	-
2.3.7	Extent of land coverage of development	Not available
2.3.8	Earth moving and excavation	Yes
2.3.9	Number of storeys	Immaterial
2.3.10	Maximum height above ground level	-
2.3.11	Monetary value development	Not available
2.3.12	Time frames	Urgent

A technology evaluation report prepared by Black & Veatch for Kuyasa determined that the boiler technology most suited to burn Kuyasa's low grade No. 4 seam coal would be circulating fluidized bed (CFB) boiler firing technology. The requirements of the siting study are therefore based on CFB technology with 4x150 MW power plant configuration with a 2-300 MW alternative. It is estimated that approximately 200ha will be required for the development of the power plant. A separate land provision will be kept for ash disposal.

The power plant and its components and associated infrastructure include:

- Power station precinct
- Power station buildings
- Administrative buildings (control buildings, medical, security etc.)
- High voltage yard
- Associated infrastructure
- Coal stock yard
- Coal and ash conveyors
- Water supply pipelines (temporary and permanent)
- Water and wastewater treatment facilities
- Ash disposal system
- Access roads (including haul roads)
- Dams for water storage
- Railway siding and/or line for sorbent supply



FIGURE 7: The deviated Wilge River that forms the western boundary of Preferred Site 1 – note the dumps in the background



FIGURE 8: General view of the proposal landfill (ash disposal) site



FIGURE 9: View of the Preferred Site 1 looking west – the trees in the distance indicate the small cemetery and homestead ruin



FIGURE 10: The abandoned colliery on Preferred Site 1



FIGURE 11: Another view of the Preferred Site 1 showing the location of the small cemetery (arrow)



FIGURE 12: General view of the Preferred Site 2 looking east

3. HERITAGE IMPACT CONTEXT

3.1 Cultural landscape evidence

The concept of cultural landscapes is of more recent origin and, although the definitions of the National Heritage Resources Act bear reference, is primarily grounded in international doctrinal texts in the form of Charters and Recommendations produced by ICOMOS and UNESCO. The most recent and authoritative text is the World Heritage Cultural Landscapes handbook, published by the World Heritage Centre (2009).

The term “cultural landscape” embraces a diversity of manifestations of the interaction between humankind and its natural environment. Cultural landscapes often reflect specific techniques of sustainable *land-use*, considering the characteristics and limits of the natural environment they are established in, and a specific spiritual relation to nature. Cultural landscapes are illustrative of the evolution of human society and settlement over time, under the influence of the physical constraints and/or opportunities presented by their natural environment and of successive social, economic and cultural forces, both external and internal. They are categorized on the basis both of their value and of their representativity in terms of a clearly defined geo-cultural *region* and also for their capacity to illustrate the essential and distinct cultural elements of such regions. The term “cultural landscape” embraces a diversity of manifestations of the interaction between humankind and its natural environment.

The World Heritage Committee distinguishes between three categories of cultural landscapes:

- Clearly defined landscapes, designed and created intentionally by people, such as parkland and urban areas
- Organically evolved landscapes that has developed over time, including relic landscapes (where a certain activity has ceased to exist) and continuing landscapes (which retain an active social role and where the evolutionary process is still in progress)
- Associative landscapes, which are essentially natural landscapes with significant human associations in the realm of the intangible heritage

All three categories exist in the study area. However, they are too broad in terms of the practical mapping and assessment of heritage elements; hence, the following criteria for classifying the type of cultural landscape have been used:

TABLE 5: Cultural landscape classification

HERITAGE LANDSCAPE CONTEXT	ELEMENTS	EVIDENCE
A. PALAEOONTOLOGICAL LANDSCAPE CONTEXT	Fossil remains. Such resources are typically found in specific geographical areas, e.g. the Karoo and are embedded in ancient rock and limestone/calcrete formations.	None
B. ARCHAEOLOGICAL LANDSCAPE CONTEXT	Archaeological remains dating to the following periods: <ul style="list-style-type: none"> • Early Stone Age • Middle Stone Age • Late Stone Age • Early Iron Age • Late Iron Age • Historical 	None
C. HISTORICAL BUILT URBAN LANDSCAPE CONTEXT	<ul style="list-style-type: none"> • Historical townscapes/streetscapes • Historical structures; i.e. older than 60 years • Formal public spaces • Formally declared urban conservation areas • Places associated with social identity/displacement 	None

D. HISTORICAL FARMLAND CONTEXT (SECONDARY LANDSCAPE)	<p>These possess distinctive patterns of settlement and historical features such as:</p> <ul style="list-style-type: none"> • Historical farm werfs • Historical farm workers villages/settlements • Irrigation furrows • Tree alignments and groupings • Historical routes and pathways • Distinctive types of planting • Distinctive architecture of cultivation e.g. planting blocks, trellising, terracing, ornamental planting. 	Yes
E. HISTORICAL RURAL TOWN CONTEXT	<ul style="list-style-type: none"> • Historical mission settlements • Historical townscapes 	None
F. PRISTINE/NATURAL LANDSCAPE CONTEXT	<ul style="list-style-type: none"> • Historical patterns of access to a natural amenity • Formally proclaimed nature reserves • Evidence of pre-colonial occupation • Scenic resources, e.g. view corridors, viewing sites, visual edges, visual linkages • Historical structures/settlements older than 60 years • Pre-colonial or historical burial sites • Geological sites of cultural significance. 	None
G. RELIC LANDSCAPE CONTEXT (PRIMARY LANDSCAPE)	<ul style="list-style-type: none"> • Past farming settlements • Past industrial sites • Places of isolation related to attitudes to medical treatment • Battle sites • Sites of displacement, 	Yes
H. BURIAL GROUND & GRAVE SITE CONTEXT	<ul style="list-style-type: none"> • Pre-colonial burials (marked or unmarked, known or unknown) • Historical graves (marked or unmarked, known or unknown) • Human remains (older than 100 years) • Associated burial goods (older than 100 years) • Burial architecture (older than 60 years) 	None
I. ASSOCIATED LANDSCAPE CONTEXT	<ul style="list-style-type: none"> • Sites associated with living heritage e.g. initiation sites, harvesting of natural resources for traditional medicinal purposes • Sites associated with displacement & contestation • Sites of political conflict/struggle • Sites associated with an historic event/person • Sites associated with public memory 	None
J. HISTORICAL FARM WERF CONTEXT	<ul style="list-style-type: none"> • Setting of werf and its context • Composition of structures • Historical/architectural value of individual structures • Tree alignments • Views to and from • Axial relationships • System of enclosure, e.g. werf walls • Systems of water reticulation and irrigation, e.g. furrows • Sites associated with slavery and farm labour • Colonial period archaeology 	None
K. HISTORICAL INSTITUTIONAL LANDSCAPE CONTEXT	<ul style="list-style-type: none"> • Historical prisons • Hospital sites • Historical school/reformatory sites • Military bases 	None
L. SCENIC/VISUAL	<ul style="list-style-type: none"> • Scenic routes 	None

K. AMENITY LANDSCAPE CONTEXT	<ul style="list-style-type: none"> • View sheds • View points • Views to and from • Gateway conditions • Distinctive representative landscape conditions • Scenic corridors 	
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3.2 Determining levels of sensitivity and potential impacts

Sensitivity is the ability of a cultural landscape (or heritage resource) to absorb changes or adapt to changes whilst maintaining an acceptable degree of cultural significance.

Within the context of this study, levels of sensitivity can generally be associated with certain classes or categories of cultural landscapes as tabulated below.

TABLE 6: Relationship between cultural landscape classes and levels of sensitivity

Sensitivity level	Implication	Landscape class	Evidence
D	Ability to absorb without adverse effects and very little mitigation	Relic mining landscape Degraded farm land	Of little or no intrinsic, associational or contextual heritage value due to disturbed, degraded conditions or extent of irreversible damage
C	Ability to absorb with some adverse effects and some mitigation	Historical farmland Historical farm werfs Institutional landscapes	Of medium to low intrinsic, associational or contextual heritage value within a national, provincial and local context
B	Ability to absorb with considerable adverse effects and intensive mitigation	Burial grounds and graves Palaeontological and archaeological landscapes Associated landscapes	Of moderate to high intrinsic, associational and contextual value within a local context
A	No or very little ability to absorb	Historical built environments Natural landscapes Amenity/Visual/Scenic landscapes	Of high intrinsic, associational and contextual heritage value within a national, provincial and local context

3.3 Determining potential impacts

TABLE 7: Categories of development types

CATEGORY	DESCRIPTION	EVIDENCE
A: Minimal intensity development	<ul style="list-style-type: none"> • No rezoning involved; within existing use rights • No subdivision involved • Upgrading of existing infrastructure within existing envelopes • Minor internal changes to existing structures • New building footprints limited to less than 1000m² 	No
B: Low-intensity development	<ul style="list-style-type: none"> • Spot rezoning with no change to overall zoning of a site • Linear development less than 100m • Building footprints between 1000m²-2000m² • Minor changes to external envelop of existing structures (less than 25%) • Minor changes in relation to bulk and height of immediately adjacent structures (less than 25%). 	No
C: Moderate intensity development	<ul style="list-style-type: none"> • Rezoning of a site between 5000m²-10 000m² • Linear development between 100m and 300m • Building footprints between 2000m² and 5000m² • Substantial changes to external envelop of existing structures (more than 50%) • Substantial increase in bulk and height in relation to immediately adjacent buildings (more than 50%) 	No

CATEGORY	DESCRIPTION	EVIDENCE
D: High intensity development	<ul style="list-style-type: none"> • Rezoning of a site in excess of 10 000m² • Linear development in excess of 300m • Any development changing the character of a site exceeding 5000m² or involving the subdivision of a site into three or more erven • Substantial increase in bulk and height in relation to immediately adjacent buildings (more than 100%) 	Power plant and landfill site

3.4 Expected impact significance

TABLE 8: Expected impact significance matrix

HERITAGE CONTEXT	TYPE OF DEVELOPMENT			
	CATEGORY A	CATEGORY B	CATEGORY C	CATEGORY D
A: High heritage value	Moderate heritage impact expected	High heritage impact expected	Very high heritage impact expected	Very high heritage impact expected
B: Medium to high heritage value	Minimal heritage impact expected	Moderate heritage impact expected	High heritage impact expected	Very high heritage impact expected
C: Medium to low heritage value	Little or no heritage impact expected	Minimal heritage impact expected	Moderate heritage impact expected	High heritage impact expected
D: Low heritage value	Little or no heritage impact expected	Little or no heritage impact expected	Minimal heritage value expected	Moderate heritage impact expected

4. HERITAGE IMPACT ASSESSMENT

4.1 Approach

4.1.1 Definitions and assumptions

The following aspects have a direct bearing on the investigation and the resulting report:

- *Cultural (heritage) resources* are all non-physical and physical human-made occurrences, as well as natural occurrences that are associated with human activity. These include all sites, structures and artefacts of importance, either individually or in groups, in the history, architecture and archaeology of human (cultural) development.
- The *cultural significance* of sites and artefacts is determined by means of their historical, social, aesthetic, technological and scientific value in relation to their uniqueness, condition of preservation and research potential. It must be kept in mind that the various aspects are not mutually exclusive, and that the evaluation of any site is done with reference to any number of these.
- The *value* is related to concepts such as *worth, merit, attraction or appeal*, concepts that are associated with the (current) usefulness and condition of a place or an object. Hence, in the development area, there are instances where elements of the place have a high level of significance but a lower level of value.
- It must be kept in mind that significance and value are not mutually exclusive, and that the evaluation of any feature is based on a combination or balance between the two.
- Isolated occurrences: findings of artefacts or other remains located apart from archaeological sites. Although these are noted and samples are collected, it is not used in impact assessment and therefore do not feature in the report.
- Traditional cultural use: resources which are culturally important to people.
- All archaeological remains, artificial features and structures older than 100 years and historic structures older than 60 years are protected by the relevant legislation, in this case the National Heritage Resources Act (NHRA) (Act No. 25 of 1999). No archaeological artefact, assemblage or settlement (site) and no historical building or structure older than 60 years may be altered, moved or destroyed without the necessary authorisation from the South African Heritage Resources Agency (SAHRA) or a provincial heritage resources authority. Full cognisance is taken of this Act in making recommendations in this report.
- The guidelines as provided by the NHRA (Act No. 25 of 1999) in Section 3, with special reference to subsection 3, and the Australian ICOMOS Charter (also known as the Burra Charter) are used when determining the cultural significance or other special value of archaeological or historical sites.
- It should be kept in mind that archaeological deposits usually occur below ground level. Should artefacts or skeletal material be revealed at the site during construction, such activities should be halted, and it would be required that the heritage consultants would be required to be notified in order for an investigation and evaluation of the find(s) to take place (*cf.* NHRA (Act No. 25 of 1999), Section 36 (6)).

4.1.2 Limiting/Restricting factors

The investigation has been influenced by the following factors related to the overall HIA:

- Unpredictability of buried archaeological remains (absence of evidence does not mean evidence of absence)

4.1.3 Field work

This was done through foot and vehicle investigations of the study area in June 2010. During the site inspection the respective properties were examined in some detail. Certain parts of the landscape were found generally to exhibit low visibility and were checked at random intervals, while features in the respective landscapes that were more likely to have been foci for past human activity (e.g stands of trees) were assessed more systematically.

An assessment was made regarding reports for other developments in the region that have been submitted to SAHRA.

4.1.4 Desktop study

- Published literature
- Aerial images (contemporary)
- Cadastral diagrams
- Archival records
- Maps (historical and contemporary)

4.1.5 Verbal information

None

4.2 General issues of site and context

4.2.1 Context		
	<i>(check box of all relevant categories)</i>	<i>Brief description/explanation</i>
	Urban environmental context	<ul style="list-style-type: none"> • Roads • Fences • Tracks • Farmstead ruins • Power lines • Mines • Cultivated lands • Unimproved grassland
x	Rural environmental context	
	Natural environmental context	
Formal protection (NHRA)		
	Is the property part of a protected area (S. 28)?	No
	Is the property part of a heritage area (S. 31)?	No
Other		
	Is the property near to or visible from any protected heritage sites?	No
	Is the property part of a conservation area or special area in terms of the Zoning Scheme?	No
	Does the site form part of a historical settlement or townscape?	No
x	Does the site form part of a rural cultural landscape?	Relic farm land and mining land
	Does the site form part of a natural landscape of cultural significance?	No
	Is the site within or adjacent to a scenic route?	No
	Is the property within or adjacent to any other area which has special environmental or heritage protection?	No

	Does the general context or any adjoining properties have cultural significance?	No
--	--	----

4.2.2 Property features and characteristics		
	<i>(check box if YES)</i>	<i>Brief description</i>
x	Have there been any previous development impacts on the property	Yes: Roads, tracks, grazing land, fences, open-cast collieries, cultivated lands, ruins, graves, etc.
x	Are there any significant landscape features on the property?	Wilge River (deviated due to mining)
	Are there any sites or features of geological significance on the property?	No
	Does the property have any rocky outcrops on it?	No
x	Does the property have any fresh water sources (springs, streams, rivers) on or alongside it?	Wilge River
	Does the property have any sea frontage?	No
	Does the property form part of a coastal dune system?	No
	Are there any marine shell heaps or scatters on the property?	No
	Is the property or part thereof on land reclaimed from the sea?	No

4.2.3 Heritage resources on the property		
	<i>(check box if present on the property)</i>	<i>Name / List / Brief description</i>
Formal protections (NHRA)		
	National heritage site (S. 27)	No
	Provincial heritage site (S. 27)	No
	Provisional protection (s.29)	No
	Place listed in heritage register (S. 30)	No
General protections (NHRA)		
x	structures older than 60 years (S. 34)	Haverklip homestead ruin
x	archaeological site or material (S. 35)	Possible (chance finds)
x	palaeontological site or material (S. 35)	Possible (chance finds)
x	graves or burial grounds (S. 36)	Haverklip cemetery (small)
	public monuments or memorials (S. 37)	No
Other		
	Any heritage resource identified in a heritage survey (state author and date of survey and survey grading/s)	No
	Any other heritage resources (describe)	No

4.2.4 Property history and associations		
	<i>(check box if YES)</i>	<i>Brief description/explanation</i>
x	Provide a brief history of the property (e.g. when granted, previous owners and uses).	See Appendix 1

4.2.4 Property history and associations		
	Is the property associated with any important persons or groups?	No
	Is the property associated with any important events, activities or public memory?	No
	Does the property have any direct association with the history of slavery?	No
	Is the property associated with or used for living heritage?	No
	Are there any oral traditions attached to the property?	No

4.3 Summarised identification and significance assessment of heritage resources

See Appendix 3 for significance assessment criteria

TABLE 9: Identification and significance assessment of heritage features

S 3(2) NHRA heritage resource category	ELEMENTS	INDICATORS OF HERITAGE SIGNIFICANCE										CUMULATIVE SIGNIFICANCE RATING (TOTAL 30) 1-9 = Low 10-19 = Medium 20-30 = High
		HISTORICAL	RARE	SCIENTIFIC	TYPICAL	AESTHETIC	TECHNOLOGICAL	PERSON COMMUNITY	LANDMARK	MATERIAL CONDITION	SUSTAINABILITY	
Buildings, structures, places and equipment of cultural significance	Homestead ruins	1	0	0	1	0	0	3	0	0	0	5 = Low local
	School ruin	1	0	0	1	0	0	3	1	0	0	6 = Low local
	Haverklip homestead ruin	1	0	0	1	0	0	3	0	0	0	5 = Low local
	Haverglen farmstead ruin	0	0	0	0	0	0	3	0	0	0	3 = Low local
	Abandoned open-cast collieries	0	0	1	1	0	1	3	1	1	1	9 = Low local
Areas to which oral traditions are attached or which are associated with intangible heritage	None	-	-	-	-	-	-	-	-	-	-	-
Historical settlements and landscapes	None	-	-	-	-	-	-	-	-	-	-	-
Landscapes and natural features of cultural significance	None	-	-	-	-	-	-	-	-	-	-	-
Geological sites of scientific or cultural importance	None	-	-	-	-	-	-	-	-	-	-	-
Archaeological and palaeontological sites	Stone Age artefacts and fossils (chance finds)	-	-	-	-	-	-	-	-	-	-	Unknown
Graves and burial grounds	Small Haverklip cemetery	2	0	0	3	1	0	3	0	3	3	15 = Medium local
	Large cemetery	2	0	0	3	1	0	3	0	3	3	15 = Medium local

Areas of significance related to labour history	None	-	-	-	-	-	-	-	-	-	-	-
Movable objects	None	-	-	-	-	-	-	-	-	-	-	-

4.4 Impact assessment

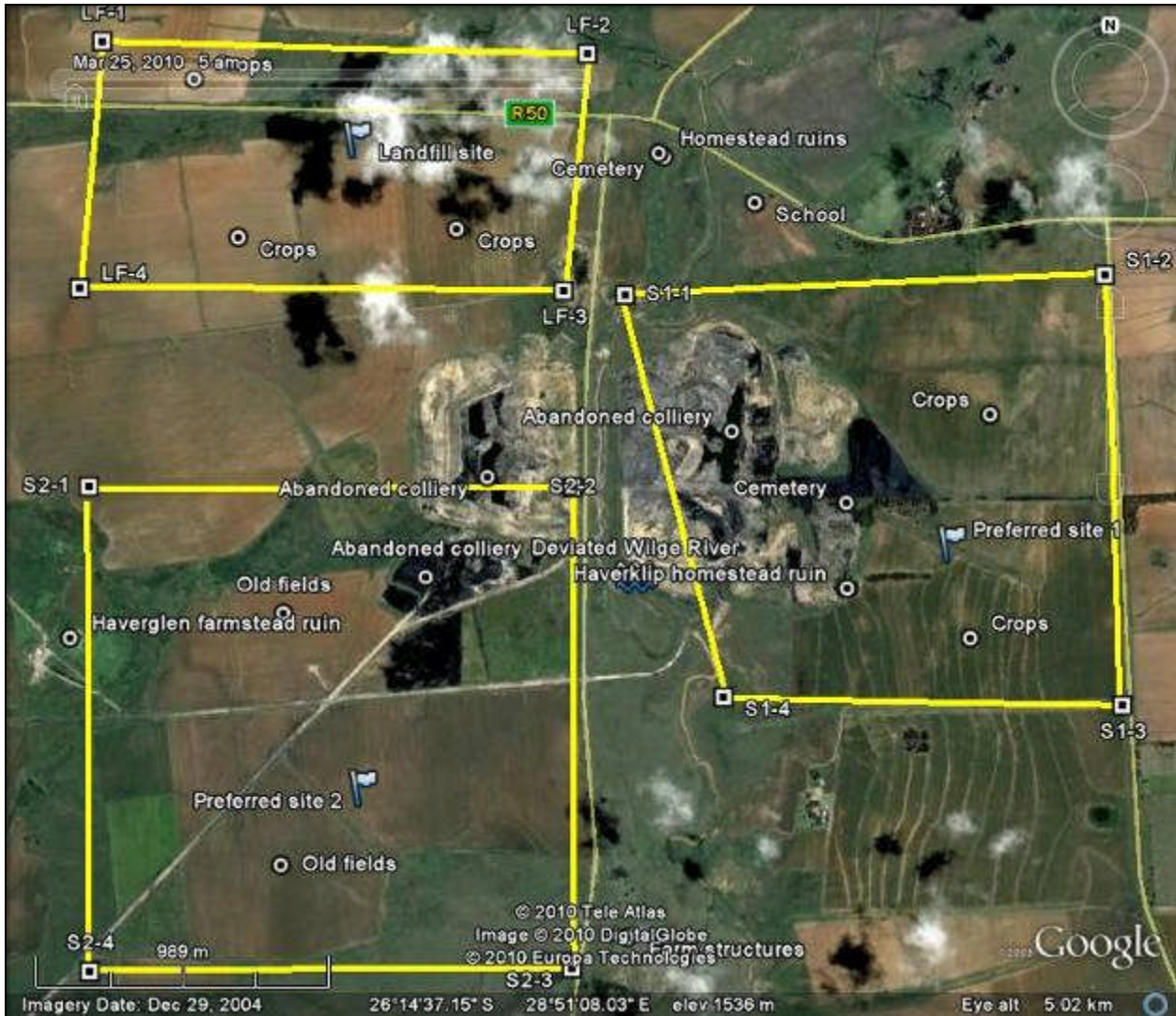


FIGURE 13: Google Earth image (2004) of the three sites (yellow) that were investigated with identifiable heritage characteristics

4.4.1 Haverklip cemetery

S 3(2) NHRA heritage resource	(a) Identification		(b) Significance	(c) Impact		(d) Recommended impact management
	Site	GPS		Study area	Impact type, certainty and significance	
Graves and burial sites	Haverklip farm cemetery (2 graves)	26°14'36.12"S 28°51'39.54"E	Medium local	Preferred Site 1	Definite destruction	Relocation of graves

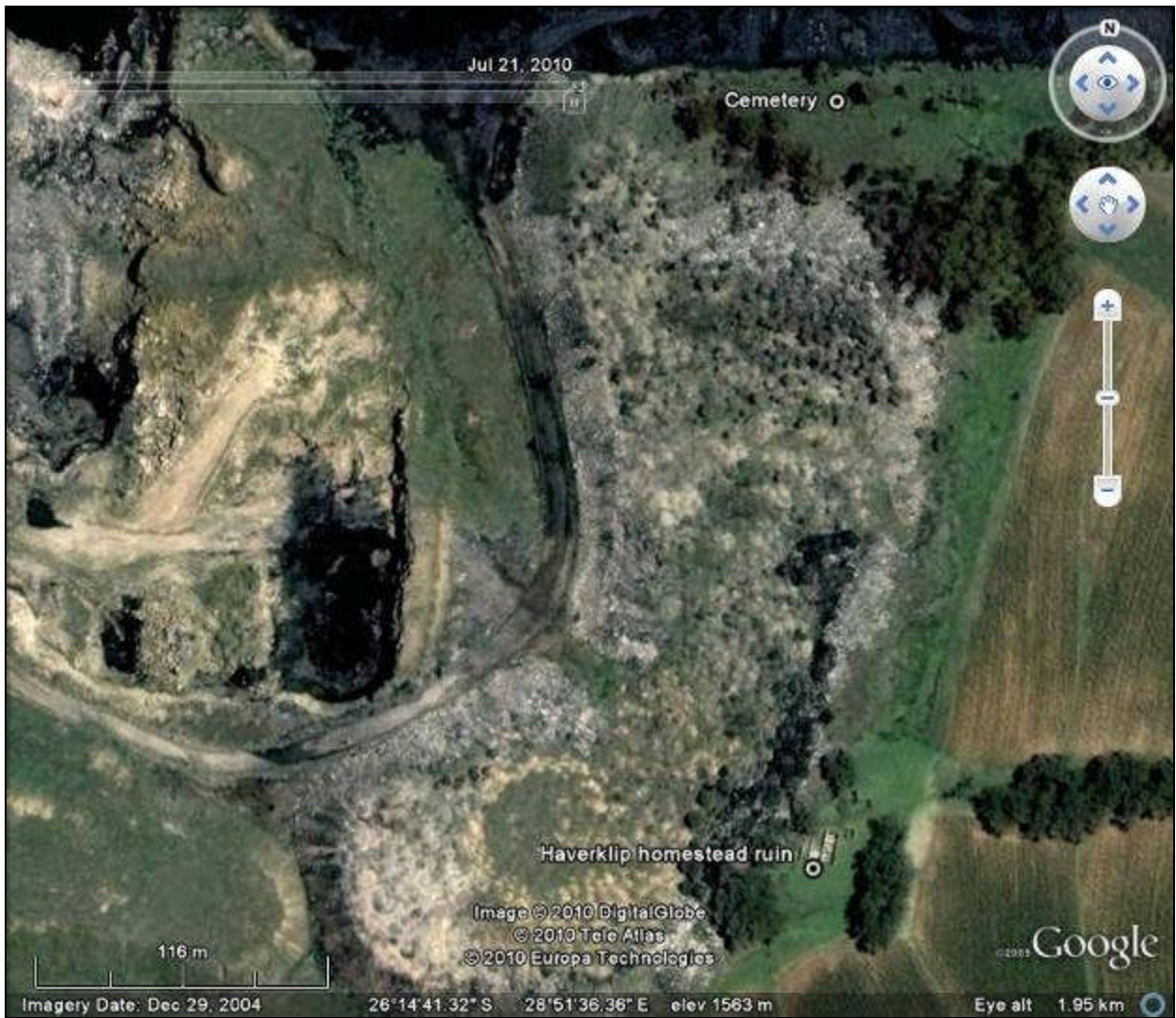


FIGURE 14: Google Earth image (2004) indicating the location of the cemetery (top) and homestead ruin (bottom) on the Preferred Site 1



