

1. PLAN OF STUDY FOR ENVIRONMENTAL IMPACT ASSESSMENT

Potential environmental impacts (biophysical, social and economic) associated with the proposed Combined Cycle Gas Turbine (CCGT) power plant have been identified by the specialists as well as through the public participation process in the revised Environmental Scoping Study (ESS). All potentially significant impacts will be further investigated and assessed within the Environmental Impact Assessment (EIA) phase of the project through specialist studies. These studies will consider the sites identified in the Scoping phase for detailed evaluation in the EIA phase, namely Sites 2A; 2B and 4. Mitigation measures will be proposed from each specialist field for each site, as a means to mitigate impacts, and these will be contained in the Environmental Management Plan (EMP) to be compiled during the EIA phase.

The EIA phase will aim to adequately investigate and address all potentially significant environmental issues in order to provide the Department of Environmental Affairs and Tourism (DEAT – the lead authority) and the Mpumalanga Department of Agriculture and Land Affairs (MDALA – commenting authority) with sufficient information to make an informed decision regarding the proposed project.

1.1. Approach to Undertaking the Environmental Impact Assessment

The following outlines the proposed approach to undertaking the EIA phase of the project. It is believed that the proposed approach will adequately fulfill the environmental authorities' requirements, the requirements of the EIA Regulations (2006) and the objectives of environmental best practice, so as to ensure transparency and to allow an informed decision regarding the proposed project to be made.

1.1.1. Authority Consultation

- ***Pre-application Consultation***

Telephonic consultation with the DEAT was initiated prior to the commencement of the environmental studies for the project, in order to determine the lead authority for the project as well as specific authority requirements regarding the proposed project. During these consultations, it was determined that DEAT would be the lead authority, with MDALA acting as the commenting authority.

- ***On going authority consultation***

Ongoing consultation with all relevant authorities, including DEAT, MDALA, the Department of Water Affairs and Forestry (DWAF), the South African National Heritage Resources Agency (SAHRA), the local and district municipalities (Pixley ka Seme Local Municipality and Gert Sibande District Municipality) and all other authorities (Department of Minerals and Energy, SANRAL, Department of Transport and Department of Health) identified during the Environmental Scoping Study (ESS) phase of the project (and further ones that may be identified during the EIA phase) will continue throughout the duration of the project. Authority consultation is therefore seen as a continuous process that takes place through the duration of the environmental investigations.

- ***Subsequent meetings with Authorities***

Authority meetings be held (if and when necessary) during the public review period of the draft Environmental Impact Report (EIR) and during the EIA phase of the project – so as to ensure the Authorities' continued understanding of the proposed project and to ensure that all requirements of the Authorities are received by the environmental team, and included in the EIA phase.

1.1.2. Application for Authorisation

An application for authorisation in terms of Section 24(5) read with Section 44 of the National Environmental Management Act, 1998 (Act No. 107 of 1998), in respect of activities identified in terms of Government Notice R386 and Government Notice R387 of the said Act was submitted to DEAT on 25 October 2007 for consideration.

The application was followed, upon acceptance of the application, by the ESS phase of the project which aimed to identify potential significant impacts associated with the proposed project and to nominate preferred alternative sites for detailed consideration within the EIA phase of the project.

1.2. The Environmental Impact Assessment Phase

1.2.1. Aims of the Environmental Impact Assessment Phase

The EIA will aim to achieve the following:

- to undertake a detailed assessment of the social and biophysical environments affected by the proposed project;
- to assess impacts on the study area in terms of environmental criteria;

- to identify and recommend appropriate mitigation measures for potentially significant environmental impacts; and
- to undertake a fully inclusive public participation process to ensure that I&AP issues and concerns are recorded and addressed.

1.3. Detailed Specialist Studies to be undertaken as part of the EIA

As required in the EIA process, a suite of specialist studies (each study undertaken by a specialist in that field) were proposed due to identified potential significant impacts they could pose on the environment. As part of the site selection and scoping exercises, the team of specialists attended site visits and specialist discussions/workshop to ensure the scope of each specialist study was presented as accurate as possibly. The outcome of the discussions/workshop was the need to further investigate all identified issues into the EIA phase, as best-practice and a means to fully understand their implications.

Each of the specialists involved has an extensive experience in their field to undertake the proposed detail of studies. Curriculum Vitae of the specialist team are available on request.

A description of each proposed specialist study and its Terms of Reference are provided below.

- **Potential Impacts on Hydrogeology**
Specialist input: Mark Stewart – SRK Consulting

It was decided that based on the input of the various specialists (biophysical, social and economic), three sites will be evaluated during the EIA phase of the proposed study. The construction and operational activities of the proposed project could result in seepages which could cause pollution or impacts on the groundwater regime.