FIGURE 15: The cemetery on the Preferred Site 1, which contains two graves

4.4.2 Haverklip homestead ruin

S 3(2) NHRA heritage resource	(a) Identification		(b) Significance	(c) Impact		(d) Recommended impact management
	Site	GPS		Study area	Impact type, certainty and significance	
Buildings, structures, places and equipment of cultural significance	Haverklip homestead ruin	26°14'45.58"S 28°51'39.63"E	Low local	Preferred Site 1	Definite destruction – low negative impact	Mitigation: Demolition permit (the place is older than 60 years) including documentation(before destruction)



FIGURE 16: Haverklip homestead ruin

4.4.3 Haverglen farmstead ruin

S 3(2) NHRA heritage resource	(a) Identification		(b) Significance	(c) Impact		(d) Recommended impact management
	Site	GPS		Study area	Impact type, certainty and significance	
Buildings, structures, places and equipment of cultural significance	Haverglen farmstead ruin	26°14'51.03"S 28°50'3.96"E	Low local	Just outside Preferred Site 2	Possible destruction – low negative impact	No action – the place is younger than 60 years and no demolition permit is needed

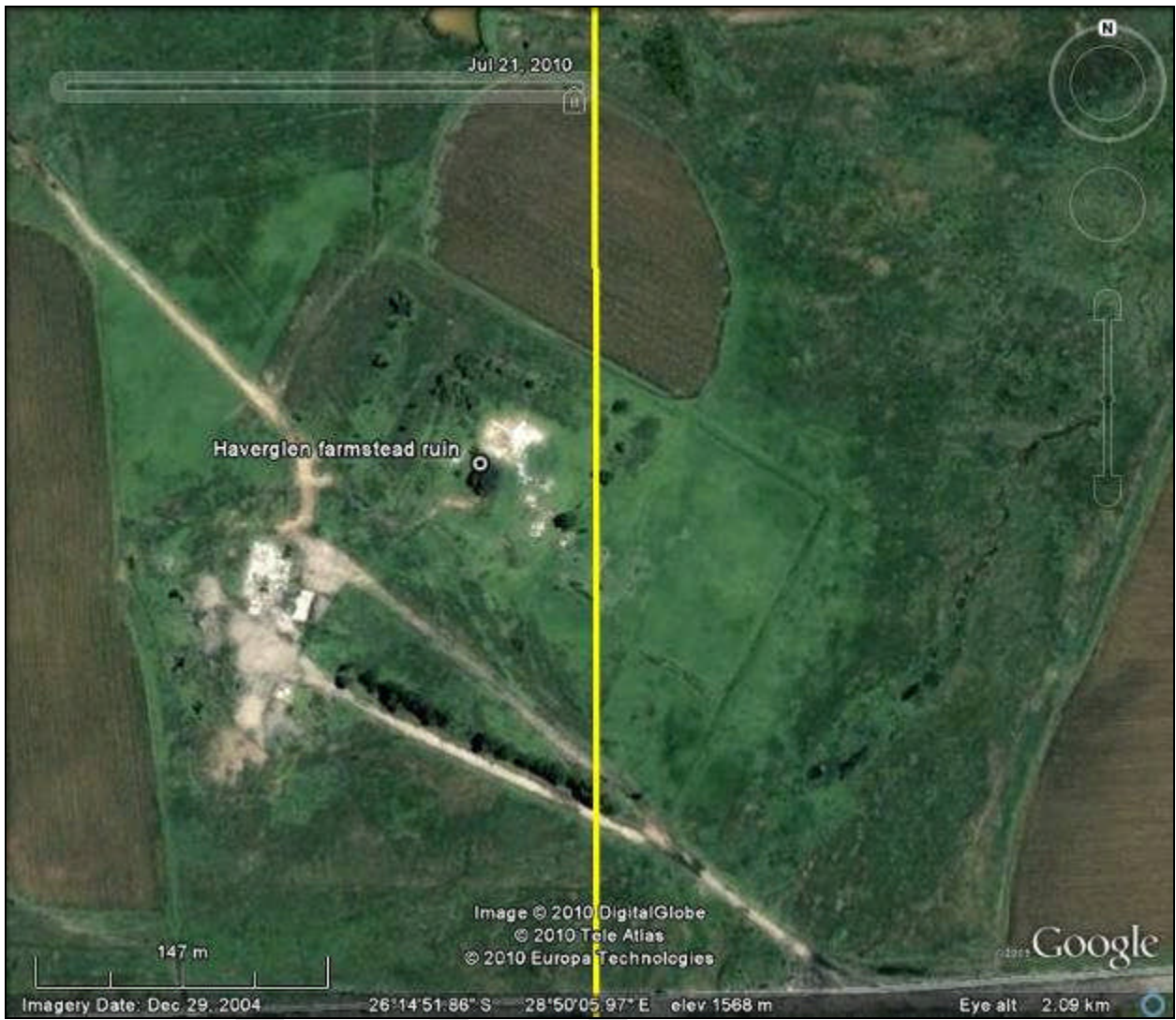


FIGURE 17: Google Earth image (2004) of a portion of the Preferred Site 2 (the yellow line is the western boundary) indicating the location of the Haverglen farmstead ruin

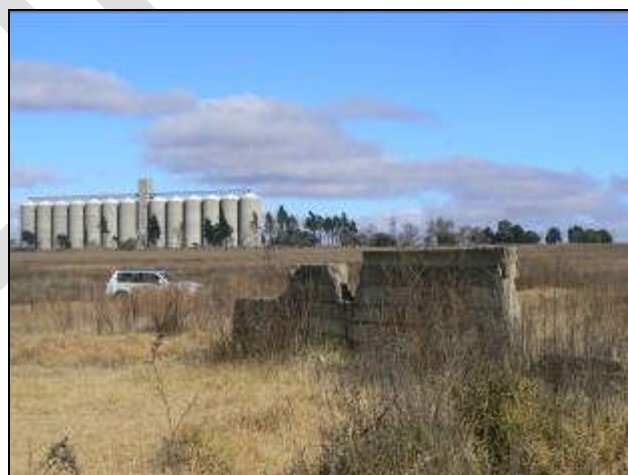


FIGURE 18: The Haverglen farmstead ruin with the Hawerklip grain elevator in the far distance

4.4.4 Summarised impact assessment

TABLE 10: Identification of heritage features, impacts and impact management measures

S 3(2) NHRA heritage resource	(a) Identification		(b) Significance	(c) Impact		(d) Recommended impact management
	Site	GPS		Study area	Impact type, certainty and significance	
Buildings, structures, places and equipment of cultural significance	Homestead ruins	26°13'57.28"S 28°51'16.48"E	Medium local	Outside	Neutral	No action: Remains of homesteads - outside development areas
	School ruin	26°14'2.77"S 28°51'28.39"E	Low local	Outside	Neutral	No action: Ruin of Haverklip farm school – outside development areas
	Haverklip homestead ruin	26°14'45.58"S 28°51'39.63"E	Low local	Preferred Site 1	Definite destruction – low negative impact	Mitigation: Demolition permit (the place is older than 60 years) including documentation(before destruction)
	Haverglen farmstead ruin	26°14'51.03"S 28°50'3.96"E	Low local	Just outside Preferred Site 2	Possible destruction – low negative impact	No action – the place is younger than 60 years and no demolition permit is needed
	Abandoned open-cast collieries	-	Low local	Preferred Site 1 and 2	Unknown	No action – the collieries are of recent origin
Areas to which oral traditions are attached or which are associated with intangible heritage	None	-	-	-	-	-
Historical settlements and landscapes	None	-	-	-	-	-
Landscapes and natural features of cultural significance	None	-	-	-	-	-
Geological sites of scientific or cultural importance	None	-	-	-	-	-
Archaeological and palaeontological sites	Chance finds	Unknown	Low local?	Preferred Site 1 and 2	Unknown	Mitigation: Report and evaluate any graves or archaeological features and artefacts when found during site preparation work
Graves and burial sites	Haverklip farm cemetery (2 graves)	26°14'36.12"S 28°51'39.54"E	Medium local	Preferred Site 1	Definite destruction	Relocation of graves
	Farm workers' cemetery	26°13'57.68"S 28°51'17.11"E	Medium local	Outside	Neutral	No action: Large cemetery associated with homestead remains
Features associated with labour history	None	-	-	-	-	-
Movable objects	None	-	-	-	-	-

4.5 Social and economic benefits

The development will have no direct benefits related to the conservation of heritage resources (structures) since none of significance have been identified, with the exception of the small Haverklip farm cemetery.

The latest ISEP (October 2005) has identified the need for increased base load electricity supply by the year 2010. The National Energy Regulator of South Africa (NERSA) is the regulatory authority responsible for the electricity supply industry in South Africa. In its National Integrated Resource Plan (INIRP), NERSA has determined that, while various alternative and renewable electricity generation options should be continually investigated, coal should still provide the main fuel source in South Africa. Accordingly, coal-fired power stations will be required for generation capacity expansion during the next 20 years. In 2003, the South African government decided that the future power generation capacity would be divided between ESKOM (70%) and Independent Power Producers (IPP) (30%).

4.6 Consultation with affected communities

This is part of the EIA process.

4.7 Identification of other risk sources

The following project actions may impact negatively on any potential palaeontological and archaeological sites and remains.

The actions are likely to occur during the preparation phases of the proposed project:

- Earthworks and excavations may expose or uncover objects and artefacts and unmarked human burials.

4.8 Key mitigation and enhancement measures before and during construction

- Monitor for chance finds (e.g. burial sites, old waste disposal sites, artefacts, fossils)

4.9 Consideration of alternatives

The nature and significance of what has been found in terms of heritage is not of such importance that the proposed ash disposal site's location should be changed or that other alternatives should be considered.

The nature and significance of what has been found in terms of heritage may imply negative impacts regarding the construction and operation of the power plant on Preferred Site 1 and therefore Preferred Site 2 is supported as a more suitable alternative.

4.10 Summarised findings and recommendations

The areas proposed for the Kuyasa IPP are located in a cultural landscape classified primarily as a combination of historic farmland and a relic mining landscape. This class of landscape is of very low heritage sensitivity because it is able to absorb new development with without many adverse effects.

The predicted physical impact on the proposed landfill site for ash is neutral since this area consists almost entirely of fields with crops, without any recognisable heritage features. **The use of this area as a landfill for ash disposal is therefore supported.**

The predicted physical impact on the Preferred Site 1 for the power plant is low to medium negative since it will adversely affect a homestead ruin (for which a demolition permit will be required due to its age of 60 years and older) and a small cemetery with two graves (that must be exhumed and relocated). **The use of this area for the power plant is therefore not supported.**

The predicted physical impact on the Preferred Site 2 for the power plant is neutral since this area mainly consists of old fields without any recognisable heritage features. The Haverglen farmstead ruin could be affected. It is located just outside the periphery) but due to its condition, age and significance the impact will be neutral and no further action is necessary. **The use of this area for the power plant is therefore supported.**

Visual intrusion as an indirect impact is not an important issue since the proposed development will be located in an environmentally degraded area (abandoned collieries, dumps, degraded parcels of farm

land) and is bordering on land that has been transformed by housing, mining and infrastructure. Noise, dust, pollution and restrictions of access patterns as indirect impacts are also not issues.

From a historic built environment perspective no features of real heritage significance were identified and those features that are extant (the Haverklip homestead ruin) are typical of many others in the region.

From an archaeological perspective no finds were identified.

Cultmatrix states that there are no compelling reasons not to proceed with the proposed project and that it should be allowed to continue as follows:

- Use of proposed landfill site for disposal of ash
- Use of Preferred Site 2 for the construction and operation of the power plant since it has no features of heritage significance and is also located closer to the source of coal than the Preferred Site 1

The following measures are to be adopted as heritage management mechanisms:

1. Should any hidden human remains (highly unlikely) be disturbed, exposed or uncovered during site clearing and excavations (for foundations etc), these should immediately be reported to an archaeologist. Burial remains should not be disturbed or removed until inspected by an archaeologist.
2. Site preparation activities must be monitored for the occurrence of any hidden archaeological material (Stone Age tools) and similar chance finds (such as historic middens and foundations) and if any are exposed, this should be reported to an archaeologist so that an investigation and evaluation of the finds can be made. The small pans and the drainage line are potential places where such finds may occur.
3. Site preparation activities must be monitored for the occurrence of any hidden fossils and trace fossils and if any are exposed, this should be reported to a palaeontologist so that an investigation and evaluation of the finds can be made.

APPENDIX 1: SOCIO-CULTURAL HISTORY OF DEVELOPMENT AREA

Early Stone Age

In South Africa the ESA dates from about 2 million to 250 000 years ago, from the early to middle Pleistocene. Over this time, the archaeological evidence shows, as our early ancestors advanced physically, mentally and socially they invented stone and bone tools and learned to control fire and exploit natural resources effectively. The earliest tools clearly manufactured by our ancestors and their relatives (early hominids) date to 2,5 million years ago, from the site of Gona in Ethiopia. These tools showed that early hominids were able to select a suitable raw material and flake it for a specific purpose. As many of the bones found in association with early tools bear cut marks, scientists have inferred that early hominids were chipping flakes off cobbles in order to create a sharp edge with which to cut meat from animal carcasses. It would seem that these early stone tools helped early hominids to access a high-protein food source in sufficient quantity to develop their brains – the brain being metabolically the most expensive organ in the body.

This earliest stone tool industry is called the Oldowan, after Olduvai Gorge in Tanzania where the tools and their importance to hominid development were first recognised by Mary Leakey in the 1960s.

To date Oldowan tools have only been found in Africa. This early technology is fairly consistent across Africa, in that the tools are mainly simple flakes struck from cobbles, a technology that appears to have been sufficient to meet the needs of early hominids as it persisted for a long time. At sites like Olduvai Gorge and Koobi Fora in Kenya, Oldowan tools remained unchanged until about 1,5 million years ago. Oldowan technology thus represents a long period of successful adaptation, which lasted for almost a million years. In South Africa the Oldowan Industry dates from about 2 million years ago. There is still some debate about which hominid made the Oldowan tools as there were at least two hominids in South Africa at that time which were capable of doing so. The first was an early form of Homo, and the second was Paranthropus robustus, which went extinct approximately one million years ago. Because the technology did not disappear when Paranthropus went extinct, it is often assumed that Homo was the toolmaker.

About 1,7 million years ago more specialised tools appeared, developing first in Africa then spreading to Asia and Europe through the movement of hominids out of Africa. These core tools, which are known as Acheulean tools after the French site, Saint Acheul, where they were first discovered in the 1800s, were intentionally designed to have sharper and straighter edges and studies suggest they were used to carry out a range of activities including butchering animals, chopping wood, digging up roots and cracking bone. Interestingly, even though the tools were named after a French site, they only appeared in Europe about 500 000 years ago.

The hominid species Homo ergaster has been credited with the manufacture of the Acheulean tools in South Africa. Compared with earlier hominids, Homo ergaster was physically almost like us; it had a larger brain, and was relatively modern in face, body proportion and height. In fact, it had a body very much like our own. Homo ergaster ranged over vast areas of territory, and occupied a variety of habitats, including drier, more open grassland settings. Most importantly, Homo ergaster became more dependent on tools; it became a habitual tool user.

Oldowan and Acheulean tools are widely distributed across South Africa, where they are most commonly found in association with water sources such as lakes and rivers. Unfortunately, because of this there are very few sites where the tools are found in a primary context, that is, exactly where the user left them. Most of the tools have either been washed into caves or eroded out of riverbanks and washed down rivers.

(Source: Peter Delius (ed), 2006, Mpumalanga – Reclaiming the Past, Defining the Future)

There are only a few places in Mpumalanga where Early Stone Age tools have been found and the development area is not known as a site.

Middle Stone Age

By 250 000 the large hand axes and cleavers of the Earlier Stone Age had begun to diminish in numbers, and our ancestors started to employ a different technique in order to produce a greater variety of tools of diverse shapes and sizes. This change in technology marks the beginning of the Middle Stone Age

(MSA). MSA tools are generally smaller, and, unlike ESA tools, which were produced by removing flakes, MSA tools were the flakes. These flakes were of a predetermined size and shape and were produced by preparing the core and striking the flake off. Long, parallel-sided blades, as well as triangular flakes, were commonly produced. The hafting of stone tools onto bone or wood to produce spears, knives or axes also became popular during the MSA, which reflected a shift from scavenging to spear hunting. During the MSA early humans still settled along or near water sources, but also took shelter in caves. Importantly, the MSA marks the transition from a more archaic Homo to anatomically modern humans, Homo sapiens. With this physical development the first signs of art, decoration and symbolism began to emerge.

Although the MSA has not been extensively studied in Mpumalanga, evidence for this period has been excavated from Bushman Rock Shelter, a well-known site situated on the farm Klipfonteinhoek in the Ohrigstad District.

(Source: Peter Delius (ed), 2006, *Mpumalanga – Reclaiming the Past, Defining the Future*)

Middle Stone Age finds (isolated and out of context) may occur along the Wilge River and its tributary, but during the fieldwork phase none have been found.

Late Stone Age

The Later Stone Age (LSA), which occurred from about 20 000 years ago, is signalled by a series of technological innovations and social transformations within these early hunter-gatherer societies. The hunting apparatus now included two important innovations, the bow and the link-shaft arrow. Link-shaft arrows were constructed with a poisoned bone tip, a link and shaft that fell away on impact, leaving the poison tip imbedded in the animal. Other innovations included bored stones, used as digging-stick weights to aid in uprooting tubers and roots; small stone tools, often less than 25 mm in length, used for cutting meat and scraping hides; polished bone tools such as needles; twine made from plant fibre or leather; tortoiseshell bowls; fishing equipment, including hooks and sinkers; bone tools with decoration; high frequencies of ostrich eggshell beads and an increase in ornaments and artwork.

There appears to be a gap in the Mpumalanga LSA record between 9 000 BP and 5 000 BP. This may have to do with the general dearth of Stone Age research in the province, but it also encompasses a period of rapid warming and major climate fluctuation, which may have forced people to seek out more protected and viable environments in this area.

We pick up the Mpumalanga Stone Age record again in the mid-Holocene at the farm Honingklip (HKLP) near Badplaas in the Carolina District. Here two LSA sites were found on opposite sides of a bend in the Nhlazatshe River, about 1km west of its confluence with the Teespruit. The HKLP sites are in the foothills of the Drakensberg, where the climate is warmer than the Highveld but cooler than the lowveld.

(Source: Peter Delius (ed), 2006, *Mpumalanga – Reclaiming the Past, Defining the Future*)

Late Stone Age finds (isolated and out of context) may occur along the Wilge River and its tributary, but during the fieldwork phase none have been found.

Early Iron Age occupation

The expansion of early farmers, who, among other things, cultivated crops, raised livestock, mined ore and smelted metals, occurred in this area between AD 400 and AD 1100. Dates from Early Iron Age sites indicated that by the beginning of the 5th century AD Bantu-speaking farmers had migrated down the eastern lowlands and settled in the Mpumalanga lowveld. Subsequently, farmers continued to move into and between the lowveld and Highveld of Mpumalanga until the 12th century. These Early Iron Age sites tend to be found in similar locations. Sites were found within 100m of water, either on a riverbank or at the confluence of streams. The close proximity to streams meant that the sites were often located on alluvial fans. The nutrient rich alluvial soils would have been favoured for agriculture. The availability of floodplains and naturally wetter soils would have been important for the practice of dryland farming. This may have been particularly so during the Early Iron Age when climate reconstruction for the interior of South Africa suggests decreased rainfall between AD 900 and AD 1100 and again after AD 1450.

Burned daga and plaster with pole impressions found at these early lowveld sites indicated that early farmers lived in fairly permanent agricultural villages. Grindstones and an imprint of millet or domestic Pennisetum in a piece of pottery from an AD 400 site on the northern border of Mpumalanga provided the

first evidence of the cultivation of millet in South Africa. Remains of iron tools indicated that metalworking was also practised. Iron was an important commodity, and ores in the form of haematite and magnetite were either picked up off the surface or mined from shafts dug into the ground. Large cattle byres with pits were also significant features of EIA Highveld sites dating from AD 600.

(Source: Peter Delius (ed), 2006, *Mpumalanga – Reclaiming the Past, Defining the Future*)

Mining and farming activities have transformed the area and no traces of Early Iron Age settlements were found.

Late Iron Age occupation

While there is some evidence that the EIA continued into the 15th century in the lowveld, on the escarpment it had ended by AD1100. The Highveld, particularly around Lydenburg, Badfontein, Sekhukhuneland, Roossenekal, and Steelpoort, became active again from the 15th century onwards. This later phase, termed the Late Iron Age (LIA), was accompanied by extensive stonewalled settlements.

Trade no doubt played an important role in the economy of these early societies. Goods were traded both locally and further afield. Control of resources such as metal provided a solid economic base that was fairly impervious to changes in the environment. Traditional sources of wealth were easily bolstered as metals were used in place of cattle to encourage key marriage alliances, and at the same time used to purchase livestock and other trade items from outside the country.

Local trade consisted of metal, salt, thatch, poles, cattle and grain. Salt was produced from alkaline springs. This valuable commodity could be obtained by paying a tithe to the chief on whose land the salt was located. However, there were examples of mass production where salt was 'balled' for transport and sold for huge profit in salt scarce areas. By the 1700s, with growing trade wealth, economically driven centres of control began to emerge and, following the establishment of Portuguese trade posts, the Mpumalanga landscape became an important thoroughfare for both local and foreign traders.

(Source: Peter Delius (ed), 2006, *Mpumalanga – Reclaiming the Past, Defining the Future*)

Typical late Iron Age features such as stone-walled settlements, potsherds, hut floors, middens and iron artefacts were not found in the study area due to disturbance by farming and mining activities. Isolated artefacts may be found along the river courses, but during the fieldwork phase none were identified.

Colonial settlement

In 1845 the establishment of a Boer settlement at Ohrigstad marked the beginning of a new phase in the history of the Eastern Transvaal. The first Trekkers to settle in the area were the followers of A H Potgieter, who moved from Mooi River in the south-western Transvaal. Trekkers from Natal led by J J Burger joined them. Tensions between the two groups soon surfaced and the difficulties facing the community were compounded by malaria, which decimated the population, and stock disease, which ravaged their herds. In 1848, partly to escape this disease and conflict-ridden community, Potgieter and his followers moved north and founded the town of Schoemansdal. Most of those who remained behind moved to higher-lying lands to the south. The town of Lydenburg became the new centre of the community and white settlers slowly established themselves in the wider region. The Trekkers' political fractiousness did not, however, diminish. In 1856 the Lydenburg community seceded from the Zuid Afrikaansche Republiek (ZAR) – a development that was symptomatic of the fragility of the wider state. Political instability and racial exclusivity – blacks were infamously denied any equality in church or state – however, co-existed with strong traditions of popular democracy. It was not until 1864 that political unity was achieved among the main Trekker communities in the Transvaal and even thereafter the state remained both rudimentary and cash strapped.

Once the Trekkers had established what they saw as their right to the land they set about distributing it among themselves. The land was demarcated into large farms and title deeds were issued. The initial policy was that all burghers (citizens) were entitled to two farms of 3 000 morgen each (about 6 330 acres or 2 564 hectares) from the state. White newcomers to the Transvaal were quickly granted citizenship and the land that went with it. Farms, which were not distributed, remained government property and the ZAR, which battled to raise revenue, increasingly fell back on its principal asset – land.

This profligate distribution of land could not be sustained. From 1860 land grants to burghers were reduced to one 3 000 morgen farm each. After 1866 newcomers no longer received any grant of land and from 1871 this prohibition applied even to the sons of burghers.

The most consistent supply of labour for those farmers able to enforce their claim to ownership of the land came from African families living on their property. The practice that developed in the area was that five families of a group were expected to render unpaid labour service to the landowner but were then spared from further demands on their labour or their produce by officials or neighbouring farmers. Elements of a patriarchal pact underpinned these arrangements as male elders within African communities used their authority over both women and youths to meet the farmers' appetite for workers. Over the subsequent decades the amount of labour that could be extracted from resident workers would be a source of recurring strife. Communities settled on land owned by absentee landlords were often able to secure their tenure through payments of rent in cash or kind, to the considerable irritation of their white neighbours, who believed they should be forced to work for them.

(Source: Peter Delius (ed), 2006, Mpumalanga – Reclaiming the Past, Defining the Future)

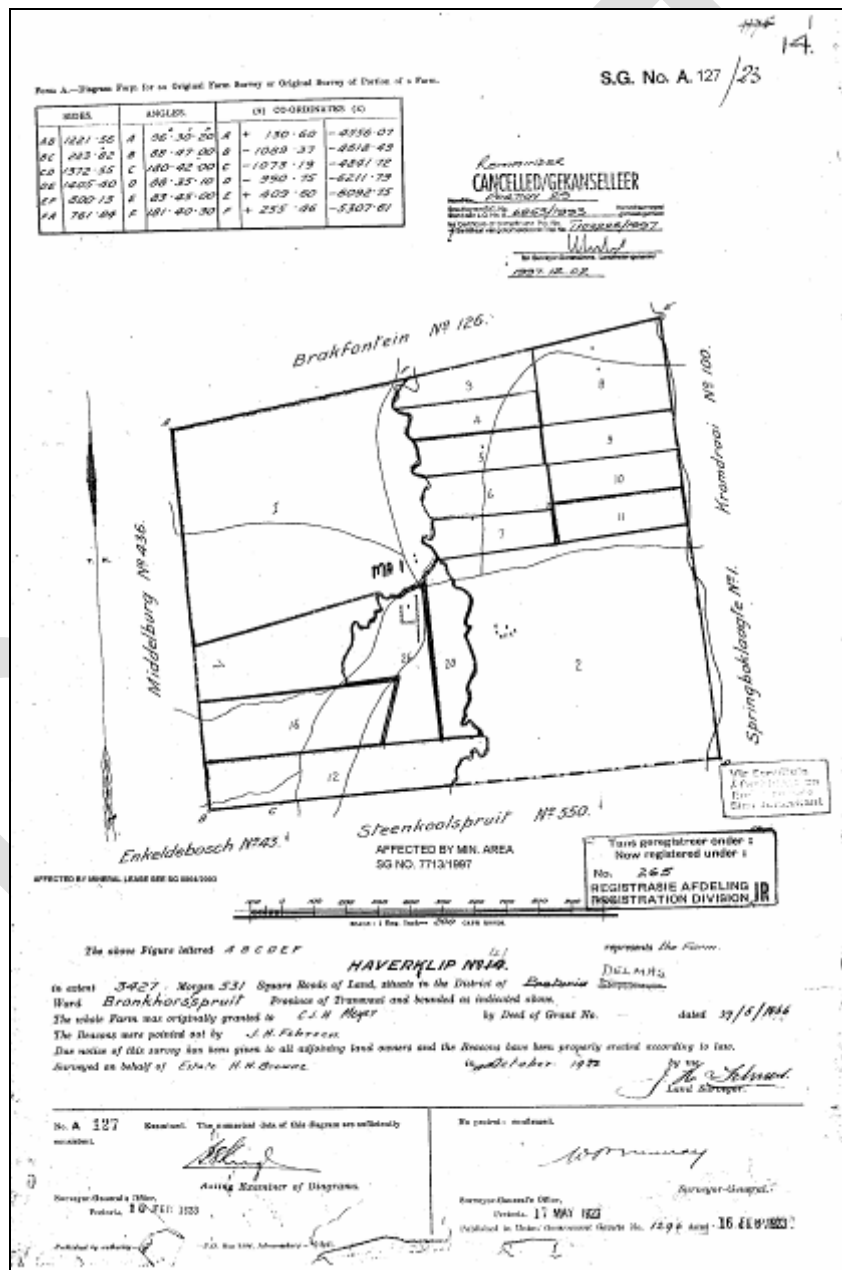


FIGURE 19: Survey diagram (1923) of the farm Haverklip

The farm Haverklip (the origin of the name is uncertain, but it could refer to the occurrence of oats-like vegetation on rocky areas) was granted by the Transvaal government to CJH Meyer in June 1866. In 1970 the western portion was resurveyed and renamed Haverglen.

Some of the farms were divided and subdivided many times over. Each subdivided portion often had a separate farmstead where the owner lived. Black tenant farmers and sharecroppers were allowed to live on the land in return for providing farm labour to the white farmers. They lived in homesteads away from the main farmstead. The homestead remains and large cemetery outside the development areas are associated with this community, as well as the ruin of the farm school.

The cultivated fields, planted trees, ruins and cemeteries are associated with farming history.

Coal mining

Though gold mining has a longer history, coal mining is Mpumalanga's most important industrial activity. Today the province produces 80 per cent of South Africa's coal. Coal mining had already begun in Mpumalanga in 1868 when Thomas Baines recorded that farmers in the Middelburg district were extracting outcropped coal for their own use. However, it was only after the discovery of gold on the Witwatersrand in 1886 that large-scale coal mining was undertaken in the vicinity of the town of Witbank. This initial venture was very short lived. Once coal was discovered around Brakpan and Springs in 1887, the Witbank coalmines closed down. There was no rail link between Witbank and the Rand, which made the cost of using Witbank's coal much higher than that of the closer coal of Springs and Brakpan. Viable commercial coal mining in Mpumalanga, therefore, had to wait until a cost-effective railway link had been established.

Once that had happened and freight rates had dropped to a reasonable level, the Witbank coalfields came on stream. The coal deposits are concentrated around Witbank and run eastwards for about 48 km past the town of Middelburg to the town of Belfast. The coalfields are approximately 40 km wide. The first coalmines – the Douglas, Transvaal and Delagoa Bay, Witbank, and Landau collieries – were all located around Witbank and the quality of coal they produced was higher than that produced on the East Rand and found a ready market on the gold mines, as well as being used for domestic heating. In the 1890s some of the coal was already being exported via Delagoa Bay. The coal was also relatively easy to mine as it lay close to the surface, at a depth of 100 m or less

In the first two decades of the 20th century, coal production expanded rapidly and many new collieries were founded. The price of coal dropped and, in response, a number of coalmines sought to form an association known as the Transvaal Coal Owners Association 'for the purpose of regulating both output and price, and to put an end to what was considered in some quarters as ruinous competition'. Advocates of the move argued that this course of action was justifiable because 'the large amount of capital invested in the companies is entitled to a fair return'. However, there were negative aspects to this development from an economic point of view – a reduction in competition can be bad for efficiency and for workers. But it is also possible that the association enhanced the capacity of coalmines and facilitated further investment and development of the industry. Not all the Witbank collieries joined this association, however. In particular, Sigismund Neumann, who operated a significant colliery, decided it was better to go it alone.

One positive outcome of the formation of the association was that it enabled more efficient interaction with international buyers. As explained by a leading member of the association in 1907: 'instead of each colliery going in for the shipping trade, and the internal trade, the Association is able to allot the export trade orders to certain collieries who have the necessary quality, the railway trade to other collieries who have the quality required for the railway, and the internal trade, that is for industries, to other collieries, who do not perhaps enjoy the same high value of coal'. In this way the Association allowed the coalmines to find a larger market at a lower cost.

By 1946 a modern coal industry was emerging in Witbank and Middelburg. In the Transvaal 34 large collieries produced 99,7 per cent of the province's coal. Of these 23 were in the Witbank-Middelburg coalfield. An additional coal producing area was emerging around the town of Ermelo, where six collieries had been established, though these were small compared with those in Witbank. The coal commission of 1946 reported that Transvaal and Orange Free State collieries had sold more than 20 million tons of coal in that year. Capital invested totalled £11,5 million, yielding an after tax profit of £1,6 million. The commission also established that there were sufficient reserves of high-grade steam coal in the Witbank-Middelburg area to last for well over 100 years. Problems were, however, beginning to emerge with the

way the industry was organised, with some of the smaller collieries in Witbank expressing dissatisfaction with the restrictive practices imposed by the Transvaal Coal Owners Association. They complained that the association, 'raised standards of quality unnecessarily high for the purpose of stifling competition, was inflexible towards competing producers and slow to welcome new members'. Thus we see the problems that emerge when institutional power is used to entrench the position of established businesses.

Between 1940 and 1960 Mpumalanga's coal output increased from 13 million to 25 million tons. But, while the industrialisation of South Africa expanded rapidly in the 1950s and 1960s, which, to an extent, created an expanding internal market for coal, the demand for coal both locally and internationally was being adversely affected by the switch to oil as the dominant form of energy. In South Africa this trend was offset a little by the government's decision to convert coal into oil, but there was nevertheless significant cause for concern. In response, the Anglo American Corporation, the largest company in South Africa and the largest coalmining company in Mpumalanga, undertook initiatives to locate new markets for South Africa's coal. In the mid-1960s three research programmes were initiated within the company: a technical programme to probe the nature and potential of South African coals, a marketing programme in the West European energy market, and, arising from this, a transportation study. As a result of these efforts and additional forms of government support, Mpumalanga's coalmines became increasingly oriented to the international export market. This trend continued through the 1980s despite the imposition of sanctions against South Africa.

(Source: Peter Delius (ed), 2006, *Mpumalanga – Reclaiming the Past, Defining the Future*)

The two collieries on the farms Haverghlen and Haverklip date to the late 1990s and are therefore of no special heritage significance, in contrast to the much older Delmas Colliery.

APPENDIX 2: INFORMATION SOURCES USED IN THIS REPORT

Databases

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Heritage Sites Database, Pretoria
SAHRA database of archaeological impact assessment reports (2009)

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Maps

2628 BB Kendal (1995)
Cadastral farm diagrams of Haverklip and Haverglen
Maps provided by client

Aerial photos

Google Earth (2004)

Other information

Mr Roger Price, Council for Geoscience, Pretoria, August 2009

Jones and Wagener specialist briefing document regarding a heritage specialist study, 20 July 2009

APPENDIX 3: GLOSSARY OF TERMS

Cultural significance (Burra Charter)

Aesthetic, historic, scientific, social or spiritual importance, meaning or noteworthiness for past, present or future generations

Cultural significance is embodied in the place itself (intrinsic significance), its fabric, setting, use, associations, meanings, records, related places and related objects.

Cultural significance is assessed in terms of the following criteria, some of which are embodied in the NHRA:

- Historic value: Material or intangible evidence resulting from changing social, political and environmental circumstances or conditions
- Rarity: Unique or unusual features also possess rarity value, apart from their age. Section 34 of the NHRA provided general protection for all structures older than 60 years. This does not imply that recently erected structures cannot possess rarity, or for that matter cultural value.
- Scientific value: Indicates research potential (the capacity to yield more knowledge)
- Typical: Indicates that the feature is a good example of a certain class or type of heritage resource
- Aesthetic: Other than artistic or architectural expression, aesthetic value can also be evident in craftsmanship, technique, visual cohesion (harmony), visual evidence of permanence and stability, setting etc.
- Technological: Indicates value in terms of a technological achievement
- Personal/Community: Indicates value in terms of association with a certain person, community, organisation or cultural group
- Landmark: A sense of place or belonging involves the physical and visual relationship between a feature and its environment.
- Condition (material integrity): Indicates substantial evidence of authentic fabric with minor degree of lost or obliterated fabric; also refers to a structure's restoration potential
- Sustainability: The potential for lasting economic viability (use) and the perpetuation of the original use or part thereof.

Heritage resources/features (NHRA)

Any place or object of cultural significance, including:

- (a) places, buildings, structures and equipment of cultural significance;
- (b) places to which oral traditions are attached or which are associated with living heritage;
- (c) historical settlements and townscapes;
- (d) landscapes and natural features of cultural significance;
- (e) geological sites of scientific or cultural importance;
- (f) archaeological and palaeontological sites;
- (g) graves and burial grounds, including—
 - (i) ancestral graves;
 - (ii) royal graves and graves of traditional leaders;
 - (iii) graves of victims of conflict;
 - (iv) graves of individuals designated by the Minister by notice in the *Gazette*;
 - (v) historical graves and cemeteries; and
 - (vi) other human remains, which are not covered in terms of the Human Tissue Act, 1983 Act No. 65 of 1983);
- (h) sites of significance relating to the history of slavery in South Africa;
- (i) movable objects, including—
 - (i) objects recovered from the soil or waters of South Africa, including archaeological and palaeontological objects and material, meteorites and rare geological specimens;
 - (ii) objects to which oral traditions are attached or which are associated with living heritage;
 - (iii) ethnographic art and objects;
 - (iv) military objects;

(v) objects of decorative or fine art;
(vi) objects of scientific or technological interest; and
(vii) books, records, documents, photographic positives and negatives, graphic, film or video material or sound recordings, excluding those that are public records as defined in section 1(xiv) of the National Archives of South Africa Act, 1996 (Act No. 43 of 1996).

Heritage significance (NHRA)

(a) its importance in the community, or pattern of South Africa's history;
(b) its possession of uncommon, rare or endangered aspects of South Africa's natural or cultural heritage;
(c) its potential to yield information that will contribute to an understanding of South Africa's natural or cultural heritage;
(d) its importance in demonstrating the principal characteristics of a particular class of South Africa's natural or cultural places or objects;
(e) its importance in exhibiting particular aesthetic characteristics valued by a community or cultural group;
(f) its importance in demonstrating a high degree of creative or technical achievement at a particular period;
(g) its strong or special association with a particular community or cultural group for social, cultural or spiritual reasons;
(h) its strong or special association with the life or work of a person, group or organisation of importance in the history of South Africa; and
(i) sites of significance relating to the history of slavery in South Africa.

Historic period

Since the arrival of the white settlers - c. AD 1840 in this part of the country

Impact

A description of the effect of an aspect of the development on a specified component of the biophysical, social or economic environment within a defined time and space

Impact assessment

Issues that cannot be resolved during screening (Level 1) and scoping (Level 2) and thus require further investigation

Intangible heritage

Defined in terms of the UNESCO Convention for the Safeguarding of the Intangible Cultural Heritage (2003) as:

- Oral traditions and expressions, including language as a vehicle of the intangible cultural heritage;
- Performing arts;
- Social practices, rituals and festive events;
- Knowledge and practices concerning nature and the universe;
- Traditional craftsmanship.

The "intangible cultural heritage" means the practices, representations, expressions, knowledge, skills – as well as the instruments, objects, artefacts and cultural spaces associated therewith – that communities, groups and, in some cases, individuals recognize as part of their cultural heritage. This intangible cultural heritage, transmitted from generation to generation, is constantly recreated by communities and groups in response to their environment, their interaction with nature and their history, and provides them with a sense of identity and continuity, thus promoting respect for cultural diversity and human creativity.

Visual and social impact assessments as part of an HIA are directly associated with intangible cultural heritage.

Iron Age

Early Iron Age (EIA)	AD 200 - AD 1000
Late Iron Age (LIA)	AD 1000 - AD 1830

Issue

A question that asks what the impact of the proposed development will be on some element of the environment

Maintenance

Keeping something in good health or repair

Management actions

Actions that enhance benefits associated with a proposed development or avoid, mitigate, restore, rehabilitate or compensate for the negative impacts

Preservation

Conservation activities that consolidate and maintain the existing form, material and integrity of a cultural resource

Reconstruction

Re-erecting a structure on its original site using original components

Rehabilitation

Re-using an original building or structure for its historic purpose or placing it in a new use that requires minimal change to the building or structure characteristics and its site and environment.

Restoration

Returning the existing fabric of a place to a known earlier state by removing additions or by reassembling existing components

SAHRA - South African Heritage Resources Agency

Stone Age

Early Stone Age (ESA)	2 000 000 - 150 000 Before Present
Middle Stone Age (MSA)	150 000 - 30 000 BP
Late Stone Age (LSA)	30 000 - until c. AD 200

Value

Worth, conservation utility, desirability to conserve etc in terms of physical condition, level of significance (importance), economy (feasibility), possible new uses and associations/comparisons with similar features elsewhere

**SOCIO-ECONOMIC IMPACT ASSESSMENT WITH COGNISANCE OF TOURISM
IMPACTS**
As part of the
ENVIRONMENTAL IMPACT ASSESSMENT PROCESS
For the
**KUYASA INDEPENDENT POWER PRODUCER'S PROPOSED POWER GENERATION
PLANT IN THE DELMAS AREA, MPUMALANGA PROVINCE**

DRAFT SCOPING REPORT

MAY 2010



Prepared by:

MasterQ Research

Reg. No.: 2003/002350/07

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EXPERIENCE RECORD

This report was compiled by **Ms Nonka Byker** (social specialist) and **Mr Raoul de Villiers** (economic specialist), both of **MasterQ Research**.

Nonka holds a B.Psych (Adult Mental Health) from the University of Pretoria and is a social impact assessment specialist with approximately 4 years experience in this field. She specialises in the assessment of potential social impacts, which includes the collection and analysis of data and superimposing a proposed project on a baseline social profile to determine the potential social impacts from which mitigation measures can be developed. In total she has approximately 11 years experience in the social development field, of which 7 years were spent as a public participation consultant. Ms Byker is registered with the Health Professions Council of South Africa (HPCSA) and is a member of the International Association for Impact Assessment South African Affiliate (IAIAsa).

Raoul holds two Masters Degrees in Economics and Management and is a specialist in the manner in which large project based work is planned, with a special focus on determining the business and economic viability of projects. He is also is an experienced Project Manager and has assisted large corporations and government departments with the execution of capacity building, restructuring and systems development projects. He has had a strong strategic focus, being involved in projects that have an organisation wide or industry wide impact.

Some of the Social and Socio-Economic Impact Assessments that MasterQ Research have been involved with as social and economic specialists, include amongst others, the following projects:

Date	Project	EAP
<i>July 2009 - ongoing</i>	Social Impact Assessment for the proposed Trekkopje Mine access road in the Arandis area, Erongo Region, Namibia	Turgis Consulting for AREVA Resources
<i>July 2009 – ongoing</i>	Social Impact Assessment and Micro Economic Impact Assessment for the proposed 140MW Open Cycle Gas Turbine (OCGT) demonstration plant and associated Underground Coal Gasification (UCG) plant in the Amersfoort area, Mpumalanga Province	Bohlweki-SSI Environmental for Eskom Generation & Transmission
<i>March 2009 – ongoing</i>	Socio-Economic Impact Assessment on the Bus Rapid Transport (BRT) system, section 6 along Oxford Road in the City of Johannesburg, Gauteng Province	Bohlweki-SSI Environmental for Eskom Generation & Transmission
<i>February 2009</i>	Socio-Economic Impact Assessment for the proposed town development with associated infrastructure and services in Steenbokpan, Limpopo	Enviro-Solution for the Steenbokpan Development

	Province	Consortium
<i>January 2009 ongoing</i> -	Social Impact Assessment for the establishment of a Coal Fired Power Station, and its associated infrastructure (a substation and transmission power lines) in the Musina area, Limpopo Province	Arcus Gibb for Mulilo Power
<i>January 2009 ongoing</i> -	Social Impact Assessment for the proposed upgrading of the existing Welgedacht Water Care Works to facilitate a capacity extension of up to 100ml/d, in the Ekurhuleni Metropolitan Municipality area, Gauteng Province	Savannah Environmental for ERWAT
<i>January 2009 ongoing</i> -	Social Impact Assessment for the proposed provision of wastewater infrastructure to improve quality of effluent discharge from the Hartebeesfontein Water Care Works, in the Ekurhuleni Metropolitan Municipal area, Gauteng Province	Savannah Environmental for ERWAT
<i>November 2008 January 2009</i> -	Economic Impact Assessment for the proposed Kyalami Transmission Project	Savannah Environmental for Eskom Generation & Transmission
<i>October 2008 November 2008</i> -	Social Impact Assessment for the proposed Bravo Integration Project, Govan Mbeki Local and Delmas Local Municipalities, Mpumalanga Province; Kungwini Local Municipality, City of Tshwane, Ekurhuleni Metro and City of Johannesburg, Gauteng Province	Cymbian Socio-Environmental Consultants for Eskom Generation & Transmission
<i>April 2008 – April 2009</i>	Social Impact Assessment for the proposed liquid fuels transportation infrastructure from the Milnerton refinery area to the Ankerlig power station in the Atlantis Industrial area, City of Cape Town, Western Cape	Bohlweki-SSI Environmental for Eskom Generation & Transmission

DECLARATIONS OF INDEPENDENCE

The Independent Social Specialist

I, **J.W. NONKA BYKER**, declare that I –

- act as the Independent Social Specialist in this application for the proposed construction and operation of the Kuyasa Independent Power Producer's (IPP) power generation plant in the Delmas area of the Mpumalanga Province;
- do not have and will not have any financial interest in the undertaking of the activity, other than remuneration for work performed in terms of the Environmental Impact Assessment Regulations, 2006;
- have and will not have any vested interest in the proposed activity proceeding;
- have no, and will not engage in, conflicting interests in the undertaking of the activity; and
- will provide the competent authority with access to all information at my disposal regarding the application, whether such information is favourable to the applicant or not.



Signature of the Specialist

MasterQ Research (Pty) Ltd.

Name of company

2010-05-14

Date

The Independent Economic Specialist

I, **RAOUL DE VILLERS**, declare that I –

- act as the Independent Economic Specialist in this application for the proposed construction and operation of the Kuyasa Independent Power Producer's (IPP) power generation plant in the Delmas area of the Mpumalanga Province;
- do not have and will not have any financial interest in the undertaking of the activity, other than remuneration for work performed in terms of the Environmental Impact Assessment Regulations, 2006;
- have and will not have any vested interest in the proposed activity proceeding;
- have no, and will not engage in, conflicting interests in the undertaking of the activity; and
- will provide the competent authority with access to all information at my disposal regarding the application, whether such information is favourable to the applicant or not.



Signature of the Specialist

MasterQ Research (Pty) Ltd.

Name of company

2010-05-14

Date

EXECUTIVE SUMMARY

In accordance with the South African government's decision that future power generation capacity should be divided between Eskom and Independent Power Producers (IPP), Kuyasa Mining Ltd (Kuyasa), as the current owner of coal reserves suitable for power generation, has submitted a Statement of Qualification (SOQ) to Eskom and has been conditionally pre-qualified to participate in the base load IPP Programme. Kuyasa proposes to develop a 600MW mine-mouth power generation facility with possible future expansion to 2,400MW.

Five potential sites were evaluated on general criteria required to support the proposed power station, three of which were deemed technically feasible and that will be assessed during this Environmental Impact Assessment (EIA) process, as the proposed project would require multiple environmental permits and authorisations from national, provincial and municipal governmental agencies for various construction and operational activities.

The sites under investigation are all located in close proximity to Kuyasa's Delmas and Ikhwezi Colliers, approximately 16km southeast of the town of Delmas in the Mpumalanga Province. A number of surface infrastructure features are planned, covering an area of 200ha. An additional area will be used for ash disposal. Current land-use activities in the area include mining and farming.

MasterQ Research (Pty) Ltd was appointed as specialised social and economic sub-consultants to the Environmental Assessment Practitioner (EAP), Jones & Wagner. This particular report details the findings of the scoping phase as part of the Socio-Economic Impact Assessment (SIA) and includes an assessment of the possible future tourism potential of the area.

The definition of a SIA as defined by Vanclay (2002) gives an understanding of the backdrop against which this SIA was conducted. According to this definition, a **social impact assessment** is *"the process of analyzing (predicting, evaluating and reflecting) and managing the intended and unintended consequences on the human environment of planned interventions (policies, programmes, plans and projects) and any social change processes invoked by those interventions so as to bring about a more sustainable and equitable biophysical and human environment."*

The economic assessment (EA) in turn aims to examine all aspects that might contribute to the creation (gain) and destruction (loss) of individual, community, regional or national resources. This gain or loss in resources is most easily understood when it is quantified and expressed in monetary value and therefore the EA relies mostly on quantitative data. However, many of the underlying causes of economic effects like perception, opinion, and sentiment cannot be easily quantified and therefore qualitative data is used to support

conclusions in the EA. In most cases a series of options exist, which have different implications in terms of gain and loss and these must be compared to determine a minimum negative and maximum positive economic impact.

The main objectives of the Scoping Phase are to identify issues and concerns to guide the ensuing detailed assessment that will take place during the Impact Assessment Phase, and to provide a framework within which the assessment will be undertaken. Secondary objectives include the following:

- Gain an understanding of the proposed project, including the nature and timeframe of the activities that will take place across the lifespan of the project (i.e. construction, operation and maintenance, and decommissioning);
- Obtain information on the baseline socio-economic and tourism profile characterising the study area in terms of the following socio-economic processes (cf. Vanclay, 2002):
 - * **Geographical processes:** land use patterns, including tourism;
 - * **Demographical processes:** the composition of the local community;
 - * **Economical processes:** the way in which people make a living and the economic activities in a society;
 - * **Institutional and Legal processes:** the role and efficiency of the local authority and other service providers in the area in terms of their capacity to deliver services to the local area; and
 - * **Socio-cultural processes:** The way, in which humans behave, interact and relate to each other, their environment, and the belief and value systems that guide these interactions.
 - * Potential **tourism** impacts will be identified and described for each of the above change processes, where relevant.
- Identify and describe how these processes might change as a result of the proposed project;
- Identify and describe the potential socio-economic and tourism impacts that may occur as a result of the change processes brought about by the proposed project;
- Identify key issues and impacts of significance that would have to be addressed during the EIA phase, which includes the identification of further information requirements; and
- Describe the proposed studies for the Impact Assessment Phase that would ultimately address the identified information requirements and result in a detailed assessment of the potential impacts.

For the purposes of this scoping study the impact variables were categorised in terms of change processes. A **change process** can be defined as change that takes place within the receiving environment as a result of a direct or indirect intervention from an outside source. A potential **impact** follows as a result of the change process. However, a change process can only result in an impact once it is experienced as such by an individual or a community on a physical and/or cognitive level.

The infrastructure development associated with the proposed project is located within the Delmas Local Municipality, which forms part of the Nkangala District of the Mpumalanga Province.

According to the Mpumalanga Province Growth and Development Strategy (MPGDS), the economic growth within the province averaged around 2.5% between 1996 and 2001, increasing to an average of around 4.3% between 2004 and 2007. This places the province more or less on par with the country's Geographic Domestic Product (GDP) growth. In 2004 the main economic sectors in the province were the mining, energy, and manufacturing industries that, collectively, comprised approximately 60% of the province's Gross Value Addition. Despite these industries being the largest, they only provided employment to around 20% of the province's population. During 2005 the energy sector was replaced by community services as a key industry, contributing approximately 20% to the province's employment rate.

Mpumalanga is also home to large coal deposits and for this reason most of the country's coal fired power stations can be found in the province (eight of the eleven operational coal fired power stations are located in Mpumalanga). These power stations contribute approximately 70% of the country's total generated power. Linked to the coal deposits is mining, which contributes approximately one fifth of Mpumalanga's Gross Geographic Product (GGP). The coal resources are mostly situated in the western and south-western parts of the province and are used to sustain the coal-fired power stations between Witbank, Standerton, Piet Retief and Carolina. Coal is further used to sustain the petrochemical plants in the province.

Geographical Processes

Geographical processes relate to land use patterns, both established and planned. Land use is defined as "... the human modification of the natural environment or wilderness into a built environment such as fields, pastures, and settlements."¹ During the orientation site visit in March 2010, the following land use trends were identified within a 5km radius of the proposed sites:

- Small-scale human settlement (scattered households);
- An informal settlement along the R50, approximately 1km west of site alternative 2;
- Commercial farming (mostly maize), but some cattle were also observed;
- Mining activities; and
- Commercial and retail activities.

¹ www.wikipedia.org.za/wiki/Land_use.html

The Delmas Local Municipality covers an area of approximately 1,570km², of which more than 60% are utilised for agricultural activities (Delmas IDP, 2009/10). The municipal area further consists of a mixture of urban and peri-urban areas and includes the towns of Delmas, Botleng, Eloff and Sundra. In addition to these formal urban areas, the IDP makes mention of a number of villages scattered around farms in the area. It further states that there has been a high migration rate in the past couple of years from these villages into areas such as Botleng, and Botleng Extensions 3 and 4, causing further expansion of informal settlements in these areas. In 2009/10, the Delmas Local Municipality estimated that informal settlements around the area constituted approximately 5,000 households, most of which were located in and around Botleng.

In terms of the specific site alternatives, the following land uses were observed during the site visit undertaken in March 2010:

- **Site Alternative 2:** Crop farming (maize). At the time of the study it was unclear who the landowner of this farm portion is. If Kuyasa is the landowner, it is assumed that the land in question is leased to the current occupier, but the terms of such a lease agreement was not known. No houses or other structures were observed within the confines of the site.
- **Site Alternative 3:** Mining activities were observed on parts of the site, but it was not clear whether it was open cast mining or just a storage area. It is believed that the site belongs to Kuyasa and that the activities taking place on the site is part of their operations. One structure was observed within the confines of the site, but it was unclear from the aerial photograph what the structure is or whether or not it has been abandoned.
- **Site Alternative 5:** The site appears to be an open field located adjacent to Kuyasa's Delmas Colliery. At the time of the study the site was covered in cosmos flowers, illustrating why Delmas and surrounds form part of the Mpumalanga Tourism and Park Agency's so called *Cosmos Country*. No houses or structures were observed within the confines of the site.

The development proposals for the area as contained in the SDF and summarised in the IDP mainly relate to development along major linear spatial features such as national and provincial roads.

The identification of geographical (land use) change process from a social perspective looks at how the presence of the proposed power station and associated infrastructure might change the behaviour/lives of land owners and/or land users in the project area. This is done by considering actual or perceived land use changes, whether on a temporary or permanent basis.