The aim of the groundwater study is to:

- investigate and establish the status of the groundwater quality and quantity, through literature review and site visit to establish baseline conditions;
- predict how the proposed development could impact this resource;
- investigate possible sources of the groundwater contamination;
- determine the source of the groundwater, its flow characteristics and depths etc;
- propose feasible mitigation measures for implementation to prevent or minimise impacts on this resource;
- conduct a hydrocensus, to advise Eskom about possible risk to this resource;
- provide an opinion on cumulative impacts due to the development;
- offer an opinion on site layout in each site;

- provide an opinion on the preferred site from the groundwater perspective – with and without mitigation; and
- compile a report that reflects the above, including relevant mapping.

During the EIA study additional site-specific groundwater data will be compiled. The data will be obtained from a hydrocensus on the selected sites. It is proposed that due to lack of hydrochemical data, groundwater samples will be collected from existing boreholes, where possible. Groundwater levels, borehole yields, and usage will be determined to assist in assessing possible impacts on the groundwater resources. This data plus additional CCGT details will be compiled in a groundwater risk assessment to aid in developing optimal mitigation and management plans to reduce the impact of the CCGT power plant on the groundwater regime.

- **Potential Impacts on Hydrology**
Specialist input: Gary Morgan – SRK Consulting

This study will entail a thorough examination of the preferred sites from a hydrological perspective, making informed assessments as to the repercussions of the proposed CCGT power plant on the surface water resources locally and regionally with a view of both the primary and secondary effects.

The proposed Terms of Reference for the hydrology study follow:

- Source and review baseline information;
- site inspection to assess local hydrology;
- review water supply details to the CCGT plant – inter-catchment transfer schemes taken into account and incorporating an accurate water balance for the plant;
- assessing the local climate;
- pre- and post development description of the hydrology, focussing on mean annual runoff, peak flows and volumes, drainage density and water quality studies including sampling and utilising the DWAF databases;
- assessing the local infrastructure, including the dams in the vicinity, their size, their specific water uses and what the probability of breaking or not with the increased water supply needed in the area. The dams supplying the CCGT Plant will be included in the water balance as well. The dams will need to be assessed in terms of the long term impacts, with the dam being required to be fuller, of the increased discharge from the dam. The infrastructure will also include what stormwater management systems would have to be implemented to contain stormflows in accordance with Regulation 704 of the National Water Act, 1998;
- controlling erosion, pollutants as well as industrial and domestic waste;
- assess if there are any fatal flaws or environmental conflicts;

- the downstream water users would need to be considered in terms of water availability, water quality and their ability to continue with their livelihoods;
- provide an opinion on cumulative impacts due to the development;
- offer an opinion on site layout in each site;
- provide an opinion on the preferred site from the hydrology perspective; and
- compile a report that reflects the above, including relevant mapping.

- **Potential impacts on Biodiversity (Terrestrial and Aquatic)**

- * **Flora**

- Specialist input: Riaan Robbeson – Bathusi Environmental Consulting***

Considering the findings of the vegetation Scoping study it is likely that there will be impacts on the vegetation associated with the CCGT power plant. Areas that constitute pristine natural grasslands, rocky outcrops and riparian vegetation/areas are not regarded suitable for the proposed development. Conversely, the proposed sites that are characterised by, or situated in close proximity to transformed and degraded habitat will be regarded more suitable for the proposed development.

Floral aspects that will be taken into account in the EIA phase include:

- the potential/ confirmed presence of Red Data flora or fauna species;
- the presence of sensitive habitat types;
- untransformed regional vegetation types; and
- areas that are generally regarded as sensitive (ridges, outcrops, rivers, wetlands, etc.).

The Terms of Reference for the floristic impact evaluation is as follows:

- source and review baseline information;
- survey environmentally sensitive areas in order to verify results of the GIS modelling;
- survey representative areas in order to obtain a clear understanding of the nature of sensitivity in specific sites;
- survey the area for general floristic diversity (common species, Red Data floral species, alien and invasive plant species);
- describe the status and importance of any primary vegetation;
- conduct a basic slope sensitivity analysis;
- address all issues relating to cultural landscapes, including:
 - * detailed site investigations;
 - * sensitivity analysis;
 - * Site descriptions and recommendations
- compile an ecological impact evaluation, taking the following aspects into consideration:
 - * the relationship of potential impacts to temporal and spatial scales;
 - * the severity of potential impacts;
 - * the risk or likelihood of potential impacts occurring;

- * the degree of confidence placed in the assessment of potential impacts;
- map all relevant aspects;
- recommend preferred site variants based on results of the ecological impact evaluation;
- liaise with other specialists to create a holistic understanding of likely impacts on flora
- provide an opinion on cumulative impacts due to the development;
- offer an opinion on site layout in each site;
- provide an opinion on the preferred site from the floral specialist field – with and without mitigation; and
- compile a report that reflects the above, including relevant mapping.