- If site 2 is selected, the presumed lease agreement with the occupier will be terminated and the existing crops will be cleared from the area. This will have an immediate

economic impact on the land occupier in question. It will reduce the crop yielding ability of maize production in the country as a whole, but due to the size of the land in question, this is not deemed to be a significant reduction. Immediate land use changes are not foreseen on sites 2 and 5 as the activities on these sites are already mining related.

- The construction and operation of the proposed power station and associated infrastructure (i.e. the presence of such infrastructure in the area) should form part of the local municipality's future spatial development planning and can therefore influence the placement of certain land uses to a certain extent.
- The presence of a power station might detract from the tourism experience, which in turn might yield an economic impact if visitors choose to rather visit more unspoilt areas. However, this impact is highly dependent on the reasons why tourists visit a certain area, which at the time of the study was unclear.

Demographical Processes

Demographical processes relate to the size and composition of a community. The baseline demographical profile includes an overview of demographical aspects such as the population size, the racial composition, age, gender and the educational profile of the population. It also provides a broad overview of household arrangements.

In 2001, Delmas had a total population of 56,199 people. The population size decreased by some 5,747 people between 2001 and 2007, so that, in 2007, the population size was estimated at around 50,452 people. It is unclear why so many people left the area or where they went to, but presumably the majority left for the bigger urban areas either within the province itself or for neighbouring Gauteng in search of employment opportunities. In 2007 the population density in the area was around 32 persons per km², which is indicative of the mostly rural nature of the area.

Delmas has a fairly young population and in 2007 well over a third of the population (42.0%) were below the age of 15. The economically active population group (defined by StatsSA as the ages between 15 and 65) accounts for just over a half (54.1%) of the total population. It is noteworthy that the biggest decline in population between 2001 and 2007 was in the economically active population (by some 8,562 people), whereas the biggest increase in the population during the same period was in the age category 0-14 (by some 3,247 people). This tie in with the possibility that economically active individuals are leaving the area in search of employment elsewhere.

In 2001, Delmas had a total of 13,949 households, with an occupancy rate of approximately 4 persons per household. Despite the outflow of people, the number of households increased so that in 2007, Delmas had a total of 15,130 households, reducing the occupancy rate to 3.3 persons per household.

In 2001, a quarter (25.9%) of the population aged 20 years and older had no form of schooling. Coupled with those individuals who only completed some form of primary education (a further 28.3%), this means that, in 2001, more than half (54.2%) of Delmas' population had limited educational skills, which in turn would hinder their employability on the general job market. A further quarter (27.1%) of the population completed some form of secondary education, which could enhance their employability, but it is believed that it would only slightly increase their chances of finding employment. Only 14.0% of the total population completed Grade 12 with a further 4.7% who went on to obtain a tertiary qualification. The situation only improved marginally between 2001 and 2007: Although the number of people who had no form of education decreased drastically to 10.7%, those who completed Grade 12 also decreased to 12.7%, whereas those who only completed some form of primary or secondary education still accounted for more than two thirds of the population (71.8%).

The construction of the proposed power station and associated infrastructure will lead to a (mostly temporary) change in the number and composition of the population within the affected local area, which in turn could lead to economic, land use, and socio-cultural change processes. The following change processes are expected:

- It is expected that the construction and operation of the proposed power station and its associated infrastructure (including mine expansion, if required) will lead to an influx of people to the area. Based on the conservative estimate of around 1,000 new employment opportunities, this would represent an approximate 2% increase in population, which is more than double the current population growth rate of 0.58% (Delmas IDP, 2009/10). A change in the number and composition of the local population can lead to economic, health, safety and social-wellbeing impacts. However, the impact is expected to significantly decrease during the operation and maintenance phase as the size of the operational team will be considerably smaller than that of the construction team.
- The presence of the construction team and the prospect of employment might reverse the outflow of people, i.e. an influx of unemployed work seekers is expected. It is difficult to predict what the impact would be as a result of this, as it is coupled to the number of people who return to the area. However, as is the case with the more controlled influx of people due to formalised employment, the influx of unemployed work seekers can lead to economic, health, safety and well-being impacts. It can further lead to the expansion of informal settlements, which can amplify the expected impacts.
- It appears that the biggest cluster of households and other structures are located around site 3, to the north, east and south of the site. This is also the only site where there is a structure located within the site's footprint, but at this stage it is unclear what the structure is used for and whether or not it is inhabited. Although households and structures immediately surrounding the site might not be directly affected, indirect impacts (e.g. visual impacts, air quality impacts, etc.) are likely due to the close proximity of the power station to these households/structures. Depending on the extent and intensity of such indirect impacts, the relocation of these households/structures might become necessary.

The relocation of households' impacts on the affected households' way of life – but this is to a large degree influenced by the affected family's level of attachment to their environment, which in turn is influenced by the family history, years spent in the area, etc.

Economical Processes

Economical processes relate to the way in which people make a living and the economic activities within that society. The employment status within any given area gives an indication of the economic stability of such an area and also serves as an indicator of such an area's general well-being.

The economic growth rate of the Nkangala District area was on average 3% per year between 1996-2003, compared to the 2% for the Mpumalanga Province and the national average of 2.5%. Nkangala contributed 3.32% to the national economy in 2003, compared to the 6.87% contribution by the Mpumalanga province to the national economy (Department of Cooperative Governance and Traditional Affairs, 2005). The overall economic growth for the Nkangala District area declined to 1.9% during the period 2005-2007 (Mpumalanga Provincial Government, 2008).

The main sector in the Delmas area is trade and hospitality followed by agriculture. Both mining and manufacturing do however play a major role, contributing just over 10% each. The electricity, gas and water industry contributes less than 5% of the local economy despite the fact that Eskom operates a number of large power stations in the district area that comprise a large portion of South Africa's electricity generation capacity.

When local employment figures are considered in the context of provincial and district information it seems that employment levels in the Delmas area are higher than that of either the district or the province. Better local employment may be due to the migration of unemployed work seekers to larger economic centres such as Gauteng or the Witbank/Middelburg area, a phenomenon which is often associated with rural areas with limited opportunities.

Although fewer households in Delmas has no form of income compared to the district as a whole, Delmas is still characterised by poorer households given the fact that by far the majority of households earn less than minimum standard (\leq R 20,000 per annum), including a vast number of households who have no income whatsoever. Given the increased employment rate in the area between 2001 and 2007, the household income profile might have changed significantly in recent years, although Community Survey 2007 did not include household income as a variable.

Economic activity on site alternatives 2 and 3 is limited to maize farming on unused and undeveloped sections. There seems to be no cultivation agriculture activities found on site

alternative 5. The project proponent, Kuyasa², indicated that the land on which the sites are located belongs to Billiton Energy Coal South Africa (BECSA) and that the land is currently leased to users such as the mine and farmers. Grazing cattle was spotted south of site alternative 3, but they may graze on other sites as well. The exact nature of the lease agreements and the rights of farmers to the sites is not known and must be investigated further.

Residents on the northern border of Site 3 (who also seem to be farming in the area) have set up a small kiosk and fast food restaurant near their residence and seem to benefit from business as a result of passing traffic on the R50 due to mining and power generation activities in the area. A lodge is in operation near the current Delmas colliery to the west of site alternative 2. The economic activity of local residents and the lodge are unverified at this stage and need to be confirmed during the impact assessment phase.

Economical change processes relate to the changes brought about to the employment and general economic profile of an area as a result of the introduction of any development. For example, job opportunities might be created as a result of the construction and maintenance of the proposed power station and associated infrastructure. Employment creates a source of income, which in turn enables the employed individual to access services as a support mechanism for his/her family. The following change processes are expected:

- The project has the potential of “securing” economic activity by assisting in removing supply constraints if Eskom generation activities result in a supply shortfall.
- The proposed project is likely to contribute to economic recovery by creating economic injections, supply opportunities and increased consumer spending both during construction as well as operations. A large component of construction costs would involve the purchase of overseas equipment, but South African construction firms will likely benefit to a large degree. The level on local beneficiation from construction is uncertain and requires further investigation. There is a greater chance that the operational phase will supply opportunities that will be regional or local in nature due to the existing power generation industry.
- The proposed project will likely improve the current baseline profile through the creation of employment opportunities. Increased household spending and upstream industry activity will result in indirect employment. Employment will in turn result in better income earnings and an improved local and regional income profile. The exact level to which local opportunities will be created must be investigated further.
- The proposed project will probably impact on farming activities if site 2 or 3 is chosen by denying access to current rented farmland. This will in turn reduce local agricultural production and farmer income from agricultural activities. In respect to this impact there are indications that site 5 may be a preferred site.

² Mr M Saliwa of Kuyasa, personal communication

- The proposed project may result in increases in revenue for businesses in close proximity that supply essential services, such as accommodation, catering and basic consumer products. Negative impacts are expected to be minimal as the establishments are already located in an area of industrial development close to the Delmas coal mine. It is thus unlikely that these businesses' customer patronage is based on a pristine environment – however, this will have to be confirmed during the impact assessment phase.

Institutional and Legal Processes

Institutional and Legal processes refer to the role and efficiency of the local authority and other service providers in the area in terms of their capacity to deliver a quality and uninterrupted service to the local area.

Although the overall number of households in the Delmas area who make use of electricity for lighting has increased between 2001 and 2007, large segments of the population still make use of coal for cooking and heating purposes. At least three quarters of households within Delmas have their refuse removed once a week, which is much higher than the standard for the district where the majority of households make use of their own (informal) waste disposal sites, which means that waste is not properly stored or treated, which in turn leads to unhealthy living conditions. At least a quarter of households in Delmas access to water and sanitation services are below RDP standard.³

According to the Delmas IDP (2009/10), water in the area is mostly supplied from boreholes. Numerous developments in the area, including residential and industrial developments, have placed an enormous demand on the water supply, so much so that the demand for water now exceeds the supply (the demand is estimated at 18 MI/day, while the boreholes are only able to supply 16 MI/day). Currently the Rand Water supply is used to augment the water supply to Delmas, but this in turn had a negative effect on the water supply in certain areas, e.g. Eloff Agricultural Holdings.

Two sewer plants serve the Delmas area, one within Delmas itself with a capacity of 5 MI/day and the other in Botleng with a capacity of 4 MI/day. Both these plants are over capacity, with the Delmas plant receiving up to 8 MI/day and the Botleng plant receiving approximately 6 MI/day. This has the effect that waste water is not treated properly and that discharge from these plants into rivers and streams are not on par with the standards required in the National Water Act (Act 36 of 1998). The IDP ascribes the overload of the sewerage system to the numerous new residential and industrial developments in the area.

³ RDP standard in terms of water supply implies piped water to a dwelling or within 200m of a dwelling, whereas sanitation services in line with RDP standard is defined as toilet facilities connected to a waterborne sewerage system or at least a ventilated pit latrine.

The Delmas Local Municipal area is serviced by 2 police stations, one in Delmas and one in Sundra. According to the South African Police Service's website, the ratio of police officers in the Mpumalanga province as at February 2010 was 1 police officer for every 406 citizens. On a population size of 50,452 theoretically this means that there should be approximately 124 police officers deployed throughout the area.

Although it appears as if crime is on the decline in both areas, in general Delmas had almost double the crime rate than neighbouring Sundra. During the period under review a total of 2,390 crimes against the person were reported in Delmas, whereas only 754 cases were reported in Sundra. As far as property related crimes are concerned, a total of 2,375 cases were reported in Delmas and 1,071 cases in Sundra.

According to the Delmas IDP (2009/10), the area is serviced by one hospital, three primary health care clinics and three mobile clinics, of which only one is operational. In addition there are six private general practitioner practices and one private clinic. There are a total of 14 non-governmental organisations operating within the public health sector, but it appears as if most of these NGOs operate within the realm of HIV/AIDS care.

Institutional and Legal Change Processes assesses the way in which a development of this nature could change the face of service delivery in the affected area and how this change in turn could affect the quality of life of local residents. The following change processes are expected:

- Additional demand on municipal services, such as water, sewerage and roads could impact on health and safety if such services are not available.
- It is foreseen that the proposed development could enhance the equal access of households to at least some basic services such as electricity as a result of the broadening of the local network. The availability of additional services in turn can lead to economic growth.
- An influx of unemployed job seekers can lead to the expansion of informal settlements. This can impact on health (as services are not provided or further taxed) and safety (an increase in crime is possible as people do not find employment and become frustrated with their living conditions).
- The influx of job seekers might lead to an increase in opportunistic crime. The health and emergency services in the area might not be able to cope with accidents and emergencies, which will have obvious health impacts.

Socio-Cultural Processes

Socio-cultural processes relate to the way in which humans behave, interact and relate to each other and their environment, as well as the belief and value systems which guide these interactions.

Mpumalanga has been inhabited since earliest times, with Middle Stone Age implements being found in the province dating back some 100,000 BC. It is also believed that red ochre was mined in the area around 46,000 BC. Nguni tribes in the area forged friendships with other clans and through marriage, new clans were formed. In those early years the provincial area was characterised by warrior clans who was only concerned for their own safety and that of their cattle.

Little information could be obtained on the history of Delmas itself. What is known is that locals refer to the area as Botleng, meaning “beautiful”. The area is an important agricultural and milling centre. The town of Delmas was laid out on a small farm, Witklip, in 1907, from which it also obtained the name Delmas (*de le mas*), which means “of the small farm” in French. The town is mostly surrounded by farmland that produces maize, wheat, potatoes and chickens.

As socio-cultural processes recount the way in which humans behave, interact, and relate to each other and their environment, socio-cultural change processes in turn looks at the way in which the proposed developments can alter the interactions and relationships within the local community. The following change processes are expected:

- It is possible that construction workers and job seekers have a different cultural background and dissimilar social practices than local residents, which can lead to the development of conflict situations that impact on community cohesion and social well-being.
- The construction and operation of the power station and associated infrastructure might affect people’s relationship with their environment (their sense of place) as the presence of such infrastructure changes the landscape from unspoilt to ‘spoilt’.
- Although it is not foreseen that the development per se will alter family cohesiveness and the traditional role played by families, the introduction of strangers to the area might have this affect. This can happen when social integration is hindered (through conflict) and also because migratory workers have a certain legacy when it comes to establishing relationships that can increase the risk of spreading HIV and other contagious infections. Apart from the obvious health implications, HIV infection in particular also has an economic impact.

Conclusions and Recommendations

At this stage, no issues emerged that can be considered as fatal flaws from a social perspective. Although there are currently no fatal flaws, the following issues are highlighted:

- At least two of the three alternative sites proposed is currently being used for agricultural purposes (mostly crop farming, but also to some extent for grazing). Agriculture plays an

important economic role in the local area, although it is not the most dominant economic sector of employment.

- A number of development activity corridors and economic activity nodes are planned in the area. These corridors and nodes are mostly concentrated around major linear spatial features. Planned residential developments mostly concentrate on in-fill developments of existing residential areas, none of which are in close proximity to the proposed project sites.
- The Delmas IDP (2009/10) states that, to date, the tourism potential of the Delmas area has not been fully developed and that tourism development is one of the 'untapped areas' in Delmas. This might mean a considerable effort in future to develop the tourism market in the area, an effort which might be affected by the presence of a coal-fired power station (although this is highly dependent on the tourism niche market that will be catered for).
- The presence of the construction team and the prospect of employment might reverse the outflow of people, i.e. an influx of unemployed work seekers is expected. It is difficult to predict what the impact would be as a result of this, as it is coupled to the number of people who return to the area. However, as is the case with the more controlled influx of people due to formalised employment, the influx of unemployed work seekers can lead to economic, health, safety and well-being impacts. It can further lead to the expansion of informal settlements, which can amplify the expected impacts.
- The current world-wide emphasis that is being placed on 'cleaner' energy sources might lead to significant public opinion and increase the likelihood of social mobilisation against the project as the project proposes the more 'traditional' form of energy generation through the use of coal.
- The baseline municipal profile suggests that municipal and other services and infrastructure is inadequate. Any additional pressure on these services can have far reaching effects, e.g. the inconsistency of health and emergency services can result in help not being available when needed.
- According to the Delmas IDP (2009/10), water in the area is mostly supplied from boreholes. Numerous developments in the area, including residential and industrial developments, have placed an enormous demand on the water supply, so much so that the demand for water now exceeds the supply (the demand is estimated at 18 MI/day, while the boreholes are only able to supply 16 MI/day).
- Although it is not foreseen that the development per se will alter family cohesiveness and the traditional role played by families, the introduction of strangers to the area might have this affect. This can happen when social integration is hindered (through conflict) and also because migratory workers have a certain legacy when it comes to establishing relationships that can increase the risk of spreading HIV and other contagious infections. Apart from the obvious health implications, HIV infection in particular also has an economic impact.

Initial indications are that the local negative economic impact will not be extensive due to the limited activity occurring on the properties and due to current ownership arrangements. Economic benefits will most likely be regional and national in nature due to the location of the project close to Gauteng.

Most of the expected change processes and potential impacts that was identified during the course of the study will result in category 1 impacts, i.e. these impacts are expected to occur irrespective of the site selected in the end. Where category 2 impacts have been identified, the difference between the various alternatives is marginal, i.e. indirect social impacts will be experienced irrespective of which site is selected in the end. However, it at this stages it appears as if site 5 might yield the least amount of direct social impacts and therefore this site has been nominated as a preliminary preferred site from a social and economic perspective.

1. BACKGROUND AND INTRODUCTION

In accordance with the South African government's decision that future power generation capacity should be divided between ESKOM and Independent Power Producers (IPP), Kuyasa Mining Ltd (Kuyasa), as the current owner of coal reserves suitable for power generation, has submitted a Statement of Qualification (SOQ) to Eskom and has been conditionally pre-qualified to participate in the base load IPP Programme. Kuyasa proposes to develop a 600MW mine-mouth power generation facility with possible future expansion to 2,400MW.

Five potential sites were evaluated on general criteria required to support the proposed power station, three of which were deemed technically feasible and that will be assessed during this Environmental Impact Assessment (EIA) process, as the proposed project would require multiple environmental permits and authorisations from national, provincial and municipal governmental agencies for various construction and operational activities.

The sites under investigation are all located in close proximity to Kuyasa's Delmas and Ikhwezi Colliers, approximately 16km southeast of the town of Delmas in the Mpumalanga Province. A number of surface infrastructure features are planned, covering an area of 200ha. An additional area will be used for ash disposal. Current land-use activities in the area include mining and farming.

MasterQ Research (Pty) Ltd was appointed as specialised social and economic sub-consultants to the Environmental Assessment Practitioner (EAP), Jones & Wagner. This particular report details the findings of the scoping phase as part of the Socio-Economic Impact Assessment (SIA) and includes an assessment of the possible future tourism potential of the area. In general, the SIA will be conducted in parallel to the overall EIA process and will consist of the following two phases:

- Phase 1: Scoping Phase (current phase) during which a baseline socio-economic and tourism profile will be developed, from which any pertinent socio-economic and tourism issues will be identified for assessment during phase 2; and
- Phase 2: Impact Assessment Phase during which the detailed assessments and studies that were identified during phase 1 will be undertaken. This will also include detailed input into the Environmental Management Plan (EMP).

The first subsection below provides some key definitions, followed by the objectives of the study. The third subsection details the approach and methodology that were followed to meet these objectives. This section is concluded with the assumptions and limitations of study.

1.1 Key Definitions

The definition of a SIA as defined by Vanclay (2002) gives an understanding of the backdrop against which this SIA was conducted. According to this definition, a **social impact assessment** is *“the process of analyzing (predicting, evaluating and reflecting) and managing the intended and unintended consequences on the human environment of planned interventions (policies, programmes, plans and projects) and any social change processes invoked by those interventions so as to bring about a more sustainable and equitable biophysical and human environment.”*

The social team made a clear distinction between change processes and impacts. According to Van Schooten, Vanclay and Slootweg (2003:78-79), **“Social change processes** are set in motion by project activities or policies. They take place independently of the social context. Resettlement, for example, is a social change process, set in motion by, inter alia, the activity of land clearing... social change processes can lead to several other processes. Depending on the characteristics of the local social setting and mitigation process that are put in place, social change process can lead to **social impacts**.” Furthermore, *“The way in which the social change processes are perceived, given meaning or value depend on the social context in which various societal groups act. Some sectors of society, or groups in society, are able to adapt quickly and exploit the opportunities of a new situation. Others (for example, various vulnerable groups) are less able to adapt and will bear most of the negative consequences of change. Social impacts, therefore, are implicitly context-dependent.”*

Vanclay (2002) defines **social impacts** as:

“The consequences to human populations of any public or private actions (these include policies, programmes, plans and/or projects) that alter the ways in which people live, work, play, relate to one another, organise to meet their needs and generally live and cope as members of society. These impacts are felt at various levels, including individual level, family or household level, community, organisation or society level. Some social impacts are felt by the body as physical reality, while other social impacts are perceptual or emotional.”

The economic assessment (EA) in turn aims to examine all aspects that might contribute to the creation (gain) and destruction (loss) of individual, community, regional or national resources. This gain or loss in resources is most easily understood when it is quantified and expressed in monetary value and therefore the EA relies mostly on quantitative data. However, many of the underlying causes of economic effects like perception, opinion, and sentiment cannot be easily quantified and therefore qualitative data is used to support conclusions in the EA. In most cases a series of options exist, which have different implications in terms of gain and loss and these must be compared to determine a minimum negative and maximum positive economic impact.

Bearing these definitions in mind, we see impacts as the difference between the current and future development of the affected human environment **with** vis-à-vis **without** the project.

1.2 Objectives of the Study

The overall business objective of the SIA is to assess the probable social and economic that can occur because of the construction and operation of the proposed power generation plant. Detailed Scoping and SIA Reports will be developed, which in turn will inform the Environmental Scoping and EIA reports that is submitted to the competent authority, the Department of Environmental Affairs (DEA), who will the decide whether or not to grant environmental authorisation, and if so, subject to which conditions.

The main objectives of the Scoping Phase are to identify issues and concerns to guide the ensuing detailed assessment that will take place during the Impact Assessment Phase, and to provide a framework within which the assessment will be undertaken. Secondary objectives include the following:

- Gain an understanding of the proposed project, including the nature and timeframe of the activities that will take place across the lifespan of the project (i.e. construction, operation and maintenance, and decommissioning);
- Obtain information on the baseline socio-economic and tourism profile characterising the study area in terms of the following socio-economic processes (cf. Vanclay, 2002):
 - * **Geographical processes:** land use patterns, including tourism;
 - * **Demographical processes:** the composition of the local community;
 - * **Economical processes:** the way in which people make a living and the economic activities in a society;
 - * **Institutional and Legal processes:** the role and efficiency of the local authority and other service providers in the area in terms of their capacity to deliver services to the local area; and
 - * **Socio-cultural processes:** The way, in which humans behave, interact and relate to each other, their environment, and the belief and value systems that guide these interactions.
 - * Potential **tourism** impacts will be identified and described for each of the above change processes, where relevant.
- Identify and describe how these processes might change as a result of the proposed project;
- Identify and describe the potential socio-economic and tourism impacts that may occur as a result of the change processes brought about by the proposed project;
- Identify key issues and impacts of significance that would have to be addressed during the EIA phase, which includes the identification of further information requirements; and

- Describe the proposed studies for the Impact Assessment Phase that would ultimately address the identified information requirements and result in a detailed assessment of the potential impacts.

The approach and methodology that were followed to fulfil the objectives of the Scoping Phase are listed in section 1.3 below.

1.3 Approach and Methodology

The following procedures were implemented to meet the objectives of the study.

1.3.1 Data Collection

To obtain baseline information on the socio-economic and tourism profile currently characterising the study area on individual, settlement, institutional and organisational level in terms of current and predicted future socio-economic changes with and without the project, data collection methods took on the following forms:

- An orientation site visit by vehicle and on foot on Monday 30 March 2010;
- A desktop study to compare Census 2001 and Community Survey 2007 data with the aim to develop a baseline socio-economic profile and to identify any significant socio-economic trends in the area;
- A desktop study to determine the current tourism profile of the area;
- A desktop aerial study of the affected area through the use of Google Earth (2007);
- A desktop study of the Integrated Development Plan (IDP) of the affected Local (Delmas) and District (Nkangala) Municipalities.

Information that was relevant to the project was identified and assessed from these sources, and within the context of the construction, operation and maintenance, and decommissioning phases of the proposed project.

1.4 Limitations and Assumptions

- This study was carried out with the information available to the specialists at the time of executing the study, within the available timeframe and budget. The sources consulted are not exhaustive and additional information which might strengthen arguments or contradict information in this report might exist.
- The specialists did endeavour to take an evidence-based approach in the compilation of this report and did not intentionally exclude scientific information relevant to the assessment.
- It was assumed that the motivation for, and the ensuing planning and feasibility studies of the project were done with integrity, and that the information provided to date by the

project proponent, the independent EAP and the public participation consultant was accurate.

- Areas that might yield socio-economic or tourism sensitivities have been identified through a desktop study making use of Google™ Earth. The areas that have been marked are the sensitive areas visible to the socio-economic specialists at the time of the study, which are in close proximity to the proposed three sites under investigation. However, the sensitivity map is not meant as a final, all-inclusive indication of sensitive areas, as it is possible that more sensitive areas might be found during the Environmental Impact Assessment Phase when a more detailed assessment will be undertaken.
- The statistics that informed this report were primarily taken from Census 2001 and the more recent Community Survey 2007 (CS). The comparative analyses of these sets of data should only be regarded as an indication of broad trends in the area, because of the South African Statistics Council's (SASC) concerns about data integrity in CS. The SASC was concerned about the following regarding CS:
 - * Institutional population is merely an approximation to 2001 numbers and not new data;
 - * Unemployment in the Community Survey is higher and less reliable because of questions that were asked differently;
 - * Grants do not match the (SASSA) data and should be interpreted with great care;
 - * Income includes unreasonably high income for children – presumably misinterpretation of the question, listing parents' income for the child; and
 - * Distribution of households by province has very little congruence with the General Household Survey or last census.

A number of systematic errors were observed in the statistical data, which included:

- * An underestimate of men relative to women;
- * An underestimate of children younger than 10 years;
- * An excess of those aged 85+, in particular among men;
- * Missing women aged 20–34 from the Coloured population;
- * Misdistribution of the population by province;
- * Excess of people aged 10–24 in Western Cape and Gauteng;
- * A shortfall of women aged 20–34 in Free State, KwaZulu-Natal and Limpopo.

The SASC states (2008): *“In the absence of a comprehensive sampling frame, it is difficult to determine whether the differences are due to sampling error, biases or the reality that has changed beyond our expectations. There may be other variables that will require similar warnings after further interrogation.”*

2. PROJECT BACKGROUND

This section aims to address the following objective:

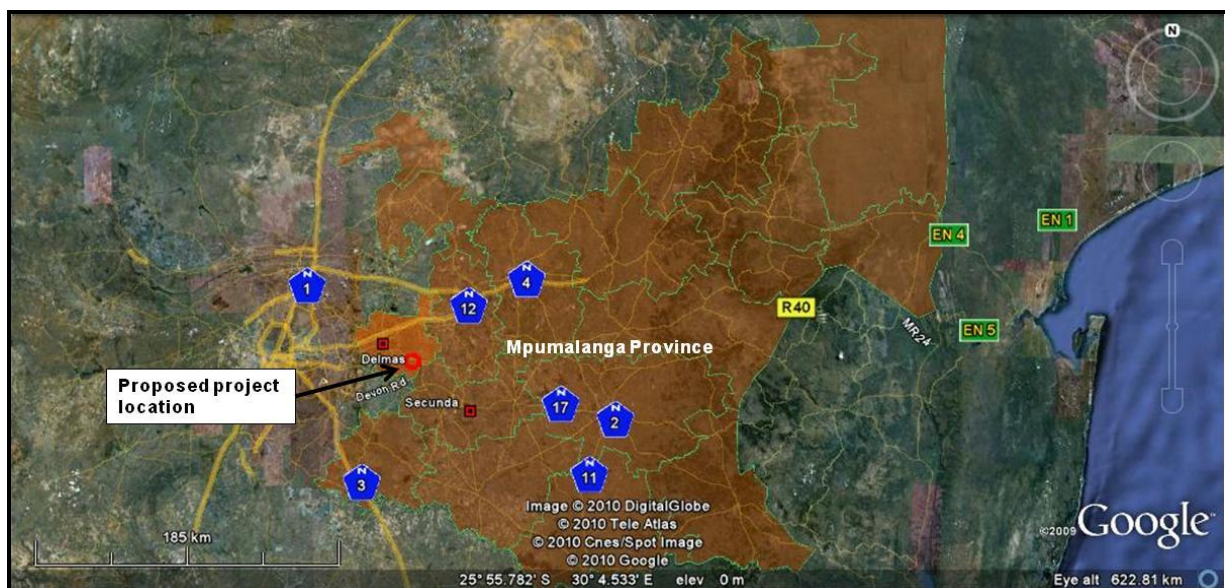
- Gain an understanding of the proposed project, including the nature and timeframe of the activities that will take place across the lifespan of the project (i.e. construction, operation and maintenance, and decommissioning).

This section briefly describes the information relevant to the study area and the proposed project. The first subsection provides a general overview of the study area on provincial level (a more detailed baseline profile of the study area in terms of the identified social processes follows in Section 3), followed by a brief description of the proposed project.

2.1 Provincial Overview⁴

The infrastructure development associated with the proposed project is located within the Delmas Local Municipality, which forms part of the Nkangala District of the Mpumalanga Province. An indication of the study area within the Mpumalanga Province is reflected in figure 2.1 below, whereas figure 2.2 provides a close-up view of the proposed project's location in relation to the affected local municipality.

Figure 2.1: Location of the proposed project within the Mpumalanga Province



⁴ The information in this subsection was primarily drawn from the *Mpumalanga State of the Environment Report (2003)*, available online at http://www.environment.gov.za/soer/reports/mpumalanga_report.html.

Figure 2.2: Location of the proposed project within the Delmas Local Municipality



Mpumalanga means “place where the sun rises”. The province is located to the north eastern part of South Africa, and is bordered by Mozambique to the east and the Kingdom of Swaziland to the south and east. On its western border is the province of Gauteng, with the Free State to the south west and KwaZulu-Natal to the south east.

Mpumalanga has a land surface area of approximate 79 511.5km², which represents approximately 6.5% of South Africa’s total land surface. According to Community Survey 2007⁵, the province is home to approximately 3,643,435 people, which represents a population growth of approximately 7.6% (or 277,550 people) over the 6-year period between 2001 (when the last census was conducted) and 2007. The population in Mpumalanga accounts for 7.5% of South Africa’s total population of 48,502, 063 people as of 2007. The province appears to be largely rural in nature, which is evident in the fairly low population density of 45.8 persons per km².

According to the Mpumalanga Province Growth and Development Strategy (MPGDS), the economic growth within the province averaged around 2.5% between 1996 and 2001, increasing to an average of around 4.3% between 2004 and 2007. This places the province more or less on par with the country’s Geographic Domestic Product (GDP) growth. In 2004 the main economic sectors in the province were the mining, energy, and manufacturing industries that, collectively, comprised approximately 60% of the province’s Gross Value Addition. Despite these industries being the largest, they only provided employment to around 20% of the province’s population. During 2005 the energy sector was replaced by community services as a key industry, contributing approximately 20% to the province’s employment rate.

⁵ Statistics South Africa. Community Survey 2007: Key Municipal Data. Report No: 03-01-22 (2007)

The main aim of the province's GDS (2004-2014) is to improve the local inhabitants' quality of life by promoting sustainable development. It is believed that sustainable development in turn will create a stable investment climate that will aid in creating employment opportunities, which will then create income generating capabilities for those individuals involved.

Agriculture is also one of Mpumalanga's largest economic sectors, producing some 15% of South Africa's total agricultural output. Products produced in the province include sugar cane, sunflowers, sorghum, potatoes, onions, cotton and maize. Most of the agricultural activities in Mpumalanga centre on dry farming land, although extensive irrigation schemes can be found in the Loskop area near Groblersdal and in the lowveld area adjacent to the Crocodile and Komati rivers.

Mpumalanga is also home to large coal deposits and for this reason most of the country's coal fired power stations can be found in the province (eight of the eleven operational coal fired power stations are located in Mpumalanga). These power stations contribute approximately 70% of the country's total generated power. Linked to the coal deposits is mining, which contributes approximately one fifth of Mpumalanga's Gross Geographic Product (GGP). The coal resources are mostly situated in the western and south-western parts of the province and are used to sustain the coal-fired power stations between Witbank, Standerton, Piet Retief and Carolina. Coal is further used to sustain the petrochemical plants in the province.

Apart from industries such as mining and energy, Mpumalanga is rated as one of South Africa's most popular tourist destinations. Some of the major attractions in the area include:

- The Kruger National Park;
- A number of Game Lodges;
- Big catch country (fly-fishing);
- Gold-digging in Pilgrim's Rest;
- The green belt (at Sabie);
- Majestic viewpoints (at God's Window, the Blyde River Canyon, etc.); and
- Arts and culture (the Shangana Cultural Village, Nyani Shangaan Cultural Village, and the Matsulu Village).

According to *Mpumalanga Companies*⁶, a business and investment guide for the Mpumalanga Province, the tourism sector makes up approximately 8% of the province's Gross Geographic Product (GGP). It is expected that the sector would further increase its contribution to the GGP during the period leading up to the Soccer World cup. It was estimated that international tourists spent roughly R4.5 billion in the province in 2006.

⁶ http://www.mpumalangacompanies.co.za/pls/cms/ti_secout.secout_prov?p_sid=24&p_site_id=150

The province is divided into seven tourist regions (refer to figure 2.3), as follows:

Figure 2.3: Tourism regions within the Mpumalanga Province



Source: SA Lodges (www.salodges.com)

- The **Cultural Heartland** in the north-western part of the province includes destinations such as the Ndebele Cultural Village at Botshabelo, near Middelburg. An Anglo-Boer War route meanders through the cultural heartland. Other areas of interest include Loskop Dam and Witbank Dam.
- **Cosmos Country** is located in the south-western part of the province. This region is well known for its underground coal and gold mining, and includes towns such as Bethal, Secunda and the current study area, Delmas. During the summer months this region is covered in cosmos flowers, hence its name.
- The **Grass and Wetlands** tourism region is located in the south-east of Mpumalanga and with its many large lakes it is famous for bird watching. The eastern part of this region borders on Swaziland, with many forests to the south. The region lends itself to further tourism development in certain activities such as hiking and horse trials. The Lubombo Tourism Route traverses this region.
- The **Wild Frontier** region is home to historical towns that formed part of the gold-rush in the late 19th century. This region is one of the most important regions in Mpumalanga's tourist economy. The Songimvelo Game Reserve within the region forms part of a transfrontier project with its counterpart in Swaziland.
- The Kruger Mpumalanga International Airport and the N4 highway forms part of the **Lowveld Legogote** region, which enhances the accessibility and visibility of the region as a tourist destination. The N4 forms part of the Maputo Development Corridor, which

aims to stimulate development from neighbouring Gauteng up to the capital of Mozambique. The capital of the region, Nelspruit, is a host city for the Soccer World Cup in 2010.

- The **Panorama** region offers scenic views and is home to the Blyderiver Canyon, God's Window and the Bourke's Luck Potholes. Adventure tourism is on the rise in the region as it offers waterfalls, white waters, cliffs and muddy paths. The region includes towns such as Lydenburg, Graskop and Hazyview.
- The **Highlands Meander** offers activities such as trout-fishing in the areas around Dullstroom, Belfast and Waterval Boven. The region is home to Verloren Vallei Nature Reserve, which is an internationally recognised wetland.

The province is home to 70 game and nature reserves, of which only 13 are managed by South African National Parks (SANParks) – the remainder are all private reserves. Cultural tourism is being utilised in the northwest of Mpumalanga as a means of community upliftment and capacity building. A Heritage Project that was commissioned by the Mpumalanga Provincial Government indicated that the province's history could open new tourism markets, in addition to existing historical sites such as Pilgrim's Rest. Other potential areas of development include the following:

- Rock art;
- The Lydenburg Heads; and
- Struggle tourism, particularly in Delmas where the famous treason trial took place.

According to the Mpumalanga State of the Environment Report (2003), the tourism potential in the province is well developed, but rapid growth is expected in the lowveld area, which would require large-scale investment in tourism facilities. It is also expected that the respective casinos in Nelspruit, Witbank and Secunda would further enhance the tourism industry, requiring additional accommodation, tourist attractions and entertainment facilities.

So What?

- Local economic development should be enhanced by affording local businesses, service providers and/or local individuals with job and supply opportunities;
- Agriculture contributes significantly to the economic growth of the province and therefore agricultural land should be preserved as far as possible;
- The tourism market appears to be a well established industry in some places, whereas it is deemed a growth point in others. Overall it is viewed as an important economic sector that should be enhanced through new initiatives in support of existing practices and establishments;
- The mining industry also contributes significantly to the province's local economy and therefore any current and future mining activities should be considered.

2.2 Project Overview

Eskom abides by an Integrated Strategic Electricity Planning (ISEP) process with the aim to identify and implement long term electricity supply options in the country. The latest review of the ISEP (2005) stated that an increased electricity base load will be required by 2010. Although the National Energy Regulator of South Africa (NERSA) determined that alternative and renewable electricity generation should be investigated, it also states that coal should still be utilised as the main fuel source and therefore coal-fired power stations will still be utilized to expand the country's electricity generation capacity for the following 20 years.

As part of the ISEP and in line with the Medium Term Power Purchase Programme (MTPP), Eskom called for tenders from interested parties for the generation and/or provision of energy. These interested parties are known as Independent Power Producers (IPP), of which the project proponent of the current proposed project, Kuyasa Power (Pty) Ltd (Kuyasa) is one of the pre-qualified IPPs.

Kuyasa proposes the construction and operation of a new coal-fired power station in the Delmas area of the Mpumalanga Province. Initially the proposed power station will be a 600MW mine-mouth power generation facility, with the possibility to expand the plant by a further 1,800MW in future. The thermal coal required as fuel will be sourced from Kuyasa's own Delmas Colliery. The proposed power station will consist of four units that will each produce 150MW gross electricity.

Initially five potential sites were evaluated, all of which are located in close proximity to Kuyasa's Delmas and Ikhqezi Collieries in the Delmas area. Of these five sites, three sites were identified as technically and environmentally feasible and will therefore be further assessed during the EIA process. The sites are located on the farms Haverglen 269 IR, Haverklip 265 IR and Brakfontein 264 KR, as reflected in Figure 2.4 below.

Figure 2.4: Site Alternative locations for the proposed Kuyasa IPP power station



In addition to the power plant itself, the following infrastructure is associated with the proposed new coal-fired power station:

- A landfill site and ashing facilities;
- A coal stock yard and ash conveyors;
- Water supply pipelines;
- Water and wastewater treatment facilities;
- An ash disposal system;
- Access roads (including haul roads);
- Storage dams;
- Railway siding and/or railway line for sorbent supply; and
- Offices and administration buildings.

The total development area will comprise approximately 200ha. The actual placement of the proposed power station and the associated infrastructure, as detailed above, within a particular site still needs to be determined, and will be based on the technical and environmental feasibility of suitable areas within a particular site.

2.3 EIA Project Processes

During the EIA the public will encounter various project processes as part of the EIA phases (Scoping and Impact Assessment). Although the various processes are always clear about its respective intent and purpose, there is often confusion about processes that might look similar, but that have different outcomes. Most notably Interested & Affected Parties (I&APs) often confuse the **Social Impact Assessment** specialist study with the **Public Participation Process** and vice versa. In an attempt to clear up some of this confusion, table 2.1 below

provides a comparative overview of the above-mentioned processes to enable the reader to make a clear distinction between these processes.

Table 2.1: Comparative overview of the SIA & PPP

	Social Impact Assessment	Public Participation Process
Practitioner	MasterQ Research	Sivest
Definition	<i>“The process of analyzing (predicting, evaluating and reflecting) and managing the intended and unintended consequences on the human environment of planned interventions (policies, programmes, plans and projects) and any social change processes invoked by those interventions so as to bring about a more sustainable and equitable biophysical and human environment.”</i> (Vanclay, 2002).	The “...process leading to a joint effort by stakeholders, technical specialists, the authorities and the proponent who work together to produce better decisions than if they had acted independently” (Greyling, 1999). The process aims at improving “...communication between stakeholders – including the proponent – in the interest of facilitating better decision-making and/or sustainable development” (DEAT, 2002).
Objectives	The overall business objective of the SIA is to assess the probable/potential social impacts on the human environment that can occur because of the design, construction, operation and decommissioning of a proposed project for consideration by the competent authority and the project proponent in their decision-making process. Part of the process is to identify and describe measures to mitigate against negative impacts and to enhance positive impacts.	The main objectives of the public participation process are to: <ul style="list-style-type: none"> • Inform any and all identified I&APs with sufficient information on a proposed project in such a way that the I&APs are empowered to actively participate in the decision-making process; and • Create an entry point for I&APs to raise their viewpoints (issues, comments and concerns) with regard to potential impacts, benefits and drawbacks related to a proposed project.
Timing & Activities	The SIA is undertaken in parallel to the overall EIA process and is normally subjected to the same timeframes as that of the EIA. The SIA consists of two distinct phases, namely a Scoping Phase and an Impact Assessment Phase. During the Scoping Phase, the baseline social context is determined, potential social impacts identified and, based on these results, develop the terms of reference/scope of work for the next phase. Depending on the scope of works, an SIA consist of varying activities, including: <ul style="list-style-type: none"> • Literature reviews and review of existing databases (secondary data sources); • Baseline profiling; • Site visit(s); • Social Research, including the use of surveys, interviews and/or 	The PP process spans across all the phases of the EIA process (scoping, EIA, etc.) and normally includes the following activities: <ul style="list-style-type: none"> • Identify stakeholders; • Disseminating project information; • Managing incoming correspondence regarding the project and follow ups with other project team members; • Responding to stakeholder queries; • Organising and facilitating public events such as open days, public meetings, etc.; • Inform specialists about issues raised by stakeholders; and • Reporting on the process itself as well as the outcomes of the

	Social Impact Assessment	Public Participation Process
	<p>focus group meeting discussions (primary data sources);</p> <ul style="list-style-type: none"> • Data assessments of primary and secondary data sources • Data modelling; • Impact Assessment; • Identifying mitigation and/or enhancement measures; • Development of a Construction Social Management Plan. <p>Qualitative and quantitative research methods are used to inform the SIA. Both these methods use a systematic approach to collect information. Quantitative methods focus on the “why” and quantitative methods focus on “how many.”</p> <p>A focus group is a qualitative social research method, which is one of the methods used when the social specialist wants to gain a depth understanding of specific issues, concerns and/or recommendations that I&APs raised. The results of these discussions are confidential to allow participants to freely participate, although a summary of issues and concerns might be made public. The results of the discussions are used in the assessment of social impacts with consideration of other data sources, e.g. structured interviews, literature. These inputs are not seen as representative of the whole population but are regarded as indicative of the range of sentiments/viewpoints/feelings etc. present in the population. Ideally, a group should not consist of more than 12 people – ordinarily the whole population, e.g. farmers in a corridor, has to be invited to ensure adequate numbers.</p>	<p>process.</p> <p>The public participation consultant also makes use of focus group discussions and these are usually aimed at gathering issues, concerns and opinions from a targeted group of I&APs. Minutes, issues and concerns are reflected in the public participation report and specialists are informed about issues and concerns pertaining to their field of expertise. Specialists have to address these in their assessments.</p>
Applicable Legislation	<p>Cognisance is taken of the following legal requirements and regulatory documents during the execution of an SIA:</p> <ul style="list-style-type: none"> • Constitution of the Republic of South Africa, Act No. No. 108 of 1996; • Construction regulations under the Occupational Health and Safety Act; 	<p>The approach and methodology as well as the legal framework for the PPP are based on the principles embodied in the following legal framework:</p> <ul style="list-style-type: none"> • The Constitution of the Republic of South Africa, Act No. 108 of 1996; • National Environmental Management Act (NEMA), Act No. 107

	Social Impact Assessment	Public Participation Process
	<ul style="list-style-type: none"> • Extension of Security of Tenure Act (Act 62 of 1997) (ESTA); • National Environmental Management Act (NEMA), No. 107 of 1998, as amended and Environment Conservation Act, No. 73 of 1989, as amended; • The Environmental Impact Assessment Regulations of 21 April 2006; • Relevant Labour Relations legislation; • Development plans in the relevant IDP/s and SDF/s; and • Applicable local by-laws. 	<p>of 1998; and</p> <ul style="list-style-type: none"> • Specific regulations, notably Regulation 28 and Chapter 6 of GN 385.
Deliverable(s)	<ul style="list-style-type: none"> • Social Scoping Report as part of the Environmental Scoping phase; • Social Impact Assessment Report as part of the Environmental Impact Assessment phase; and • In some cases, a Social Management Plan as part of the Environmental Management Plan. 	<ul style="list-style-type: none"> • Public documentation, such as Background Information Documents, meeting minutes, an issues register, I&AP database, etc; and • Public participation reports as part of the Scoping and EIA phases.
What is it NOT?	<p>It is not the official body with which to formally raise issues and concerns, i.e. it is an independent specialist study that is separate process from the public participation process, although the public participation can often be used as a vehicle to undertake public consultation.</p>	<p>It is not a marketing tool to 'sell' a particular project to the public or to gain public support for such a project.</p> <p>It is not an assessment tool, i.e. comments and issues received by the public participation practitioner will not be addressed or assessed by them, but will be communicated to the relevant specialist.</p>
Your responsibilities	<ul style="list-style-type: none"> • Attend and participate in social research activities when invited to do so. • Although you are welcome to contact and/or submit written comments, questions, or concerns directly to the social specialist, formal submissions should also be directed to the public participation consultants to ensure that your comments are formally registered on a project's issues register. The public 	<ul style="list-style-type: none"> • Respond to invitations to participate in projects that might affect you by registering on the project database. EIA processes are normally advertised in the local and/or regional press and in some cases, even in the national press; • Complete and return project comment sheets if you are asked to do so;

Social Impact Assessment	Public Participation Process
	<p>participation consultants will in turn direct your comments to the appropriate specialist for consideration in their assessment, at times requesting the specialist to formally respond to your comments.</p> <ul style="list-style-type: none"> • At times it might be necessary that you disclose sensitive information, e.g. future development plans, financial information, etc., so that such information can be considered during the assessment. Information gathered in the research process is analysed as part of the group of respondents' input and is usually not linked to your name in a report. Should you wish your name to be linked to information, you should indicate to the specialist how the information should be handled.

- Attend public participation events that are held throughout an EIA process. Registered I&APs normally receive personal invitations to such events;
- Feel free to contact the public participation consultants with your comments and queries; and
- Review and comment on reports that are placed in the public domain within the stipulated public review periods.

2.4 Relevant Legislation

The following legislation and regulatory documents are relevant to the SIA process:

- Constitution of the Republic of South Africa (Act No. 108 of 1996);
- The Occupational Health and Safety Act (Act No. 85 of 1993);
- Extension of Security of Tenure Act (Act 62 of 1997) (ESTA);
- National Environmental Management Act (NEMA), No. 107 of 1998, as amended and Environment Conservation Act, No. 73 of 1989, as amended;
- The Environmental Impact Regulations of 21 April 2006;
- Relevant Labour Relations legislation.

2.4.1 *Constitution of the Republic of South Africa (Act No. 108 of 1996)*

The Constitution mostly relates to human rights with the intention of establishing “a society based on democratic values, social justice and fundamental human rights”, which should be achieved through the promotion of human dignity, equality and the advancement of human rights and freedoms. Some of the human rights that are explicitly stated in the Constitution are a person’s right to equality, freedom of expression and association, political and property rights, housing, healthcare, education, access to information, and access to courts.

The Constitution is made up of a preamble, fourteen chapters each relating to a specific topic, and seven schedules. Of these fourteen chapters, chapter 2 (The Bill of Rights) is mostly applicable to the implementation and management of social mitigation measures.

The Bill of Rights outlines detailed provisions on civil, political, social and economic rights. According to the Bill of Rights, it is therefore illegal to discriminate against any person on any of the following grounds:

- Race and colour;
- Sexual orientation (be that heterosexual, homosexual or transsexual);
- Marital status (be that single, married, divorced or widowed);
- Gender in terms of social and cultural ascribed gender roles, e.g. not permitting women to work on a construction team because she is a woman;
- Sex, relating to the physical differences between men and women;
- Pregnancy;
- Age;
- Disability;
- Ethnic origin;
- Culture, e.g. traditional practices;
- Language;
- Religion, conscience, belief; and

- Birth.

2.4.2 The Occupational Health and Safety Act (Act No. 85 of 1993)

The occupational health and safety act outlines the clear responsibilities of employers and employees alike in ensuring that a safe work environment is created and maintained at all times. The creation of a safe work environment also applies to any and all work equipment that is required in carrying out assigned duties.

Noteworthy to consider is the fact that this act stipulates that a health and safety representative has to be appointed where a workforce consists of 20 or more people. A health and safety representative has to be a fulltime employee and there should be at least one such a representative per every 50 employees or part thereof, either per workplace or per section of the workplace. Where a workplace has more than one health and safety representative, a health and safety committee should be formed that meets at least once every 3 months. Health and safety representatives should carry out the following functions in terms of this act:

- Review the effectiveness of health and safety measures;
- Identify potential hazards at the workplace that could lead to potential major incidents;
- Examine the causes of incidents at the workplace, in collaboration with the employer;
- Investigate any complaints made by employees in terms of health and safety aspects at the workplace;
- Provide feedback to the health and safety committee on the aspects mentioned above;
- Provide feedback to the employer on matters relating to the health and safety of employees at the workplace; and
- Inspect all aspects relating to the safety of the workplace, including the workplace itself, any plants, machinery, articles, health and safety equipment, etc. at intervals agreed upon with the employer.

2.4.3 Extension of Security of Tenure Act (Act 62 of 1997) (ESTA)

This act provides for measures to facilitate the long-term security of land tenure, and also regulates the conditions of residence on certain land, the circumstances under which a person's right to reside on a particular piece of land may be terminated, and to provide for regulatory matters where persons have been evicted from a particular piece of land or land portion.

Chapter 4 of this act relates to the measures that have to be implemented when right of tenure is terminated on any lawful ground (e.g. in the case of relocation), provided that such a termination is just and has regarded the following factors:

- The fairness of the agreement on which the owner relies;

- The conduct of the parties giving rise to the termination;
- The interests of the parties involved in relation to the comparative hardship of the owner and/or occupier of the land;
- The existence of a reasonable expectation for the renewal of an agreement; and
- The fairness of the procedure leading to termination, including whether or not the owner/occupier had been granted a reasonable opportunity to make representations before termination became effective.

Section 14 under Chapter 4 outlines the procedures for the restoration of residence, the use of land, and compensation for damages. A person who was the rightful owner of the land may institute proceedings in a court of law, where after the court may make the following orders:

- The restoration of residence and land use;
- The repair, reconstruction or replacement of any building, structure or any other installations that the owner/occupier have enjoyed on his land prior to the removal and/or eviction;
- The restoration of any services that the owner/occupier has a right to;
- The payment of compensation;
- The payment of damages, including but not limited to, damages inflicted by the removal process; or
- Any other compensation the court may see fit.

2.4.4 National Environmental Management Act (NEMA), No. 107 of 1998, as amended and Environment Conservation Act, No. 73 of 1989, as amended

Both the National Environmental Management Act (NEMA) as well as the Environmental Conservation Act (ECA) promotes citizens' right to an environment that is not harmful to their health and well being. This right is closely linked to the Constitution where clause 32 of the Bill of Rights stipulates that current and future generations have a right to a healthy environment. NEMA defines the environment as the natural environment as well as the physical, chemical, aesthetic and cultural properties that influences a person's health and well-being.

Part of the scope of works of this particular SIA is also to take cognizance of potential tourism impacts that may result from the construction and operation of the proposed power station and associated infrastructure. In this regard the following regulatory documents are applicable:

- The White Paper on the Development and Promotion of Tourism in South Africa, 1996;
- Institutional Guidelines for Public Sector Tourism Development and Promotion in South Africa, 1999; and

- The Tourism Act, 1993.

2.4.5 The White Paper on the Development and Promotion of Tourism in South Africa, 1996

The main aim of the White Paper on the Development and promotion of tourism in South Africa is to provide a broad structure to steer the planning, development and management of tourism and tourism initiatives in the country. The document provides a discussion on the potential economic role that tourism can play and goes on to identify and discuss possible constraints that can prevent the realization of this goal.

The White Paper further sets forth a vision to guide responsible and sustainable economic growth, supported by certain key principles, including:

- A safe and established tourism environment;
- The involvement of local communities, especially previously neglected and vulnerable groups;
- Sustainable environmental management;
- The creation of a tourism industry that can compete with the rest of the world;
- Ensuring a tourism environment and experience that meet tourists requirements and expectations;
- Ensuring product development that offers visitors a variety of choice;
- The effective training and capacity building of those individuals who are involved in the tourist industry by promoting awareness of the importance of the tourism industry as an important economic sector;
- The establishment of a creative marketing campaign;
- Establishing and strengthening economic linkages with other economic sectors within the country;
- Establishing appropriate institutional structures; and
- Establishing appropriate support infrastructure to aid the sustainability of tourism development in the country.