* **Fauna**

Specialist input: Dewald Kamfer – Bathusi Environmental Consulting

Areas that constitute pristine natural grasslands, rocky outcrops and riparian zones are not regarded suitable for the proposed development. Conversely, the proposed sample plots that are characterised by, or situated in close proximity to transformed and degraded habitat is regarded more suitable for the proposed development. Further detailed faunal studies will therefore, be undertaken at and in the vicinity of the nominated preferred sites during the EIA phase of the project in order to determine the probability of the potential impacts identified within the study area as well as the significance of these impacts and to propose appropriate mitigation.

The Terms of Reference for the faunal impact evaluation is as follows:

- survey environmentally sensitive areas in order to verify results of the GIS modelling;
- survey representative areas in order to obtain a clear understanding of the nature of sensitivity in specific sites;
- survey the area for general faunal diversity (common species, Red Data faunal species);
- assess the potential presence of Red List faunal species;
- address all issues relating to cultural landscapes, including:
 - * detailed site investigations;
 - * sensitivity analysis;
 - * site descriptions and recommendations
- compile an ecological impact evaluation, taking the following aspects into consideration:
 - * the relationship of potential impacts to temporal scales;
 - * the relationship of potential impacts to spatial scales;
 - * the severity of potential impacts;
 - * the risk or likelihood of potential impacts occurring;
 - * the degree of confidence placed in the assessment of potential impacts;
 - * compile a report that reflects the above, including relevant mapping.
- recommend preferred site variants based on results of the ecological impact evaluation.

- **Potential Impacts on Wetlands**
Specialist input: Paul da Cruz – SiVEST

Wetland delineation would be based on the DWAF guidelines 'A practical field procedure for the identification and delineation of wetlands and riparian areas', which stipulates that consideration be given to four specific wetland indicators to determine the boundary of the wetland. All wetlands on the three sites will be visited and delineated. A thorough on-foot survey of the wetlands and surrounds would be conducted, during which a hand-held soil auger would be used to take soil samples and examine the soils within and surrounding the wetland. The field survey would focus on confirming the boundaries of the wetlands delineated by desktop methods in the Scoping phase, but would also cover the remainder of the sites to verify the absence of wetlands/hydric soils on these parts of the site. The field visits would be used to verify the initial classification of hydro-geomorphic form undertaken in the Scoping phase through analysis of wetland characteristics relating to parameters such as hydrology, topography and soil type.

An assessment of the functionality of the wetlands on the site will be undertaken using the Wet-EcoServices methodology. A basic assessment of the state and integrity of the wetlands on the site based on the principles of the Wet-Health methodology will also be undertaken.

The activities listed below will be undertaken as part of the EIA-phase wetland assessment studies that will be undertaken in the EIA phase of the project. It is assumed that all three sites will be assessed in this phase of the project.

- Data acquisition.
- On-site wetland delineation of wetlands within and immediately adjacent to the three sites to determine the extent of wetlands on the three sites.
- Functional assessments of wetlands within and adjacent to the three sites.
- Assessment of integrity/state of wetlands on and adjacent to each of the sites.
- Assessment of the impact of the proposed gas and water pipelines, as well as any new access roads on wetlands crossed by the pipelines and access roads. This would include the delineation of any wetlands crossed by the proposed pipelines/roads, if these wetlands are to be physically affected by the proposed pipelines/roads. A basic functionality and state assessment of all affected wetlands would be undertaken to assist in the assessment of impacts of the pipeline/new roads on the wetlands.
- Comparative assessment of the three alternative sites in terms of suitability for location of the plant and minimisation of impact on wetlands
- Assessment of the impact of the proposed plant on wetlands, utilising technical information provided by the project proponent.
- Report Writing.
- GIS Mapping / Analysis.
- Input into specialist workshop.
- Input of mitigation measures into EMP.

- **Potential Impacts on Soils and Agricultural Potential**

Specialist input: Johan van der Waals – Terra Soil Science

The Terms of Reference for the Soils and Agricultural Potential study during the EIA phase are included below:

- Conduct detailed soil surveys on a 200 m interval. This survey will consist of a field sampling of 200 points (across the three sites) comprising the following:
 - Diagnostic soil horizons (SA Taxonomic System) and depth of auger samples.
 - Soil colour, texture, structure.
 - Presence and intensity/frequency of mottles, concretions, and rocks.
 - Permeability.
 - Soil form - SA Taxonomic system.
 - Soil analysis of 20 topsoil and 20 subsoil samples.
 - Estimate of soil potential linked to current land use (including irrigation potential) and other possible uses and options.
 - Land capability survey.
 - Land use survey.
 - Possible crop types according to the soil type and climate as well as anticipated yields.
- Undertake an assessment to predict potential impacts and their significance due to the proposed development on soils and agricultural potential.
- Propose mitigation measures to reduce or eliminate the identified impacts and offer an opinion on the preference between the sites.
- Sensitivity maps will be compiled to show the soil profile and agricultural potential of the sites selected. In addition, a report will be compiled to reflect the findings of the study.