The White Paper was developed on a national level and as such it does not address any specific requirements on a provincial or local level. Although provincial and local governments can take their direction from the White Paper, it does imply that these departments have to develop their own tourism development strategies to fit in with their specific context.

2.4.6 *Institutional Guidelines for Public Sector Tourism Development and Promotion in South Africa, 1999*

The Institutional Guidelines for Public Sector Tourism Development and Promotion in South Africa was first published by the then Department of Environmental Affairs and Tourism (DEAT) in 1999. The aim of this document was to formulate institutional systems and mechanisms that would facilitate synergy between the various spheres of government concerned with tourism development. In support to the White Paper, this document further outlined the roles and responsibilities of National, Provincial and Local Government as it pertained to tourism.

2.4.7 *The Tourism Act, 1993*

The Tourism Act makes provision for the promotion of tourism in South Africa by providing a framework within which the industry can be regulated. This is done by setting forth measures aimed at the maintenance and enhancement of the tourist industry to ensure that tourism in South Africa complies with certain standards.

Through the Act the South African Tourism Board (SATB) came into being, who acts as the juristic person in terms of the Act. The main objective of the SATB is to ensure the sustainable use of natural resources, and to promote tourism in and to South Africa by:

- Taking measures to ensure that services rendered to tourists comply with the highest attainable standards;
- Managing information and undertaking further research pertaining to the tourism sector;
- Advising the Minister on tourism policy, either by their own choice or when so requested by the Minister.

3. CHANGE PROCESSES AND POTENTIAL IMPACTS

This section aims to address the following objectives:

- Obtain information on the baseline socio-economic profile characterising the study area in terms of the following socio-economic processes:
 - * **Geographical processes:** land use patterns;
 - * **Demographical processes:** the composition of the local community;
 - * **Economical processes:** the way in which people make a living and the economic activities in a society;
 - * **Institutional and Legal processes:** the role and efficiency of the local authority and other service providers in the area in terms of their capacity to deliver services to the local area; and
 - * **Socio-cultural processes:** The way, in which humans behave, interact and relate to each other, their environment, and the belief and value systems that guide these interactions.
- Identify how these processes might be changed by the proposed project and identify major concerns; and
- Identify any gaps in knowledge.

In order to address the overall objective of this study, it was necessary to compile a detailed description of the study area. Each subsection first presents the baseline profile (status quo) of the receiving environment in terms of the various socio-economic processes (cf. Vanclay, 2002). It is believed that the baseline profile would be maintained to a large degree (not taking into account variables outside of the project) in the event that a 'no go' option was implemented.

Each subsection concludes with a table summarizing how the project is likely to change the baseline profile, and the related impacts that could be expected as a result of the introduction of the project to the local area. The following section (section 4) outlines the plan of study for the Impact Assessment phase, based on the information requirements identified during this section.

Unless otherwise stated, the baseline profile was compiled based on data obtained from Census 2001 and the more recent Community Survey (CS) 2007. It is important for readers to note that CS data does not replace Census data, but that the CS is merely an attempt to adjust measurements to a best estimate. In this regard, Statistics South Africa has stated the following: *"Any adjustment done [in CS 2007] has maintained the profiling of the community in terms of the people and households while compensating and correcting the undercounted bias by different projections on national, provincial and municipalities level."*⁷ Therefore,

⁷ Statistics South Africa: Community Survey 2007: Key Municipal Data: ix.

please bear in mind that the following data should only be viewed as suggestive of the broad socio-economic trends within an area and not as a fixed representation of the area.

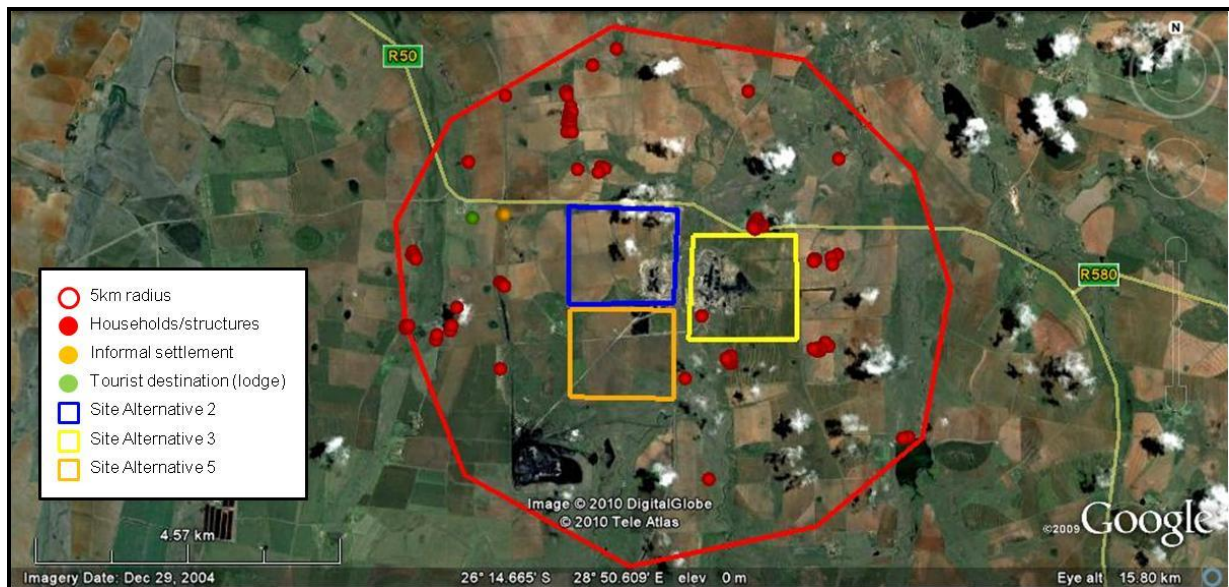
For the purposes of this scoping study the impact variables were categorised in terms of change processes, as previously mentioned. A **change process** can be defined as change that takes place within the receiving environment as a result of a direct or indirect intervention from an outside source. A potential **impact** follows as a result of the change process. However, a change process can only result in an impact once it is experienced as such by an individual or a community on a physical and/or cognitive level.

Figure 3.1 below provides an overview of the preliminary social sensitivity within a 5km radius of the proposed project location. The social sensitivity map was developed based on a desktop study through the use of *Google™ Earth*. The social specialist endeavoured to identify social sensitive areas such as residential areas (human settlement), scattered households, commercial/industrial areas, irrigated farmlands, etc. However, it should be noted that these were the areas visible to the social specialist at the time of the Scoping study and therefore the map might not be all inclusive at this stage, i.e. it is possible that more areas of a social sensitive nature might be found during the Impact Assessment phase.

Following on the social sensitivity map, the various subsections discuss the respective change processes and the potential impacts that could be experienced by the receiving environment as a result of the construction and operation of the proposed Kuyasa IPP Power Station and associated infrastructure. The categories of processes are as follows:

- **Geographical Processes:** the land use pattern within the (affected) area;
- **Demographical Processes:** the number and composition of the local population;
- **Economical Processes:** the way in which people make a living and the economic activities within a specific (affected) area;
- **Institutional and Legal processes:** the role and efficiency of the local authority and other service providers in the area in terms of their capacity to deliver services to the local area; and
- **Socio-Cultural Processes:** the way in which humans interact and relate to each other within the context of their environment, and how this interaction is guided by their value systems.

Figure 3.1: Preliminary Social Sensitivity Map (based on a 5km radius) for the Proposed Kuayasa IPP Power Station site alternatives



2.5 Baseline Geographical Process

Geographical processes relate to land use patterns, both established and planned. Land use is defined as "... the human modification of the natural environment or wilderness into a built environment such as fields, pastures, and settlements."⁸ This subsection therefore describes the current and future land use in the project area (baseline profile), followed by the description of the expected change processes and potential social impacts that can result from project implementation.

During the orientation site visit in March 2010, the following land use trends were identified within a 5km radius of the proposed sites:

- Small-scale human settlement (scattered households);
- An informal settlement along the R50, approximately 1km west of site alternative 2;
- Commercial farming (mostly maize), but some cattle were also observed;
- Mining activities; and
- Commercial and retail activities.

2.5.1 Current Land Use

The Delmas Local Municipality covers an area of approximately 1,570km², of which more than 60% are utilised for agricultural activities (Delmas IDP, 2009/10). The municipal area further consists of a mixture of urban and peri-urban areas and includes the towns of Delmas, Botleng, Eloff and Sundra. In addition to these formal urban areas, the IDP makes

⁸ www.wikipedia.org.za/wiki/Land_use.html

mention of a number of villages scattered around farms in the area. It further states that there has been a high migration rate in the past couple of years from these villages into areas such as Botleng, and Botleng Extensions 3 and 4, causing further expansion of informal settlements in these areas. In 2009/10, the Delmas Local Municipality estimated that informal settlements around the area constituted approximately 5,000 households, most of which were located in and around Botleng.

Although agriculture constitutes the largest portion of land use in the Delmas area, it is not the largest contributor to the local economy (Delmas IDP, 2009/10).

Major roads and railway linkages traverse the Delmas area, which makes the area more accessible to people from outside of town. Major roads in the area include the following:

- The N12 highway linking Delmas with other towns in the province (Ogies, Witbank, and Nelspruit), and major cities and towns in neighbouring Gauteng;
- The R555 between Delmas and Springs;
- The R50 between Delmas and Pretoria; and
- The R42 between Delmas and Bronkhorstspuit.

In terms of the specific site alternatives, the following land uses were observed during the site visit undertaken in March 2010:

- **Site Alternative 2:** Crop farming (maize). At the time of the study it was unclear who the landowner of this farm portion is. If Kuyasa is the landowner, it is assumed that the land in question is leased to the current occupier, but the terms of such a lease agreement was not known. No houses or other structures were observed within the confines of the site.

Figure 3.2: Crop farming (maize) on Site Alternative 2, with Eskom 275kV transmission power lines in the background



- **Site Alternative 3:** Mining activities were observed on parts of the site, but it was not clear whether it was open cast mining or just a storage area. It is believed that the site belongs to Kuyasa and that the activities taking place on the site is part of their operations. One structure was observed within the confines of the site, but it was unclear from the aerial photograph what the structure is or whether or not it has been abandoned.



Figure 3.3: Mining activity taking place on Site Alternative 3

- **Site Alternative 5:** The site appears to be an open field located adjacent to Kuyasa's Delmas Colliery. At the time of the study the site was covered in cosmos flowers, illustrating why Delmas and surrounds form part of the Mpumalanga Tourism and Park

Agency's so called *Cosmos Country*. No houses or structures were observed within the confines of the site.

Figure 3.4: Land use on Site Alternative 5 with Eskom 275kV transmission power lines in the background



2.5.2 Future Land Use

The Delmas Spatial Development Framework (SDF) (as sections within the Delmas IDP) identified the following objectives:

- The optimal economic development associated with the area around the N12 corridor in the vicinity of the R42;
- The provision of land for housing projects that cater for various socio-economic groups;
- The provision of adequate social facilities to the Delmas area, for both urban and rural areas, including promoting the development of multi-purpose community centres in the area;
- Enhancing the tourism potential of the area by balancing the land use needs between the various sectors (mining, agriculture, conservation and tourism); and
- Promoting the establishment of agri-processing industries to complement the existing agricultural activities taking place in the area.

The development proposals for the area as contained in the SDF and summarised in the IDP mainly relate to development along major linear spatial features such as national and provincial roads. The following development proposals for the Delmas area are outlined in the SDF and the IDP:

Development Activity Corridors

The main aim of these development activity corridors is to promote economic development in the area between the railway and the N12. It comprises five strategic development areas, namely:

- The N12 development corridor that will link the Maputo Corridor to the Gold Reef Band. It is believed that this corridor will provide visual exposure to traffic along the N12 and also the planned Delmas Airport.
- Together with the N12, the R42, R50 and R555 form another economic activity node between Delmas and Botleng. Within Botleng Extensions 3 and 4, the area along Nelson Mandela Drive will be utilised to serve the surrounding community with an activity spine that will comprise of mixed land use. Secondary to this activity spine, is the activity spines located on the southern portion of the R42 (between the R50 and the R555), and along Samuel Road.

Economic Activity Nodes

The area south of the N12/R42 interchange has been earmarked for business and retail use. The southern section of Leeuwpoot (along the N12) will be earmarked for commercial and light industrial activity and house public services such as municipal offices, commercial and light industries. A tourism gateway is also planned within the same area, which will house services such as restaurants, a tourism information centre, and a special education academy.

Another economic activity node is planned further to the south along the R42 between Botleng, Delmas Extension 4, and the agricultural holdings. This activity node will be an extension of the existing node that comprises of commercial, light industrial and business/retail land uses. Existing and planned residential areas are located around this node.

A third economic activity node is planned along the R555 that will include the Delmas Central Activity District (CAD), currently comprising of business and light industrial areas. At the same time the development potential of the area around the R50/R555 intersection will be further expanded to make use of the road and railway infrastructure in the area.

Residential Developments

Residential development will take on the form of in-fill developments and will include developments such as the densification of Delmas West Extension 4 adjacent to the railway line, and south of Delpark up to the flood line. Other residential development areas include the east of Botleng, the area south of the Old Witbank Road into the Union Forest Plantation

Agricultural Holdings, the area north of Delmas Extension 4, the southern portion of the Remainder of the farm Leeuwpoort, and portion 6 of the farm Middelburg.

The IDP states that medium to long term pressure for residential developments can be expected into the Leeuwpoort area and in the area to the west of the R42. The area between Botleng and Botleng Extensions 4 and 5 will be utilised for mixed land use developments such as sports and recreation, as most of the area is regarded as unsuitable for residential development due to the geological instability of the area. The housing backlog in Delmas is currently estimated at around 5,000 units.

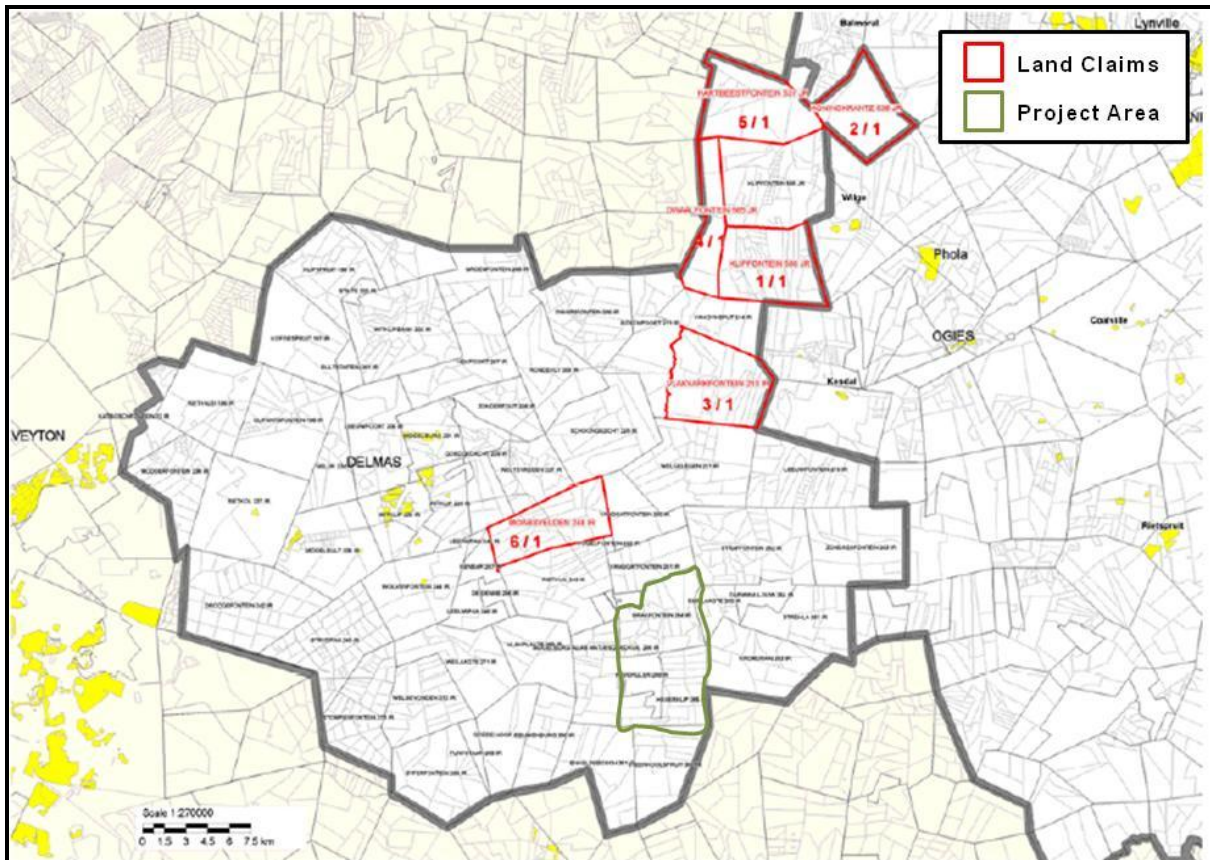
Land Claims

The majority of land claims are located in the north and north-eastern part of the municipality. Apart from one, these land claims have not been settled and are still being considered by the Department of Land Affairs and the Land Claims Commission. Claims were laid against the following farms:

- Klipfontein 568 JR;
- Honingkranz 536 JR;
- Dwaalfontein 565 JR;
- Hartbeesfontein 537 JR; and
- Moabsvelden/Middelbult 248 IR (settled in 2006).

Figure 3.5 below gives an indication of the location of these farms. No land claims exist within the proposed project area.

Figure 3.5: Land claims within the Delmas Local Municipality



Source: Delmas IDP 2009/10

Tourism

The Delmas IDP (2009/10) states that, to date, the tourism potential of the Delmas area has not been fully developed and that tourism development is one of the ‘untapped areas’ in Delmas. Some of the potential tourist sites identified includes the Bronkhorstspruit pans and the fact that Delmas is the main entry point from neighbouring Gauteng Province along the N12. For this reason the Delmas local municipality deems it necessary to establish a tourism information centre on the N12 just before the town of Delmas. Other sites of interest include cultural sites such as the Ndebele Heritage sites as well as the Voortrekker houses in the area. The length and depth of the caves at the Modder-east Orchards have to be determined after which it might be declared as a tourist attraction site.

The IDP further quotes from a document entitled *Formalisation of Cultural and Historical Sites in the Nkangala District* (2004), which states the following:

“The most prominent natural feature of the Delmas Local Municipal Area is the Skurweberg Mountain, so named for the ancient sandstone outcroppings that are a rare example of an ancient seabed from the Godwana period. This mountain stretches down the Hell’s Kloof Pass into the gorges and canyons cut by the Bankspruit, Elands and Komati Rivers. From a heritage point of view the Delmas municipal area is mainly agricultural with a few important

Iron Age sites, such as Kwahlanga which is the grave site of Inkosi Fene Mahlangu. One of the longest running court cases in South African history ran at the Delmas magisterial court. It was associated with the liberation struggle and was popularly known as the Delmas Treason Trial. It is recommended that a conservation & tourism strategy and guidelines should be formulated, which should look at the historical town and some of its more outlying elements.”

The IDP therefore highlighted the following strategic objectives as part of tourism development in the Delmas area:

- The positioning of Delmas as tourist information nerve centre to serve the Mpumalanga Province;
- The creation of employment in the Bed & Breakfast sector;
- The establishment of a one-stop tourism information centre on the N12;
- Promoting the Ndebele and Voortrekker heritage sites that are prevalent in the area; and
- The development of refreshment nodes in the Delmas area where tourists can stop and rest before they venture deeper into the province.

So What?

- Although agriculture constitutes the largest portion of land use in the Delmas area, it is not the largest contributor to the local economy (Delmas IDP, 2009/10).
- Any new development has to take cognisance of the local government’s formal planning for an area to ensure that such a development is not to the detriment of other planned activities – in some instances new development can enhance future development plans, e.g. broadening the municipal services base, enabling wider development to take place.

2.6 Expected Geographical Change Processes

The identification of geographical (land use) change process from a social perspective looks at how the presence of the proposed power station and associated infrastructure might change the behaviour/lives of land owners and/or land users in the project area. This is done by considering actual or perceived land use changes, whether on a temporary or permanent basis.

2.6.1 Potential Impacts

Table 3.1 below provides an overview of the expected geographical change processes as well as the potential impacts that might occur as a result of the changes taking place. The potential impacts will be expanded and assessed in detail during the Impact Assessment phase.

Table 3.1: Overview of Expected Geographical Change Processes and Potential Impacts

GEOGRAPHICAL PROCESSES				
Summary of Baseline Profile	Change Process and Expected Impacts	Impact Category		Status
		Pre-Construction, Construction & Decommissioning	Operation & Maintenance	
The predominant land use in the Delmas area is agriculture, although it is not the predominant economic sector. The sites self is characterised by crop farming (site 2), mining (site 3) and non-specific land use (site 5).	If site 2 is selected, the presumed lease agreement with the occupier will be terminated and the existing crops will be cleared from the area. This will have an immediate economic impact on the land occupier in question. It will reduce the crop yielding ability of maize production in the country as a whole, but due to the size of the land in question, this is not deemed to be a significant reduction. Immediate land use changes are not foreseen on sites 2 and 5 as the activities on these sites are already mining related.	2	1 ⁹	Negative to Neutral, depending on the preferred site.
A number of development activity corridors and economic activity nodes are planned in the area. These corridors and nodes are mostly concentrated around major linear spatial features. Planned residential developments mostly concentrate on in-fill developments of existing residential areas, none of which are in close proximity to the proposed	The construction and operation of the proposed power station and associated infrastructure (i.e. the presence of such infrastructure in the area) should form part of the local municipality's future spatial development planning and can therefore influence the placement of certain land uses to a certain extent.	2 ¹⁰	1	Negative to Neutral where it affects development plans. Positive where it enhances available services, which in turn enables further

⁹ Only one alternative will be in operation during this phase.

¹⁰ A preliminary assessment was not undertaken as the exact location and the extent of future land use was not known at the time of the study.

GEOGRAPHICAL PROCESSES				
Summary of Baseline Profile	Change Process and Expected Impacts	Impact Category		Status
		Pre-Construction, Construction & Decommissioning	Operation & Maintenance	
project sites.				development.
Unsettled land claims within the Delmas area are mostly located to the north and north-east of the municipal area.	No impact foreseen as there are no land claims on any of the proposed site alternatives.	n/a	n/a	n/a
The Delmas IDP (2009/10) states that, to date, the tourism potential of the Delmas area has not been fully developed and that tourism development is one of the 'untapped areas' in Delmas.	The presence of a power station might detract from the tourism experience, which in turn might yield an economic impact if visitors choose to rather visit more unspoilt areas. However, this impact is highly dependent on the reasons why tourists visit a certain area, which at the time of the study was unclear.	1	1	Negative to neutral

2.6.2 Information Requirements

To fully assess the potential impacts as a result of geographical change processes, more information is needed on the following aspects:

- The agricultural potential of the 3 sites;
- Detail on landownership and/or lease agreements on the 3 alternative sites;
- The size and number of expected construction and operational vehicles as well as which route(s) will be used to gain access to the various construction sites;
- Detail on planned developments within a 5km radius of the site alternatives; and
- The tourism profile of the local area.

2.7 Baseline Demographical Processes

Demographical processes relate to the size and composition of a community. The baseline demographical profile includes an overview of demographical aspects such as the population size, the racial composition, age, gender and the educational profile of the population. It also provides a broad overview of household arrangements.

2.7.1 Population

The Delmas Local Municipality covers a geographical area of 1,567.7km² in the western portion of the Mpumalanga Province. To the north, west and south the municipality borders on neighbouring Gauteng, whereas the eastern border is made up of the Emalaheni Local Municipality that also forms part of the Nkangala District.

In 2001, Delmas had a total population of 56,199 people. The population size decreased by some 5,747 people between 2001 and 2007, so that, in 2007, the population size was estimated at around 50,452 people. It is unclear why so many people left the area or where they went to, but presumably the majority left for the bigger urban areas either within the province itself or for neighbouring Gauteng in search of employment opportunities. In 2007 the population density in the area was around 32 persons per km², which is indicative of the mostly rural nature of the area.

Delmas has a fairly young population and in 2007 well over a third of the population (42.0%) were below the age of 15. The economically active population group (defined by StatsSA as the ages between 15 and 65) accounts for just over a half (54.1%) of the total population. It is noteworthy that the biggest decline in population between 2001 and 2007 was in the economically active population (by some 8,562 people), whereas the biggest increase in the population during the same period was in the age category 0-14 (by some 3,247 people). This tie in with the possibility that economically active individuals are leaving the area in search of employment elsewhere.

The predominant population group are Black African (88.3% in 2001, decreasing slightly to 87.6% in 2007). Just over half (51.2%) of the population are male, which is a turn-around from 2001 when the population was female-dominated. By far the majority of households are male-headed (71.2% in 2001). Interesting to note is that the majority of people who left the area were female (2,538 females against only 473 males), but is unclear why this phenomenon occurred.

2.7.2 Households

A household is defined as: “One or more people occupying a housing unit as their usual place of residence. The occupants may be a single family, one person living alone, two or more families living together, or any other group of related or unrelated people who share living arrangements”.¹¹

In 2001, Delmas had a total of 13,949 households, with an occupancy rate of approximately 4 persons per household. Despite the outflow of people, the number of households increased so that in 2007, Delmas had a total of 15,130 households, reducing the occupancy rate to 3.3 persons per household.

Table 3.2 below provides an overview summary of the population demographics of the study area in relation to South Africa, the Mpumalanga province and the Nkangala District.

Table 3.2: Summary of Population Characteristics

	South Africa	Mpumalanga	Nkangala		Delmas	
	2001 ¹²	2007	2001	2007	2001	2007
Area size (km²)	1,219,912	79,511.5 (6.5% of SA's land surface)	16,892.6 (21.2% of the MP's land surface)		1,567.7 (9.3% of the NDM's land surface)	
Total population	48,502,063	3,643,435 (7.5% of SA's total population)	1,020,285 (28.0% of the MP's total population) ↑	1,226,498 (33.7% of the MP's total population)	56,199 (4.6% of the NDM's total population) ↓	50,452 (4.1% of the NDM's total population)
Population density (people per km²)	39.8	45.8	60.4 ↑	72.6	35.8 ↓	32.2
Total households	12,500,610	940,403 (7.5% of SA's total number of households)	257,430 (27.4% of the MP's total number of households) ↑	305,566 (32.5% of the MP's total number of households)	13,949 (4.6% of the NDM's total number of households) ↑	15,130 (5.0% of the NDM's total number of households)
Avg. persons per household	3.9	3.9	4.0 ←	4.0	4.2 ↓	3.3

¹¹ irhr.ua.edu/blackbelt/glossary.html

¹² Census 2001 data (2007 data not readily available)

Predominant Population Groups	Black African (79.5%) ¹³	Black African (92.0%)	Black African (91.2%) ↓	Black African (90.9%)	Black African (88.3%) ↓	Black African (87.6%) ↓
	-	-	White (7.7%) ↑	White (7.8%)	White (11.0%) ↑	White (12.0%) ↑
Predominant Gender	Female (50.8%) ⁹	Female (51.4%)	Male (59.1%) ↓	Female (50.1%)	Female (50.8%) ↓	Male (51.2%) ↓
Predominant Age Group	Working age (62.9%)	Working age (62.0%)	Working age (62.2%) ↑	Working age (66.3%)	Working age (63.8%) ↓	Working age (54.1%) ↓

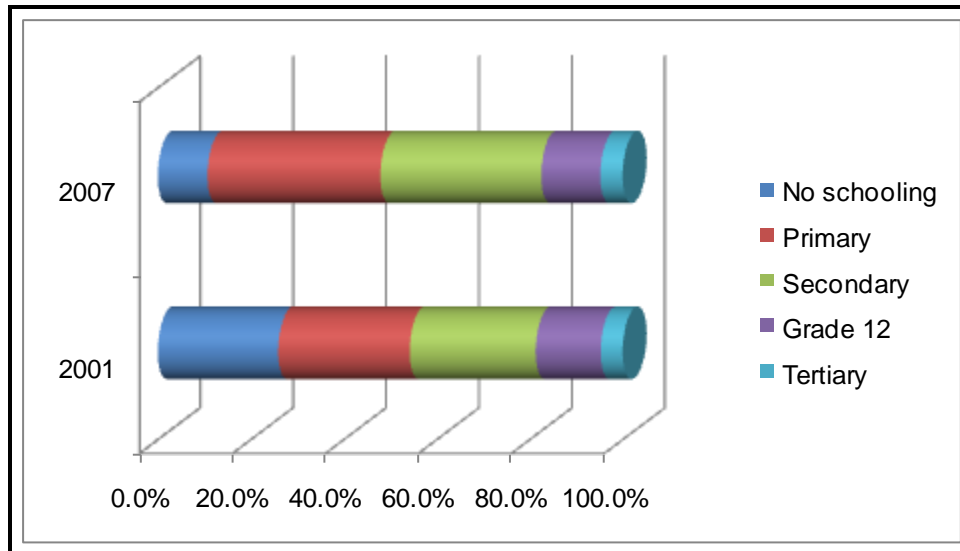
2.7.3 Education

One of the driving forces behind social change is educational attainment, which in turn is linked to poverty levels as there appears to be a correlation between the level of educational attainment and income levels. People with higher educational levels tend to be economically better off, and therefore contribute more to the reduction of the unemployment rate. Educational attainment is also linked to poverty in the sense that funds are required to further studies, therefore people living in less favourable economic conditions tend to be unable to further their education, which in turn holds them in a downward poverty spiral.

An overview of the educational profile for the affected area is provided in Figure 3.5. In 2001, a quarter (25.9%) of the population aged 20 years and older had no form of schooling. Coupled with those individuals who only completed some form of primary education (a further 28.3%), this means that, in 2001, more than half (54.2%) of Delmas' population had limited educational skills, which in turn would hinder their employability on the general job market. A further quarter (27.1%) of the population completed some form of secondary education, which could enhance their employability, but it is believed that it would only slightly increase their chances of finding employment. Only 14.0% of the total population completed Grade 12 with a further 4.7% who went on to obtain a tertiary qualification. The situation only improved marginally between 2001 and 2007: Although the number of people who had no form of education decreased drastically to 10.7%, those who completed Grade 12 also decreased to 12.7%, whereas those who only completed some form of primary or secondary education still accounted for more than two thirds of the population (71.8%).

⁹ Census 2001 data

Figure 3.5: Overview of the Education Profile for Delmas (2001 and 2007 compared)



So What?

- The baseline demographic profile provides an overview of the local area that will be affected to ensure proper planning that will affect the least amount of people during both construction and operation; and
- The baseline educational profile provides the project proponent with an indication of the skills levels that might be available in the area in an attempt to predict whether or not it would be possible to source labour and services from the local community.
- Although it seems that the project will be able to source local semi-skilled and unskilled labour with relative ease, it may be more difficult to find qualified individuals locally. It is likely that qualified positions will be filled from elsewhere in the province and from Gauteng. As the quality of rural state schooling is increasingly being questioned, it may be necessary to invest in comprehensive training for persons appointed from the area and other similar areas.

2.8 Demographical Change Processes

The construction of the proposed power station and associated infrastructure will lead to a (mostly temporary) change in the number and composition of the population within the affected local area, which in turn could lead to economic, land use, and socio-cultural change processes.

2.8.1 Workforce

It was estimated that approximately 5,500 employment opportunities would be created with the construction and operation of Eskom's 4,800MW Medupi Power Station, of which 5,000 positions would be during construction with a further 500 positions during operation (Environmental Impact Report for the proposed establishment of a New Coal-Fired Power

Station in the Lephalale Area, Limpopo Province, 2006:427). It was further estimated that the construction period would last approximately 42 months and that the power station would be in operation for an estimated 50 years.

At 600MW the Kuyasa power station is significantly smaller than Medupi, and therefore it is not expected that as many employment opportunities will be created. At the time of the study the number of employment opportunities that would be created by the proposed project was unconfirmed, but a conservative estimate places it at around 1,000 positions, some on a temporary basis during construction with others on a more permanent basis during operation. A more exact estimate would have to be confirmed during the Impact Assessment phase.

In addition to the power station itself, the possibility also exists that the Delmas Colliery would have to expand to meet the additional demand for coal created by the power station. In the case of an expansion this would create further employment opportunities, which means an increased workforce. At the time of the study it was unclear whether or not such an expansion would be required, and if so, what the required workforce would be.

2.8.2 Potential Impacts

Table 3.4 below provides an overview of the expected demographical change processes as well as the expected impacts that might occur as a result of these change processes taking place. The potential impact(s) that follow from a particular change process taking place will be assessed in detail during the Impact Assessment phase.

Table 3.4: Overview of Expected Demographical Change Processes and Potential Impacts

DEMOGRAPHICAL PROCESSES				
Summary of Baseline Profile	Change Process and Expected Impacts	Impact Category		Status
		Pre-Construction, Construction & Decommissioning	Operation & Maintenance	
In 2007 the total population in the Delmas area stood at just below 50,500 people. Measured against 2001 Census data, approximately 40% of the population live in Delmas itself, whereas the remaining 60% live in Botleng and its extensions. The overall population density in 2007 was estimated at around 32.2 people per km ² , which is indicative of the overall rural nature of the municipal area.	<p>It is expected that the construction and operation of the proposed power station and its associated infrastructure (including mine expansion, if required) will lead to an influx of people to the area. Based on the conservative estimate of around 1,000 new employment opportunities, this would represent an approximate 2% increase in population, which is more than double the current population growth rate of 0.58% (Delmas IDP, 2009/10). A change in the number and composition of the local population can lead to economic, health, safety and social-wellbeing impacts.</p> <p>However, the impact is expected to significantly decrease during the operation and maintenance phase as the size of the operational team will be considerably smaller than that of the construction team.</p>	1	1	Negative to neutral, depending on the number of people, the municipality's ability to cope with the accelerated population growth rate and the affected local community's resilience to change.
The current baseline profile indicated that close on 6,000 people left the area since 2001, presumably in search of employment elsewhere.	The presence of the construction team and the prospect of employment might reverse the outflow of people, i.e. an influx of unemployed work seekers is expected. It is difficult to predict	1	1	Negative to neutral, depending on the size of the work seeker population.

DEMOGRAPHICAL PROCESSES				
Summary of Baseline Profile	Change Process and Expected Impacts	Impact Category		Status
		Pre-Construction, Construction & Decommissioning	Operation & Maintenance	
	what the impact would be as a result of this, as it is coupled to the number of people who return to the area. However, as is the case with the more controlled influx of people due to formalised employment, the influx of unemployed work seekers can lead to economic, health, safety and well-being impacts. It can further lead to the expansion of informal settlements, which can amplify the expected impacts.			
From the Google Earth image, it appears that there are approximately 84 households and structures within a 5km radius from the sites under investigation.	As per figure 3.6 below, it appears that the biggest cluster of households and other structures are located around site 3, to the north (22-31), east (7-13 and 14-21) and south (1-6) of the site. This is also the only site where there is a structure (32) located within the site's footprint, but at this stage it is unclear what the structure is used for and whether or not it is inhabited. Although households and structures immediately surrounding the site might not be directly affected, indirect impacts (e.g. visual impacts, air quality impacts, etc.) are likely due to the close proximity of the power station to these households/structures. Depending on the extent and intensity of such indirect impacts, the relocation of these households/structures might	2	n/a	Negative

DEMOGRAPHICAL PROCESSES				
Summary of Baseline Profile	Change Process and Expected Impacts	Impact Category		Status
		Pre-Construction, Construction & Decommissioning	Operation & Maintenance	
	<p>become necessary.</p> <p>The relocation of households' impacts on the affected households' way of life – but this is to a large degree influenced by the affected family's level of attachment to their environment, which in turn is influenced by the family history, years spent in the area, etc.</p>			

Figure 3.6: Households and structures within a 5km radius from the site alternatives



Table 3.5: Preliminary Assessment: Relocation of Households

DEMOGRAPHICAL CHANGE PROCESS: RELOCATION OF HOUSEHOLDS			
Category 2 Impact	The relocation of households would have an impact on the affected residents' way of life and the standard of life they have grown accustomed to.		
	Site 2	Site 3	Site 5
Extent	Local	Local	Site
Duration	Long term	Long term	Long term
Magnitude	High	High	High
Probability	Probable	Highly probable	Probable
Status	Negative	Negative	Negative
Explanatory notes:			
<p>This brief assessment was based on a desktop identification of social sensitive areas through the use of <i>Google Earth</i> (refer to Figure 3.6). Households and other structures have been marked that are within a 5km radius of the three site alternatives - these were the social sensitive areas visible to the social specialists at the time of the study, although it is possible that more structures areas might be identified during the Impact Assessment Phase.</p> <p>The closest houses/structures to Site 2 (blue) are located approximately 500m to the north of the site [32-36]. An informal settlement [52] is located approximately 1km to the west of this site. Further eastwards, at approximately 1.5 km from the site, there is a tourist destination in the form of a lodge [60].</p> <p>One structure [32] is located within the boundaries of Site 3 (yellow), although it is unclear what the structure is used for or whether or not it is inhabited. A cluster of households and other structures are located approximately 95m to the north of the site [22-31]. Approximately 260m to the east of the site lays another cluster of households [14-16 and 17-21]. More houses are located approximately 290m to the southeast of the site [7-13], with more houses approximately 240m to the south of the site [1-6].</p> <p>Site 5 (orange) is located in close proximity to the Delmas Colliery, presumably where coal for the power station would be sourced from. The closest structure/household to this site is located approximately 170m to the east of the site's eastern boundary [33]. Further east, at approximately 800m, is another cluster of houses, which is the same cluster of houses that lies south of site 3 [1-6]. More houses lie to the west of the site, at approximately 1.8km [65-74].</p> <p>Although site 3 is the only site that has a structure within its boundaries, the close proximity of households and structures to all of the sites have to be considered as the construction and operation of the power station might yield indirect social impacts on these houses and structures, which in the end might necessitate the relocation of these structures and households, especially in the case of households that are inhabited by humans.</p>			

2.8.3 Information Requirements

To fully assess the potential impacts as a result of demographical change processes, more information is needed on the following aspects:

- The composition of the construction workforces in terms of size, skills levels, and origin;
- The composition of the maintenance workforce and their activities;

- The number of local employment opportunities that could influence the number of people entering the area; and
- A baseline profile of the households within a 5km radius from the various sites.

2.9 Baseline Economical Processes

Economical processes relate to the way in which people make a living and the economic activities within that society. The employment status within any given area gives an indication of the economic stability of such an area and also serves as an indicator of such an area's general well-being.

2.9.1 Regional and Local Economic Composition and Trends

The economic growth rate of the Nkangala District area was on average 3% per year between 1996-2003, compared to the 2% for the Mpumalanga Province and the national average of 2.5%. Nkangala contributed 3.32% to the national economy in 2003, compared to the 6.87% contribution by the Mpumalanga province to the national economy (Department of Cooperative Governance and Traditional Affairs, 2005). The overall economic growth for the Nkangala District area declined to 1.9% during the period 2005-2007 (Mpumalanga Provincial Government, 2008).

The main economic sectors that are dominant in this district are mining, manufacturing and the energy/electricity sectors which contributed 34.1%, 21.8% and 16% respectively to the local economy during 2003 (Department of Cooperative Governance and Traditional Affairs, 2005). The mining contribution is due to the activities of a number of large scale coal miners such as BHPBilliton, Anglo Coal and Xtrata. Information from the Nkangala District indicates that the Delmas area contributes between 3-4% to the economy of the total district, but this contribution is dwarfed by the contributions of the Emalathleni and Steve Tshwete areas (between 42% and 47% each). There is evidence that the total output of the agricultural sector experienced significant levels of growth in the district while the mining and minerals sector declined both within the district and at a provincial level (Mpumalanga Provincial Government, 2008).

In contrast to these mining dominated areas the main sector in the Delmas area is trade and hospitality followed by agriculture. Both mining and manufacturing do however play a major role, contributing just over 10% each. The electricity, gas and water industry contributes less than 5% of the local economy despite the fact that Eskom operates a number of large power stations in the district area that comprise a large portion of South Africa's electricity generation capacity.

The Nkangala District has completed a Local Economic Development, Job Creation and Marketing Strategy to address the issues of economic development in the district. The LED Strategy has the following seven pillars:

- Good Governance and Management/Delivery Capacity;
- Human Resources and Community Development;
- Industrial and Big Business Development;
- SMME Development and Support;
- Agricultural Development;
- Tourism Development; and
- Rural Development.

2.9.2 Employment and Economic Sectors

Table 3.6 below provides an overview of the employment and economic sectors of the study area in relation to South Africa as a whole, and the affected province (Mpumalanga). From this table it is clear that the study area is characterised by a fairly low employment rate where, on average, just over half of the working age population (excluding the not economically active population) within the study area is formally employed.

Table 3.6: Overview of Employment and Economic Sectors

	South Africa	Mpumalanga	2001		2007	
	2001 ¹⁴	2007	Nkangala (N = 638,550)	Delmas (N = 36,109)	Nkangala (N = 773,941)	Delmas (N = 32,645)
Employed*	33.7%	40.1%	31.3%	36.6%	42.1%	48.2%
Unemployed*	24.0%	20.0%	24.4%	27.1%	19.8%	17.3%
Not economically active	42.3%	39.9%	44.4%	36.3%	38.1%	34.5%
Employment rate**	58.4%	66.7%	56.2% (N = 355,340)	57.5% (N = 23,016)	68.0% (N = 479,190)	73.6% (N = 21,367)
Predominant industry	Community services (29.1%)	Undetermined (29.0%)	Undetermined (82.3%)	Undetermined (79.0%)	Undetermined (29.1%)	Manufacturing (17.6%)

* This is the percentage employed/unemployed of the entire working age population and should not be read as the unemployment rate, i.e. the not economically active population is included in this segment.

** In order to reflect a more accurate employment rate, the not economically active population has been excluded from this segment.

When local employment figures are considered in the context of provincial and district information it seems that employment levels in the Delmas area are higher than that of either the district or the province. Better local employment may be due to the migration of

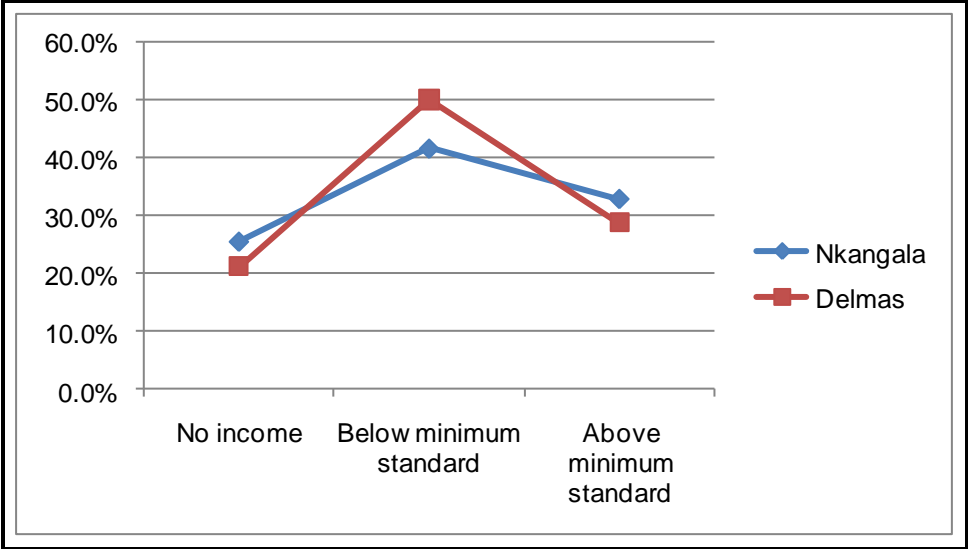
¹⁴ Census 2001 data (2007 data not readily available)

unemployed work seekers to larger economic centres such as Gauteng or the Witbank/Middelburg area, a phenomenon which is often associated with rural areas with limited opportunities.

2.9.3 Income Profile

The graph below (Figure 3.7) provides an overview of the household income levels for Nkangala compared to that of Delmas. The graph indicates that, although fewer households in Delmas has no form of income compared to the district as a whole, Delmas is still characterised by poorer households given the fact that by far the majority of households earn less than minimum standard (\leq R 20,000 per annum), including a vast number of households who have no income whatsoever. Given the increased employment rate in the area between 2001 and 2007, the household income profile might have changed significantly in recent years, although Community Survey 2007 did not include household income as a variable.

Figure 3.7: Comparative overview of Household Income (2001)



Evidence of generally better access to employment is apparent from the comparison of local, regional and provincial income figures. Fewer respondents in the Delmas area tended to indicate that they received no income and significantly more persons indicated that they receive between R1 and R800 per month. The lack of opportunity for both the unemployed as well as the highly skilled, which explain the skills and employment profiles above, may also help to explain the local income profile.

2.9.4 Macroeconomic issues of importance

Due to the integrated nature of the South African economy and the heavy reliance of rural areas on urban centres for goods, services and labour, it is important to consider macroeconomic forces which currently affect the local economy.

- **Return of energy and resources demand**

The 4th quarter GDP results indicate an increase of 3.2% quarter on quarter annualised (StatsSA, 2010), which may be indicative of a gradual local and worldwide recovery from the recent economic recession. This recovery probably signals a return of the demand for resources and energy from both the developed world as well as large middle income countries such as Brazil, India and China. The trend can be seen by the gradual increase in the price of export Coal to above \$60 per ton and the substantial increase of the oil price (bent crude per barrel) from \$50 in the April 2009 to \$85 in April 2010. Although a second reduction in economic activity (a so called double-dip recession) has not been ruled out, there are increasing signs that growth has returned, albeit in the form of a longer and slower growth path (as opposed to the strong growth experienced in the period 2000-2008). Additionally, continuous population growth makes long term resource and energy growth inevitable.

- **Security of Power Supply**

In the period immediately after the supply shortage and 2007/2008 power blackouts, Eskom announced a number of new power generation facilities including new coal-fired power stations, refurbishment of mothballed stations and oil, and diesel or gas powered turbines in order to ensure appropriate supply and the needed reserve margin. In the intervening period several of these projects have experienced delays as the economic recession has led to reductions in demand pressure. However, with possible recovery looming, the situation may change in 2010/2011 and demand growth may resume. Short to medium term electricity supply security is instrumental in securing economic growth and investor confidence (HIS Global Insight, 2009).

- **International focus on clean energy**

The development of renewable energy feed-in tariffs and recent comments by the International Monetary Fund (IMF) regarding a preference for financing cleaner energy, during the application by Eskom for project financing, are likely to influence the energy sector. These developments could lead to an increase in activity by independent power producers (IPPs) focusing on clean energy, thereby creating a competitive environment for electricity provision. However, this may also increase public resistance to traditional generation methods, eventually leading to policy shifts and further economic incentives, such as tax advantages and rebates, for cleaner energy. These incentives are currently being expanded in Europe and the US, and South Africa may follow with similar initiatives.

2.9.5 Site Economic Activity

Economic activity on site alternatives 2 and 3 is limited to maize farming on unused and undeveloped sections. There seems to be no cultivation agriculture activities found on site alternative 5. The project proponent, Kuyasa¹⁵, indicated that the land on which the sites are located belongs to Billiton Energy Coal South Africa (BECSA) and that the land is currently leased to users such as the mine and farmers. Grazing cattle was spotted south of site alternative 3, but they may graze on other sites as well. The exact nature of the lease agreements and the rights of farmers to the sites is not known and must be investigated further.

Residents on the northern border of Site 3 (who also seem to be farming in the area) have set up a small kiosk and fast food restaurant near their residence and seem to benefit from business as a result of passing traffic on the R50 due to mining and power generation activities in the area. A lodge is in operation near the current Delmas colliery to the west of site alternative 2. The economic activity of local residents and the lodge are unverified at this stage and need to be confirmed during the impact assessment phase.

So What?

- The project area is expected to experience renewed interest from mining operations in order to capitalise on resource demands.
- The district may lose productive agricultural land as mineral deposits that were previously not economically viable become so. Operations which have been marginally profitable during the economic downturn may return to profitability if the current trends continue and global resource demands recover fully.
- The project has the potential of “securing” economic activity by assisting in removing supply constraints if Eskom generation activities result in a supply shortfall. When supply is constrained it represents a limitation to economic growth. When a supply reserve is available, it represents an opportunity for economic growth.
- Coal fired power producers (such as those found in the Nkangala District Municipality area) may be affected in the long term as an increasing number of renewable IPPs attempt to provide energy to the grid and provide off-grid solutions. These IPPs may benefit from better economic viability due to increasing economic policy incentives for renewable energy.
- The economy of the Delmas area is currently small compared to other areas in the district and the province. Economic development and opportunities may be welcomed both by local residents and government, depending on public perception on the potential environmental impact.
- Although the economy is diversified it is likely that a portion of the industry benefits due to the power station may flow to neighbouring Gauteng province due to its proximity. The

¹⁵ Mr M Saliwa of Kuyasa, personal communication

extent to which local businesses are able to provide services to the project must be investigated further.

- Despite higher employment levels in the local area, unemployment is still high. The project might provide some employment relief, depending on the hiring practices used during the project and the extent to which local employment is prioritised.
- Loss of access to land for cultivation and grazing purposes is likely to be the main local negative economic impact that must be investigated. There appears to be possible local economic benefit due to the proposed project in the form of increased business opportunities that require businesses to be in close proximity to the site.

2.10 Economical Change Processes

Economical change processes relate to the changes brought about to the employment and general economic profile of an area as a result of the introduction of any development. For example, job opportunities might be created as a result of the construction and maintenance of the proposed power station and associated infrastructure. Employment creates a source of income, which in turn enables the employed individual to access services as a support mechanism for his/her family.

2.10.1 Potential Impacts

Table 3.7 below provides an overview of the expected economical change processes as well as the expected impacts that might occur as a result of these change processes taking place. The potential impact(s) that follow from a particular change process taking place will be assessed in detail during the Impact Assessment phase.

Table 3.7: Overview of Expected Economical Change Processes and Potential Impacts

ECONOMICAL PROCESSES				
Summary of Baseline Profile	Change Process and Expected Impacts	Impact Category		Status
		Pre-Construction, Construction & Decommissioning	Operation & Maintenance	
The supply shortage experienced by Eskom has highlighted the implications of security of supply and its role in economic growth. Although demand for electricity dropped in 2009, demand growth may resume in 2010/2011, highlighting the economic implications.	The project has the potential of “securing” economic activity by assisting in removing supply constraints if Eskom generation activities result in a supply shortfall.	1	1	Positive
A likely gradual economic recovery and a recovery of the resource sector prices are occurring. This may lead to increasing investment and business opportunities in resources and energy generation sectors in South Africa.	The proposed project is likely to contribute to this trend by creating economic injections, supply opportunities and increased consumer spending both during construction as well as operations. A large component of construction costs would involve the purchase of overseas equipment, but South African construction firms will likely benefit to a large degree. The level on local beneficiation from construction is uncertain and requires further investigation. There is a greater chance that the operational phase will supply opportunities that will be regional or local in nature due to the existing power generation industry.	1	1	Positive
High unemployment and low access to income in	The proposed project will likely improve the	1	1	Positive

ECONOMICAL PROCESSES				
Summary of Baseline Profile	Change Process and Expected Impacts	Impact Category		Status
		Pre-Construction, Construction & Decommissioning	Operation & Maintenance	
the local area and especially the district.	current baseline profile through the creation of employment opportunities. Increased household spending and upstream industry activity will result in indirect employment. Employment will in turn result in better income earnings and an improved local and regional income profile. The exact level to which local opportunities will be created must be investigated further.			
Commercial crop farming appears to be the main activity in the area.	The proposed project will probably impact on farming activities if site 2 or 3 is chosen by denying access to current rented farmland. This will in turn reduce local agricultural production and farmer income from agricultural activities. In respect to this impact there are indications that site 5 may be a preferred site.	2	2	Negative
A hospitality/accommodation establishment and a trading business are located in the area in close proximity to at least one site.	The proposed project may result in increases in revenue for businesses in close proximity that supply essential services, such as accommodation, catering and basic consumer products. Negative impacts are expected to be minimal as the establishments are already located in an area of industrial development close to the Delmas coal mine. It is thus unlikely	1	1	Positive

ECONOMICAL PROCESSES				
Summary of Baseline Profile	Change Process and Expected Impacts	Impact Category		Status
		Pre-Construction, Construction & Decommissioning	Operation & Maintenance	
	that these businesses' customer patronage is based on a pristine environment – however, this will have to be confirmed during the impact assessment phase.			