- **Potential Impacts on Air Quality**

Specialist input: Raylene Watson and Rebecca Thomas – Bohlweki Environmental (Air Quality Unit)

In terms of this Air Quality Scoping assessment, the following sources of current air pollution have been identified:

- stack, vent and fugitive emissions from the existing Majuba power station operations;
- Flaring and pollution from the UCG operations;
- agricultural activities on the surrounding farms;
- vehicle entrained dust and exhaust emissions;
- domestic fuel burning; and
- veld fires

By placing the proposed CCGT power plant adjacent to or within close proximity to the existing Majuba power station (and associated infrastructure), it is anticipated that the impacts will remain more localised, as opposed to placing the proposed operations further away from the existing infrastructure, thus spreading the impacts over a larger area. The exact impacts, however, can only be known once detailed modelling is undertaken, which will take into account the manner and rates at which emissions are released. Various operational scenarios and the meteorological data selected for use will also provide a better indication of the proposed impacts at the site.

A comprehensive baseline assessment, based on meteorological and air quality data recorded in the region, will be conducted to characterise baseline atmospheric pollution levels in the region. Site specific atmospheric dispersion potentials will be reviewed.

In order to provide a better indication of the extent of the impacts expected from the proposed construction and operational phases of this development, a dispersion modelling study will need to be undertaken in the EIA phase. An emissions inventory of all sources in the vicinity of the proposed CCGT will be compiled. The modelling study will take into account the nature of each source type and their respective emission rates. Dispersion model results are to be obtained for emissions from the power station only, as well as for cumulative impacts of emissions from the power station and other sources in the vicinity.

A number of scenarios will be modelled in order to assess the impact of the CCGT on ambient air quality, including:

- baseline conditions
- CCGT operating for 8, 12, and 24 hours a day
- effect of different technologies (which affect plant configuration and emission rates)
- effect of gas composition (which affect emission rates)
- impact of normal operation, start-up, shut-down and upset conditions

Once these impacts have been quantified, appropriate management measures can be suggested to best mitigate the predicted impacts. These modelled results will similarly allow for the assessment of compliance to current South African Ambient Air Quality Standards.

The following atmospheric pollutants are to be considered in the study:

- oxides of nitrogen
- sulphur dioxide
- carbon monoxide
- PM10
- volatile organic compounds

Technology and other options for air pollution mitigation are to be assessed for the CCGT. The effect of the emissions on human health and livestock is to be considered.

A recommendation is to be made on the most suitable site for the CCGT from an air quality perspective, based on the location of sources, and local meteorology and dispersion potential.

- **Potential Noise Impacts**

Specialist input: Derek Cosijn – Jongen Keets Associates

The major noise impacts are likely to occur during the construction phase and operational phases of the project at the preferred sites - will be assessed in detail during the EIA phase in which the level of significance of impact will be determined and feasible mitigation measures recommended. Detailed, site-specific mitigation and management measures will be developed for inclusion in the EMP in order to reduce the potential noise impact of the proposed CCGT power plant during the construction and operational phases.

The Terms of Reference for this study include:

- * Collect baseline information on the noise levels in the area. This included identifying sources of noise pollution, accessing relevant data from other specialists and literature references, undertaking site visits for ground-truthing and taking necessary measurements);
- * Establish the ambient noise levels at all sites (The National Noise Control Regulations and SANS 10103 should be used as the main guidelines for addressing the potential noise impact on this project);
- * Determine the significance of noise impacts of the proposed development (this includes identifying potential noise source associated with construction and operation of the scheme; assess the impacts of such changes, establish the cumulative impacts resulting from such noise sources);
- * Recommend mitigation measures to be implemented to minimise or eliminate the predicted noise impact on receptors;
- * offer an opinion on site layout in each site;
- * provide an opinion on the preferred site from the noise impact perspective – with and without mitigation; and
- * compile a report that reflects the above, including relevant mapping.

- **Potential Social Impacts**

Specialist input: Nonka Byker – Master-Q Research

The table below outlines the Terms of Reference for the studies to be carried out during the EIA Phase as part of the Social Impact Assessment.

Table 1 Terms of Reference for Social studies to be carried out in the EIA Phase

CHANGE PROCESS	RECOMMENDED STUDIES
Demographic	<ul style="list-style-type: none"> • Conduct a desktop study to try and determine what the expected population growth rate is and how this would be influenced by the HIV infection rate in order to establish how the population would have expanded without the influx of construction workers and/or job seekers; • Obtain and analyse information from the project proponent on the construction process, the associated timeframes as well as the size and composition of the construction team for both the construction of the CCGT plant itself as well as the associated infrastructure such as pipelines; • Obtain and analyse information from the public participation consultants on the local residents' expectations in terms of the proposed project within the social realm, in order to better understand local residents' viewpoint on the proposed project and the potential risk for conflict and other forms of active and passive social mobilisation; and • Obtain and analyse information from the project proponent on the maintenance process of both the CCGT plant as well as associated infrastructure (e.g. pipelines), as well as the size, composition and origin of the maintenance team (e.g. determine whether the maintenance team forms part of the permanent workforce at the plant).
Economic	<ul style="list-style-type: none"> • Obtain information from the public participation consultants on registered landowners in the area to determine which sites are located on privately owned land and would therefore need to be compensated in order to assess the extent of the economic impact as a result of compensation; • Obtain information from the public participation consultants on possible land claims in the area to determine whether any sites are or have the potential to be owned by tribal authorities; • Obtain and analyse information from the project proponent on the negotiation process and how compensation is calculated; and • Obtain and analyse information from the project proponent on an average salary package for an unskilled labourer to determine the extent and timeframe of economic impacts on local residents as a result of employment. • Assess the assets owned by the communities
Empowerment and	<ul style="list-style-type: none"> • Obtain the issues register or issues report from the public

CHANGE PROCESS	RECOMMENDED STUDIES
Institutional	<p>participation consultants to determine the recurrent issues raised from the public's side and how these issues were addressed throughout the process. An analysis of these issues would indicate the risk for social mobilisation.</p>
Socio-cultural	<ul style="list-style-type: none"> • Focus group meetings with community leaders and/or an observational study to determine the cultural dynamics and movement patterns of local residents; • Obtain and analyse information, if any, from the project proponent on the mechanisms implemented at a construction site to enhance the safety of both the construction worker as well as that of local residents passing through the area; • Obtain and analyse the results of the noise specialist study to determine the increase in noise levels and the resultant potential psycho-social impact on surrounding residential areas and/or scattered households; • Obtain information from the public participation consultants on the surrounding landowners. Either attend or organise a focus group meeting with these landowners to determine their attachment to the area; • Obtain and analyse information from the project proponent on the activities of maintenance workers and where these workers are sourced from; and • Obtain and analyse information from the project proponent on the proposed layout of the pipelines, also in terms of the construction process of such pipelines.
Geographical	<ul style="list-style-type: none"> • Obtain and analyse information from the relevant specialist on the agricultural potential of the sites; • Obtain and analyse information from the project proponent on the size and number of the construction and operational vehicles. Also obtain information from the relevant specialist conducting the traffic impact assessment, if any. • Scrutinise the IDP and SDF of the affected district and local municipality in terms of future developments and tourism. If additional information is required other than that contained in the IDP/SDF, conduct interview(s) with relevant town planners and tourism bodies.
Biophysical	<ul style="list-style-type: none"> • Obtain and analyse information from project proponent and/or construction contractor(s) on mechanisms implemented at construction sites and/or construction villages in terms of health,

CHANGE PROCESS	RECOMMENDED STUDIES
	<p>safety, sanitation services, etc.</p> <ul style="list-style-type: none"> • Obtain information from mining companies on the safety mechanisms in place at the mining operation and how they foresee that the presence and operation of the proposed CCGT plant and pipelines might affect their operations – this information might become available via the public participation process. If not, interview(s) will be conducted with mining house representatives; and • Obtain and analyse information from project proponent on safety aspects and health studies conducted at similar installations. Also conduct a broad based desktop study on the potential health implications of such an installation, whether it is real or perceived.

- **Micro-economic study**
Specialist input: MasterQ Research

The points below outline the variables that will be examined in the micro-economic study to be carried out during the EIA Phase:

- Level of education and education profile
- Employment status and/or means of livelihood
- Sources of employment, sector of employment, activities and uses of activities
- Employment and unemployment
- Social and economic linkages
- Migration
- Social pathologies
- Income levels,
- Types of skills
- Micro and macroeconomic structure
- Gross Geographic Product,
- Sectoral production,
- Growth rate,
- Employment and labour composition.

In addition the socio-economic cost will then be calculated on the basis of following aspects:

- loss/impact on primary and secondary resources (game lodges, nature reserves);
- loss of grazing land or other land use;
- loss of arable land;
- loss of irrigation land;
- loss of social facilities;

- loss of service infrastructure (existing and planned);
- loss of homesteads;
- water rights;
- mineral ownership; and
- other (services crossings, electrified railways, roads, airfields, dwellings).

Deliverables

- Compilation of a detailed report on the findings of the study. The report will provide the economic impact of the proposed development in the regional (micro-economic) economic status. Furthermore, the report will propose measures to mitigate any negative impacts and enhance positive impacts resulting from the development.

- **Potential Visual Impacts**

Specialist input: Dawie van Vuuren – MetroGIS

An initial scanning level assessment of the above issues did not reveal any fatal flaws to be associated with the proposed CCGT plant. These issues should however still be investigated in greater detail in the EIA phase in order to scientifically motivate and/or identify any other mitigating/aggravating circumstances. The potential cumulative visual impact of the existing power station and the proposed project will also be addressed as a site-specific issue. Whereas the positioning of the CCGT facility within the alternative sites has not been determined yet, it is assumed that the closest possible location to the existing Majuba Power Station will be favourable from a visual point of view because of the existing visual impact.