Table 3.8: Preliminary Assessment: Economic Impact on Farming Activities

ECONOMICAL CHANGE PROCESS: CHANGE IN AGRICULTURAL LAND USE			
Category 2 Impact	The proposed project will probably impact on farming activities if site 2 or 3 is chosen by denying access to current rented farmland. This will in turn reduce local agricultural production and farmer income from agricultural activities.		
	Site 2	Site 3	Site 5
Extent	Site	Site	Site
Duration	Long term	Long term	Long term
Magnitude	Medium	High	Low
Probability	Probable	Highly probable	Improbable
Status	Negative	Negative	Negative
Explanatory notes:			
<p>This assessment is based on the observation of maize farming on a portion of both Site 2 and 3 and grazing cattle observed south of Site 3 which may also be found on the other sites. The impact on Site 2 is likely to be reduced as the proponent indicated during interviews that the project infrastructure will be located south of the existing power line, which greatly minimises impacted farmland.</p> <p>There may still be grazing rights allocated to site 5 and these will be investigated further during the EIA phase.</p> <p>The total value of crops planted (both historically and in the last year) and a realistic loss of income for the renter (based on the lease contract) will be modelled during the EIA phase.</p> <p>In order to gather necessary information interviews with lessees is considered crucial.</p>			

2.10.2 Information Requirements

To fully assess the potential impacts as a result of economical change processes, more information is needed on the following aspects:

- The total size of affected farm/property portions leased or owned and used for cultivation, in order to determine the size of the possible agricultural production loss;
- The types of activities that are pursued on any given (affected) property;
- The income derived from these activities;
- Capital investments that have been made on (affected) properties with the aim to generate income;
- The number of people that are employed by affected farmers or other businesses;
- The employment opportunities that will be created, both formal and informal in nature and the likely local percentage of this;
- Likely local supply opportunities which may increase the level of local beneficiation; and
- Total construction value of the project and likely annual revenues during operation.

2.11 Baseline Institutional and Legal Processes

Institutional and Legal processes refer to the role and efficiency of the local authority and other service providers in the area in terms of their capacity to deliver a quality and uninterrupted service to the local area.

2.11.1 Municipal Services

Table 3.8 below provides an overview of the municipal services of the Delmas area in relation to the Nkangala District and the Mpumalanga Province as a whole. No data could be obtained for the overall municipal service delivery in South Africa.

Table 3.8: Overview of Municipal Service Delivery

	South Africa	Mpumalanga	2001			2007	
			Nkangala	Delmas	Nkangala	Delmas	
Energy Cooking	-	Electricity (55.7%) ↓	Electricity (48.8%) ↓	Coal (49.1%) ↓	Electricity (59.6%) ↓	Electricity (54.1%) ↓	
Energy Heating	-	Electricity (45.0%) ↑	Electricity (47.9%) ↓	Coal (54.6%) ↓	Electricity (49.3%) ↓	Coal (47.4%) ↓	
Energy Lighting	-	Electricity (82.2%) ↓	Electricity (79.3%) ↓	Electricity (64.9%) ↓	Electricity (81.5%) ↓	Electricity (80.1%) ↓	
Refuse	-	Own disposal (49.6%) ↑	Own disposal (43.9%) ↑	Removed once a week (62.5%) ↓	Own disposal (48.1%) ↑	Removed once a week (75.1%) ↓	
Sanitation	-	RDP standard or above (55.5%) ↓	RDP standard or above (50.6%) ↑	RDP standard or above (69.1%) ↓	RDP standard or above (54.9%) ↑	RDP standard or above (78.0%) ↓	
Water	-	RDP standard or above (91.1%) ↓	RDP standard or above (76.7%) ↓	RDP standard or above (66.4%) ↓	RDP standard or above (75.9%) ↓	RDP standard or above (74.1%) ↓	

Although the overall number of households in the Delmas area who make use of electricity for lighting has increased between 2001 and 2007, large segments of the population still make use of coal for cooking and heating purposes. At least three quarters of households within Delmas have their refused removed once a week, which is much higher than the standard for the district where the majority of households make use of their own (informal) waste disposal sites, which means that waste is not properly stored or treated, which in turn leads to unhealthy living conditions. At least a quarter of households in Delmas access to water and sanitation services are below RDP standard.¹⁶

¹⁶ RDP standard in terms of water supply implies piped water to a dwelling or within 200m of a dwelling, whereas sanitation services in line with RDP standard is defined as toilet facilities connected to a waterborne sewerage system or at least a ventilated pit latrine.

According to the Delmas IDP (2009/10), water in the area is mostly supplied from boreholes. Numerous developments in the area, including residential and industrial developments, have placed an enormous demand on the water supply, so much so that the demand for water now exceeds the supply (the demand is estimated at 18 MI/day, while the boreholes are only able to supply 16 MI/day). Currently the Rand Water supply is used to augment the water supply to Delmas, but this in turn had a negative effect on the water supply in certain areas, e.g. Eloff Agricultural Holdings.

Two sewer plants serve the Delmas area, one within Delmas itself with a capacity of 5 MI/day and the other in Botleng with a capacity of 4 MI/day. Both these plants are over capacity, with the Delmas plant receiving up to 8 MI/day and the Botleng plant receiving approximately 6 MI/day. This has the effect that waste water is not treated properly and that discharge from these plants into rivers and streams are not on par with the standards required in the National Water Act (Act 36 of 1998). The IDP ascribes the overload of the sewerage system to the numerous new residential and industrial developments in the area.

2.11.2 Crime

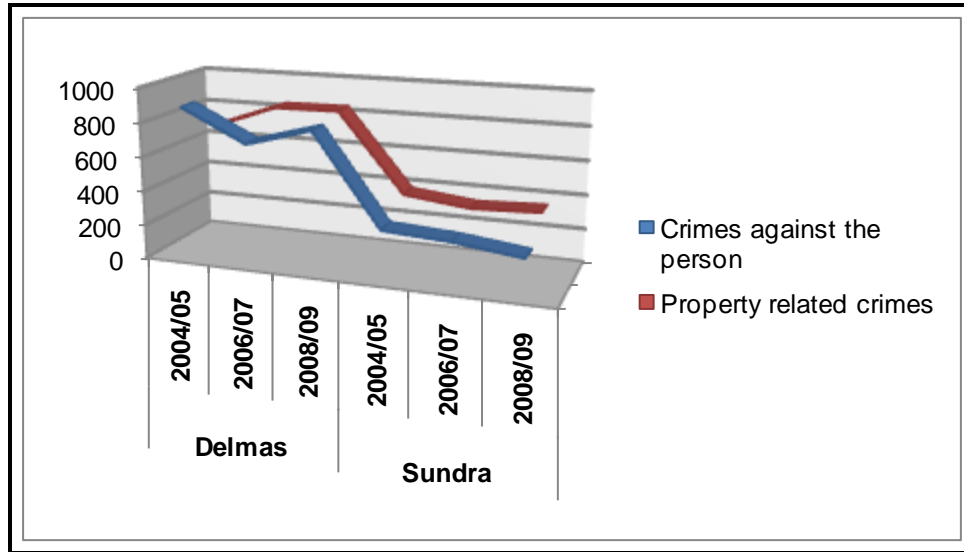
The Delmas Local Municipal area is serviced by 2 police stations, one in Delmas and one in Sundra. According to the South African Police Service's website, the ratio of police officers in the Mpumalanga province as at February 2010 was 1 police officer for every 406 citizens. On a population size of 50,452 theoretically this means that there should be approximately 124 police officers deployed throughout the area.

According to statistics supplied by the Crime Information Management Services of the South African Police Service¹⁷, there was a steady decline in the crime rate of the area (measured against the Delmas and Sundra police stations' number of crimes reported for the years 2004/05, 2006/07 and 2008/09). For the purposes of this scoping study only crimes against the person (murder, sexual crimes, attempted murder, assault with grievance bodily harm, common assault, armed robbery and common robbery) and property-related crimes (burglary and theft) were considered.

Figure 3.8 below provides an overview of the baseline profile on crime in the project area. Although it appears as if crime is on the decline in both areas, in general Delmas had almost double the crime rate than neighbouring Sundra. During the period under review a total of 2,390 crimes against the person were reported in Delmas, whereas only 754 cases were reported in Sundra. As far as property related crimes are concerned, a total of 2,375 cases were reported in Delmas and 1,071 cases in Sundra.

¹⁷ http://www.saps.gov.za/statistics/reports/crimestats/2009/crime_stats.htm

Figure 3.8: Crime profile of the study area



There is perception that crime increases in an area the moment that construction workers arrive on site. Because of this perception, occurrences of crime during the time of the project are likely to be ascribed to the construction workers. This has a mental health impact, such as fear. However, it should be noted that in most instances it is not the actual construction worker who engage in criminal activities but more likely job seekers who loiter at the site in search of employment.

2.11.3 Infrastructure and Services

According to the Delmas IDP (2009/10), the area is serviced by one hospital, three primary health care clinics and three mobile clinics, of which only one is operational. In addition there are six private general practitioner practices and one private clinic. There are a total of 14 non-governmental organisations operating within the public health sector, but it appears as if most of these NGOs operate within the realm of HIV/AIDS care.

The Delmas Local Municipality has a Disaster Management Department whose responsibility it is to plan, prevent, respond, mitigate and rehabilitate any risks associated with significant events in the area. As part of their planning, the department has a Disaster Management Plan that is reviewed on a biannual basis. Some of the major shortcomings as identified in the IDP are a shortage in emergency response vehicles, limited emergency care products, and a shortage of trained and experienced staff. Overall the IDP has identified the following problem areas associated with the municipal area's infrastructure and services:

- A lack of proper facilities such as mobile clinics, most notably in far-lying areas;
- A shortage of properly trained medical staff, especially doctors and nurses;
- An unreliable supply of medicine;
- A lack of education and ignorance on residents' parts in terms of illnesses such as HIV/AIDS;

- A general sense of poverty increases the likelihood that people engage in risky sexual behaviour such as commercial sex work and entering into short-term sexual relationships to gain financially from such a relationship;
- Insufficient entertainment facilities forces people to entertain themselves which often ends in alcohol abuse, crime and unprotected sexual practices;
- Despite the statistics released by the South African Police Service that indicate that crime rates are on the decrease in the area, the IDP states that criminal activities is still a huge concern, especially in the case of crimes against the person (most notably rape and other sexual offences);
- Despite the presence of so many NGOs in the area, these organisations often do not have all the required resources to assist vulnerable groups and infected individuals;
- A shortage of health care facilities, most notably in far-lying rural areas; and
- The stigmatisation of certain diseases, especially HIV, which prevents people to disclose their status, inadvertently increasing the risk of spreading the disease.

So What?

- The baseline institutional and empowerment profile gives an indication of the municipal services available, the local municipalities' ability to provide for additional connections if required (e.g. removing waste from site), and the capability of the area to provide in health and other emergency services.
- This information enables the project proponent and its appointed contractors to plan ahead by ensuring that they include keys aspects such as emergency management plans in their planning process and costing.

2.12 Institutional and Empowerment Change Process

Institutional and Legal Change Processes assesses the way in which a development of this nature could change the face of service delivery in the affected area and how this change in turn could affect the quality of life of local residents.

2.12.1 Potential Impacts

Table 3.9 below provides an overview of the expected Institutional and Legal Change Processes likely to occur as well as the expected impacts that might occur as a result of the change processes taking place. These potential impacts will be assessed in detail during the Impact Assessment phase.

Table 3.9: Overview of Expected Institutional and Legal Change Processes and Potential Impacts

INSTITUTIONAL & LEGAL PROCESSES				
Summary of Baseline Profile	Change Process and Expected Impacts	Impact Category		Status
		Pre-Construction, Construction & Decommissioning	Operation & Maintenance	
The existing baseline municipal profile suggests that municipal services are inadequate in the area with many households that do not have access to basic services such as electricity, municipal refuse removal, or sanitation and water services on par with RDP standards. In particular the IDP states that water and sanitation services are a concern.	Additional demand on municipal services, such as water, sewerage and roads could impact on health and safety if such services are not available.	1	1	Negative
The baseline municipal profile further suggests that all households do not have equal access to municipal services – usually it is the outlying areas and informal settlements that mostly lack these services.	It is foreseen that the proposed development could enhance the equal access of households to at least some basic services such as electricity as a result of the broadening of the local network. The availability of additional services in turn can lead to economic growth.	1	1	Positive
An informal settlement was observed approximately 1km to the west of the proposed sites (closets to sites 2 and 5).	An influx of unemployed job seekers can lead to the expansion of the informal settlement. This can impact on health (as services are not provided or further taxed) and safety (an increase in crime is possible as people do not find employment and become frustrated with their living conditions).	1	1	Negative

INSTITUTIONAL & LEGAL PROCESSES				
Summary of Baseline Profile	Change Process and Expected Impacts	Impact Category		Status
		Pre-Construction, Construction & Decommissioning	Operation & Maintenance	
The area appears to be lacking proper infrastructure and services. This is evident in the fact that the entire area is serviced by only one hospital, two police stations and an inadequate fire station.	The influx of job seekers might lead to an increase in opportunistic crime. The health and emergency services in the area might not be able to cope with accidents and emergencies, which will have obvious health impacts.	1	1	Negative

2.12.2 Information Requirements

To fully assess the potential impacts as a result of Institutional and Legal Change Processes, more information is needed on the following aspects:

- The risk for attitude formation against the project (social mobilisation);
- The affected municipalities' ability to sustain additional connections to the local municipal network in the event that these services are acquired from the municipalities at the construction site (and in the event that a residential construction village is utilised); and
- Whether a construction village will be used, and if so, the most likely location for such a construction village, how many workers would be housed within the construction village, and the housing conditions.

2.13 Baseline Socio-Cultural Processes

Socio-cultural processes relate to the way in which humans behave, interact and relate to each other and their environment, as well as the belief and value systems which guide these interactions.

Mpumalanga has been inhabited since earliest times, with Middle Stone Age implements being found in the province dating back some 100,000 BC. It is also believed that red ochre was mined in the area around 46,000 BC. Nguni tribes in the area forged friendships with other clans and through marriage, new clans were formed. In those early years the provincial area was characterised by warrior clans who was only concerned for their own safety and that of their cattle.

A period of strife in the early 19th century (referred to as the *Difaqane* or *The Crushing*) led to the total destruction or displacement of many of these tribes and had a profound impact on the development of the social culture of the province. Ensuing conflicts between the Boer, the British, the Ndebele and the Pedi lasted for many years, and in time was followed by the Anglo-Boer war (1899-1902), which also left its mark on the province.

Little information could be obtained on the history of Delmas itself. What is known is that locals refer to the area as Botleng, meaning "beautiful". The area is an important agricultural and milling centre. The town of Delmas was laid out on a small farm, Witklip, in 1907, from which it also obtained the name Delmas (*de le mas*), which means "of the small farm" in French. The town is mostly surrounded by farmland that produces maize, wheat, potatoes and chickens.

At the time of the study, not enough information was available to determine the level of cultural and place attachment that residents have to the area. Also, no information could be obtained on the history of the other settlements, like Botleng, in the area.

So What?

- The history of an area serves as an indication on local residents' place attachment in terms of their collective past and the value they attach to certain areas or symbols;
- People with similar cultural backgrounds tend to gather and live together in demarcated geographical areas. Outsiders can affect the cultural dynamics of such groups; and
- Sense of place goes hand in hand with place attachment, which is the sense of connectedness a person/community feels towards certain places. Place attachment may be evident at different geographic levels, i.e. site specific (e.g. a house, burial site, or tree where religious gatherings take place), area specific (e.g. a residential area), and/or physiographic specific (e.g. an attachment to the look and feel of an area). The concept of sense of place therefore attempts to integrate the character of a particular setting with the personal emotions, memories and cultural activities associated with such a setting.

2.14 Socio-Cultural Change Processes

As socio-cultural processes recount the way in which humans behave, interact, and relate to each other and their environment, socio-cultural change processes in turn looks at the way in which the proposed developments can alter the interactions and relationships within the local community.

2.14.1 Potential Impacts

Table 3.10 below provides an overview of the expected socio-cultural change processes as well as the expected impacts that might occur as a result of the change processes taking place. These potential impacts will be assessed in detail during the Impact Assessment phase.

Table 3.10: Overview of Expected Socio-Cultural Change Processes and Potential Impacts

SOCIO-CULTURAL PROCESSES				
Summary of Baseline Profile	Change Process and Expected Impacts	Impact Category		Status
		Pre-Construction, Construction & Decommissioning	Operation & Maintenance	
At the time of the study information was not available on the cultural dynamics of the local area.	It is possible that construction workers and job seekers have a different cultural background and dissimilar social practices than local residents, which can lead to the development of conflict situations that impact on community cohesion and social well-being.	1	1	Negative
At the time of the study the level of place attachment that local residents have the area was not known.	The construction and operation of the power station and associated infrastructure might affect people's relationship with their environment (their sense of place) as the presence of such infrastructure changes the landscape from unspoilt to 'spoilt'.	2 ¹⁸	n/a	Negative
The family structure and how families from the area function and the roles ascribed to each family member was not known.	Although it is not foreseen that the development per se will alter family cohesiveness and the traditional role played by families, the introduction of strangers to the area might have this affect. This can happen when social integration is hindered (through conflict) and also because migratory workers have a certain	1	1	Negative

¹⁸ Not assessed as the level of place attachment that influences sense of place was not known at the time of the study.

SOCIO-CULTURAL PROCESSES				
Summary of Baseline Profile	Change Process and Expected Impacts	Impact Category		Status
		Pre-Construction, Construction & Decommissioning	Operation & Maintenance	
	<p>legacy when it comes to establishing relationships that can increase the risk of spreading HIV and other contagious infections. Apart from the obvious health implications, HIV infection in particular also has an economic impact.</p>			

2.14.2 Information Requirements

To fully assess the potential impacts as a result of socio-cultural change processes, more information is needed on the following aspects:

- The history of the area and of the area's local residents;
- What residents value in the local area (i.e. why have they settled in the area);
- The cultural dynamics of the existing settlements and their ability to accommodate and/or integrate workers from outside their community;
- The daily activities of surrounding residents and their cultural attachment to the area; and
- Information on areas that hold a specific significance for local residents.

4. CONCLUSIONS AND RECOMMENDATIONS

This report fulfilled the objectives of the Scoping Phase, which was to identify issues and concerns of a social nature to enable a more focussed study in the Impact Assessment Phase.

At this stage, no issues emerged that can be considered as fatal flaws from a social perspective. Although there are currently no fatal flaws, the following issues are highlighted:

- At least two of the three alternative sites proposed is currently being used for agricultural purposes (mostly crop farming, but also to some extent for grazing). Agriculture plays an important economic role in the local area, although it is not the most dominant economic sector of employment.
- A number of development activity corridors and economic activity nodes are planned in the area. These corridors and nodes are mostly concentrated around major linear spatial features. Planned residential developments mostly concentrate on in-fill developments of existing residential areas, none of which are in close proximity to the proposed project sites.
- The Delmas IDP (2009/10) states that, to date, the tourism potential of the Delmas area has not been fully developed and that tourism development is one of the 'untapped areas' in Delmas. This might mean a considerable effort in future to develop the tourism market in the area, an effort which might be affected by the presence of a coal-fired power station (although this is highly dependent on the tourism niche market that will be catered for).
- The presence of the construction team and the prospect of employment might reverse the outflow of people, i.e. an influx of unemployed work seekers is expected. It is difficult to predict what the impact would be as a result of this, as it is coupled to the number of people who return to the area. However, as is the case with the more controlled influx of people due to formalised employment, the influx of unemployed work seekers can lead to economic, health, safety and well-being impacts. It can further lead to the expansion of informal settlements, which can amplify the expected impacts.
- The current world-wide emphasis that is being placed on 'cleaner' energy sources might lead to significant public opinion and increase the likelihood of social mobilisation against the project as the project proposes the more 'traditional' form of energy generation through the use of coal.
- The baseline municipal profile suggests that municipal and other services and infrastructure is inadequate. Any additional pressure on these services can have far reaching effects, e.g. the inconsistency of health and emergency services can result in help not being available when needed.
- According to the Delmas IDP (2009/10), water in the area is mostly supplied from boreholes. Numerous developments in the area, including residential and industrial

developments, have placed an enormous demand on the water supply, so much so that the demand for water now exceeds the supply (the demand is estimated at 18 Ml/day, while the boreholes are only able to supply 16 Ml/day).

- Although it is not foreseen that the development per se will alter family cohesiveness and the traditional role played by families, the introduction of strangers to the area might have this affect. This can happen when social integration is hindered (through conflict) and also because migratory workers have a certain legacy when it comes to establishing relationships that can increase the risk of spreading HIV and other contagious infections. Apart from the obvious health implications, HIV infection in particular also has an economic impact.

Initial indications are that the local negative economic impact will not be extensive due to the limited activity occurring on the properties and due to current ownership arrangements. Economic benefits will most likely be regional and national in nature due to the location of the project close to Gauteng.

Most of the expected change processes and potential impacts that was identified during the course of the study will result in category 1 impacts, i.e. these impacts are expected to occur irrespective of the site selected in the end. Where category 2 impacts have been identified, the difference between the various alternatives is marginal, i.e. indirect social impacts will be experienced irrespective of which site is selected in the end. However, it at this stages it appears as if site 5 might yield the least amount of direct social impacts and therefore this site has been nominated as a preliminary preferred site from a social and economic perspective.

Based on the findings of the scoping phase, it is recommended that a full SIA be undertaken during the next phase to test the assumptions made in this scoping report in respect of issues such as the expected land use change, temporary influx of people to the area and the likelihood of the project impacting on sense of place. The proposed studies to be undertaken as part of the SIA during the impact assessment phase is outlined in the following section.

The success of the economic study will depend on the accuracy and completeness of 4 sets of data (detailed below). It is therefore recommended that the economic team is contacted if there is any delay or trouble in sourcing the information. The data sets are:

- The construction value and employment opportunities during construction in person years;
- The likely annual revenues and annual employment opportunities during operation;
- The likely bill of goods for the construction phase and the main suppliers for the project; and
- Local supply opportunities investigated.

5. PLAN OF STUDY FOR THE IMPACT ASSESSMENT PHASE

This section aims to address the following objective:

- Formulate recommendations regarding studies that are more detailed for the Impact Assessment Phase, and describe how these studies will be executed.

Information Requirements	Proposed Methodology
GEOGRAPHICAL CHANGE PROCESSES	
<ol style="list-style-type: none"> 1. The agricultural potential of the 3 sites; 2. Detail on landownership and/or lease agreements on the 3 alternative sites; 3. The size and number of expected construction and operational vehicles as well as which route(s) will be used to gain access to the various construction sites; 4. Detail on planned developments within a 5km radius of the site alternatives; and 5. The tourism profile of the local area. 	<ol style="list-style-type: none"> 1. Obtain information from the agricultural potential specialist study for inclusion in the assessment. 2. Obtain landowner detail from the public participation consultant. Consult with these landowners via the public participation focus group meetings. 3. Obtain information from Kuyasa on the size and number of construction and operational vehicles and the frequency with which these vehicles will pass through the area. 4. Consult with the local municipality via the public participation focus group meetings to determine where future developments will take place. 5. Conduct interviews with identified tourism offerings in the area.
DEMOGRAPHICAL CHANGE PROCESSES	
<ol style="list-style-type: none"> 1. The composition of the construction workforces in terms of size, skills levels, and origin; 2. The composition of the operational workforce and their activities; 3. The number of local employment opportunities that could influence the number of people entering the area; and 4. A baseline profile of the households within a 5km radius from the various sites. 	<ol style="list-style-type: none"> 1. Obtain information on the construction workforce in terms of size, skills level and origin from Kuyasa. 2. Obtain information from Kuyasa on the planned size of the operational workforce and their activities. 3. Obtain information from Kuyasa on the potential for local employment. 4. Consult with affected landowners and local residents via public participation focus group meetings that will be held as part of the EIA process.

Information Requirements	Proposed Methodology
ECONOMICAL CHANGE PROCESSES	
<ol style="list-style-type: none"> 1. The total size of affected farm/property portions leased or owned and used for cultivation, in order to determine the size of the possible agricultural production loss; 2. The types of activities that are pursued on any given (affected) property; 3. The income derived from these activities; 4. Capital investments that have been made on (affected) properties with the aim to generate income; 5. The number of people that are employed by affected farmers or other businesses; 6. The employment opportunities that will be created, both formal and informal in nature and the likely local percentage of this; 7. Likely local supply opportunities which may increase the level of local beneficiation; and 8. Total construction value of the project and likely annual revenues during operation. 	<ol style="list-style-type: none"> 1-5. Consult with affected landowners via the public participation focus group meetings. 6. Obtain information from Eskom on the potential for local employment. 7. Conduct a desktop study to determine the likely local supply opportunities and consult with the project proponent on the likelihood using such services. 8. Obtain information from Kuyasa on the estimated construction value of the project and likely annual revenues during operation.
INSTITUTIONAL AND LEGAL CHANGE PROCESSES	
<ol style="list-style-type: none"> 1. The risk for attitude formation against the project (social mobilisation); 2. The affected municipalities' ability to sustain additional connections to the local municipal network in the event that these services are acquired from the municipalities at the construction site (and in the event that a residential construction village is utilised); and 3. Whether a construction village will be used, and if so, the most likely location for such a construction village, how many workers would be housed within the construction village, and the housing conditions. 	<ol style="list-style-type: none"> 1. Assess the issues and response register. Consult with interest groups via the public participation focus group meetings. 2. Consult with the local municipality via the public participation focus group meetings. 3. Obtain information from Kuyasa to determine the likelihood for the use of a residential construction village and how the location for such a village is determined.
SOCIO-CULTURAL CHANGE PROCESSES	

Information Requirements	Proposed Methodology
<ol style="list-style-type: none"> 1. The history of the area and of the area's local residents; 2. What residents value in the local area (i.e. why have they settled in the area); 3. The cultural dynamics of the existing settlements and their ability to accommodate and/or integrate workers from outside their community; 4. The daily activities of surrounding residents and their cultural attachment to the area; and 5. Information on areas that hold a specific significance for local residents. 	<ol style="list-style-type: none"> 1. Undertake a desktop study to expand the information on the history of the local area. 2. Consult with local residents via the public participation focus group meetings. 3-5. Assess information obtained from focus group meetings.

6. SOURCES CONSULTED

6.1 Municipal Documentation

- Delmas Local Municipality Integrated Development Plan 2009/10.

6.2 Project Documentation

- Project generated maps.
- Project Background Information Document (unpublished first draft).

6.3 Other Documentation

- Sloodweg R, Vanclay F, van Schooten M. Function evaluation as a framework for the integration of social and environmental impact assessment. Impact Assess Project Appraisal 2001; 19(1):19–28.
- Statistics South Africa. Community Survey 2007: Key Municipal Data. Report No: 03-01-22 (2007).
- Vanclay, F. 2002. Environmental Impact Assessment Review 22:183–211.

6.4 Websites

- Municipal Demarcation Board (<http://www.demarcation.org.za>) - accessed May 2010.
- Community Survey Interactive Data (http://www.statssa.gov.za/community_new/content.asp?link=interactivedata.asp) – accessed May 2010.
- South African Police Service (www.saps.gov.za) – accessed May 2010.
- Mpumalanga Tourism and Parks Agency (www.mpumalanga.com) – accessed May 2010.
- Wikipedia (www.wikipedia.org/wiki/Land_use.html)
- www.soil.ncsu.edu/publications/BMPs/glossary.html