As part of the EIA phase the following visual components will be integrated into a single visual impact matrix and spatially represented to arrive at more conclusive results:

- Visual distance/observer proximity to the facility (apply the principle of reduced impact over distance in a buffer analysis);
- Viewer incidence/viewer perception (identify areas with high viewer incidence and negative viewer perception);
- Landscape character/land use character (identify conflict areas in terms of existing and proposed land use) through use of tools like 3D modelling;
- Visually sensitive features (scenic features or attractions);
- General visual quality of the affected area;
- Visual absorption capacity of the natural vegetation;
- The effect of existing man-made structures on the visual exposure;
- Potential visual impact of lighting (after hours operations and security);
- Potential mitigation measures;
- Offer an opinion on a preferred site from a visual perspective; and

- Produce a report with the above information.

- **Potential Impacts on Heritage**

Specialist input: Johnny van Schalkwyk

A full Phase 1 archaeological survey (including a walk-about of the footprints of the preferred sites and recording the presence of all heritage resources) of the selected sites in accordance with the requirements of Section 38(3) of the National Heritage Resources Act (Act 25 of 1999) will be conducted in the EIA phase. Site-specific, detailed management and mitigation measures will furthermore be compiled for inclusion in the Environmental Management Plan (EMP). The study should provide a map of the identified archaeological artefacts as well as a report detailing the finding of the study, and mitigation of any impacts.

- **Potential Impacts on Risk**

Specialist input: Mike Oberholzer - Riscom

The risk assessment Terms of Reference for the EIA phase of the project include:

- provide a risk assessment associated with the materials to be stored or used in the construction and operation of the power station;
- provide an opinion on the consequences of a “worst-case” scenario impacts on the health of employees and surrounding communities;
- recommend appropriate mitigation measures to reduce or eliminate the risk;
- provide an opinion on site preference as far as risk is concerned;
- provide mapping where necessary; and
- compile a report reflecting results of the study (the report should clearly articulate if the installation would be considered a Major Hazardous Installation in accordance with legislation).

- **Potential Impacts on Traffic**

Specialist input: Melanie Wright – SSI Engineers and Environmental Consultants

In terms of traffic impacts, the following studies will be carried out in the EIA phase:

- Develop a baseline information on the current traffic status in the existing network in the area;
- Establish the fit of the traffic impact on any planning in the area;
- Review proposed road alignments (corridors) and advise Eskom as necessary;
- Impact of all traffic during both construction and operational phases;
- Liaise with other specialists to supplement with information from other areas;
- Provide an opinion on preference on the sites, from a traffic study point of view; and

- Compile a report to reflect on the above study, with appropriate mapping.

1.4. Public Participation Process

The primary aims for the public participation process include the following:

- serving as a structure for liaison and communication with I&APs for meaningful and timely participation of I&APs;
- promoting transparency and an understanding of the proposed project and its potential environmental (social, economic and biophysical) impacts;
- accountability for information used for decision-making;
- assisting in identifying potential environmental (biophysical, social and economic) impacts associated with the proposed development;
- ensure inclusivity (the needs, interests and values of I&APs must be considered in the decision-making process); and
- encouragement of shared responsibility and a sense of ownership.

The public participation process during the EIA phase is outlined below:

1.4.1. Advertising

In compliance with the EIA Regulations, the commencement of the EIA phase of the project was advertised within the *Recorder* (local) and *City Press* (national) newspapers in the predominant languages (English, Afrikaans and Zulu) of the area. The primary aim of these advertisements was to ensure that the widest group of I&APs possible are informed of the project. Other advertisements to be placed during the course of the EIA phase of the project will relate to the availability of reports for public review, as well as the advertisement of dates of public meetings.

1.4.2. Identification of and Consultation with I&APs and Key Stakeholders

I&APs and Key Stakeholders have been identified during the initial ESS phase of the project. The identification of I&APs and Key Stakeholders will continue through into the EIA phase of the project as the public participation process is a continuous process that runs throughout the duration of an environmental investigation.

1.4.3. I&AP Database

An existing I&AP database provided by Eskom for the Coal Transport System Project was utilised as a starting point. The identification of additional I&APs through existing contacts, responses to

newspaper advertisements, networking within the nominated study area and initial Scoping Study was used to further identify and invite I&APs. This vehicle will continue to be used in the EIA phase.

1.4.4. Consultation and Public Involvement

Consultation with I&APs is considered to be critical to the success of any EIA process. Therefore, one-on-one consultation, focus group meetings and public meetings with I&APs will be undertaken. The aim of this process will be to provide I&APs with details regarding the process and to obtain further comments regarding the proposed project. The information and comments gathered during these consultation sessions will also inform the detail of the studies to be undertaken at the EIA phase.

Minutes of all meetings held will be compiled and forwarded to all attendees. These minutes will also be included in the EIA Report. This consultation process will be on-going throughout the process.

- Open Day and Public Meeting

An Open Day and public meeting will be held during the review period of the draft Environmental Impact Report in order to inform I&APs of the proposed project. The primary aims of this meeting will be to:

- * provide I&APs and stakeholders with information regarding the proposed CCGT and associated infrastructure;
- * provide I&APs and stakeholders with information regarding the EIA process;
- * provide an opportunity for I&APs and stakeholders to seek clarity on the project;
- * record issues and concerns raised; and
- * provide a forum for interaction with the project team.

- Focus Group Meetings

The purpose of the Focus Group Meetings is to allow key stakeholders with specific issues to provide their views on aspects they would like addressed in the EIA process, and to facilitate the interaction of the key stakeholders and the project team. The meetings will allow for smaller groups of I&APs and/or representatives of larger interest groups or organisations who wish to play an active role in the process an opportunity for consultation.

- Key Stakeholder Workshop

Key stakeholders will be invited by letter to attend a Key Stakeholder Workshop. The purpose is to workshop the proposed project with identified key role-players who operate at a strategic level. It is acknowledged that there are several key stakeholders and interest

groups who are expected to take a keen interest in the proposed project, and it is considered to be an appropriate approach to engage these stakeholders in order to avoid potential challenges against the process at a later stage.

The primary aims of the Key Stakeholder Workshop will be to:

- * disseminate/transfer information on the proposed project to stakeholders (including the findings of the environmental studies);
- * address questions regarding the project and the EIA process;
- * address issues and concerns raised by the key stakeholders;
- * achieve a common understanding and consensus on the issues relating to the proposed project; and
- * receive input regarding the proposed project.

Formal minutes of the key stakeholder workshop will be compiled and distributed to the attendees. These proceedings will also be included in the final EIA Report.

1.4.5. Social Issues Trail

All issues, comments and concerns raised during the public participation process of the EIA process will be compiled into a Social Issues Trail. This Social Issues Trail will be incorporated as part of the reports produced in the phases of the EIA process.

1.5. Compilation of the Environmental Impact Assessment Report

The EIA Report will be compiled to address the following:

- a detailed description of the proposed project and recommended development sites;
- detailed assessment of impacts identified which are determined to be potentially significant;
- recommendations regarding the mitigation of significant impacts; and
- to meet the requirements and to comply with the necessary legislation and Acts

The combination of the specialist studies into a consolidated report will allow for easy assessment of the potential environmental aspects. In order to evaluate the significance of the identified impacts, the following characteristics of each potential impact will be identified (Table 2):

Table 2 Criteria for the classification of environmental impacts¹

CATEGORY	DESCRIPTION OF DEFINITION
Cumulative Impact	In relation to an activity, means the impact of an activity that in itself may not be significant but may become significant when added to the existing and potential impacts eventuating from similar or diverse activities or undertakings in the area.
Nature	A brief written statement of the environmental aspect being impacted upon by a particular action or activity.
Extent (Scale)	<p>The area over which the impact will be expressed. Typically, the severity and significance of an impact have different scales and as such bracketing ranges are often required. This is often useful during the detailed assessment phase of a project in terms of further defining the determined significance or intensity of an impact. For example, high at a <i>local</i> scale, but low at a <i>regional</i> scale.</p> <ul style="list-style-type: none"> • Site • Local • Regional • National • International <ul style="list-style-type: none"> • The immediate vicinity of the project (radius ±100 m). • Within a radius of 10-12 km of the project. • Provincial (and parts of neighbouring provinces). • The whole of South Africa. • Beyond the borders of South Africa.
Status	<p>Denotes the perceived effect of the impact on the affected area.</p> <ul style="list-style-type: none"> • Beneficial impact. • Deleterious or adverse impact. • Impact is neither beneficial nor adverse. <p>It is important to note that the status of an impact is assigned based on the <i>status quo</i> – i.e. should the project not proceed. Therefore not all negative impacts are equally significant.</p>
Duration	<p>Indicates what the lifetime of the impact will be.</p> <ul style="list-style-type: none"> • Short-term • Medium-term • Long-term • Permanent <ul style="list-style-type: none"> • 0 - 10years • 11 - 20 years • Impact will cease after the operational life of the activity • Permanent
Probability	<p>Describes the likelihood of an impact actually occurring.</p> <ul style="list-style-type: none"> • Improbable <ul style="list-style-type: none"> • Possibility of the impact materialising is very low

¹ Criteria for the classification of impacts are as per Regulation 32 of the EIA Regulations (July 2006) promulgated under the National Environmental Management Act (Act 107 of 1998)(as amended)

CATEGORY	DESCRIPTION OF DEFINITION
<ul style="list-style-type: none"> • Probable • Highly probable • Definite 	<ul style="list-style-type: none"> • Distinct possibility that the impact will occur • Most likely that the impact will occur • Impact will occur regardless of any preventative measures (i.e. mitigation)
<p>Intensity</p> <ul style="list-style-type: none"> • Low • Medium • High 	<p>Describes whether an impact is destructive or benign.</p> <ul style="list-style-type: none"> • Impact affects the environment in such a way that natural, cultural and social functions and processes are not affected • Effected environment is altered, but natural, cultural and social functions and processes continue albeit in a modified way • Natural, cultural and social functions and processes are altered to extent that they temporarily or permanently cease
<p>Significance</p> <ul style="list-style-type: none"> • Low • Medium • High • Very High 	<p>The significance of an impact is determined through a synthesis of <u>all</u> of the above aspects.</p> <ul style="list-style-type: none"> • No influence on decision-making • Will have an influence. • Will have an influence on decision-making regardless of mitigation. • Fatal flaw (an impact that is unable to be mitigated to within an acceptable level. A fatal flaw can also be regarded as any problem, issue or conflict (real or perceived) that could result in a proposed project being rejected or stopped).

The suitability and feasibility of all proposed mitigation measures will be included in the assessment of significant impacts. This will be achieved through the comparison of the significance of the impact before and after the proposed mitigation measure is implemented.

1.6. Review of the Environmental Impact Assessment Report

1.6.1. Public Review of the draft Environmental Impact Assessment Report

The draft EIA report will be made available at public places for public review and comment. A 30-day period will be allowed for this review process. An advert indicating the availability of this report for public scrutiny will be placed in the predominant languages of the area within local and national newspapers. I&APs registered on the project database will be notified of the availability of this report by individualised letters. Comments made to the draft EIA report during the public

review period will be submitted to Bohlweki-SSI Environmental (the consultants).

After the public review period, all relevant comments and questions received from the public will be considered and responded to and included into the final EIA report. Changes to the final document may be presented in the form of an “amendment” document. Changes made to this “amendment” document will be submitted directly to the authorities (by the I&APs).

1.6.2. Authority Review of the Environmental Impact Assessment Report

The draft EIA Report will simultaneously be made available to authorities (DEAT and MDALA), for review.

After the public review period, all relevant comments and questions received from the public will be considered and responded to and included into the final EIA report. This final document will be submitted to the authorities for final review and decision-making. Changes between the draft and final reports will be tracked so as to facilitate the review.

1.7. Environmental Authorisation

On receipt of environmental authorisation (positive or negative) for the project, I&APs registered on the project database will be informed in writing of this environmental authorisation and its associated terms and conditions.

1.8. Environmental Management Plan

A draft Environmental Management Plan (EMP) will be compiled for this project and submitted along with the draft EIA Report to the relevant authorities and simultaneously made available to the public for review and comment. The EMP will prioritise management principles for the construction, operation and maintenance phases of the proposed project. The EMP will be largely based on the recommendations of the specialist studies and the requirements as stipulated in Regulation 34 of the Environmental Impact Assessment Regulations, 2006. It will contain all the mitigation and management measures to which the project proponent must adhere to during the life cycle of the project. The EMP will be finalised upon receipt of environmental authorisation, so as to ensure that any specific conditions of approval are addressed in the EMP.

The envisaged key milestones of the programme for the Environmental Impact Assessment (EIA) phase of the project are outlined in the table below. It is imperative that all parties involved in the project adhere to the project timeframes to avoid any delays to this strategically important project.

Table 3 Key milestones of the programme for the EIA phase of the project

KEY MILESTONE ACTIVITY	PROPOSED COMPLETION DATE
Undertake further public participation – public meetings, focus group meetings, key stakeholder workshop	July 2008
Finalisation of Environmental Scoping Report	Early August 2008
DEAT acceptance of the Environmental Scoping Report and Plan of Study to undertake the Environmental Impact Assessment	September 2008
Undertake detailed specialist studies	August – September 2008
Compile draft EIA Report and draft EMP	October 2008
Making draft EIA Report and draft EMP available to the public, stakeholders and authorities	October – November 2008
Public review period (30 days)	November 2008
Submit final EIA Report and EMP to authorities	Early December 2008
Authority review period	December 2008 – February 2009
Issuing of authorization (positive or negative)	March 2009
Notify I&APs of authorisation	Early April 2009

1.9. Environmental Study Team

Details of the environmental study team and their fields of specialisation are provided in Table 4 below.

Table 4 Proposed specialist team and their areas of expertise

Name and Organisation	Specialist study to be undertaken
Malcolm Roods of Bohlweki-SSI Environmental	Project Director for the EIA process; review of EIA process documentation.
Prashika Reddy of Bohlweki-SSI Environmental	Project Manager for the EIA process. Management of specialist team. Compilation of all project documentation; assistance in public participation.
Nicolette Raats Bohlweki-SSI Environmental	Project Manager for the public participation process.
Sibongile Hlomuka and Emelda Rankopole of Bohlweki-SSI Environmental	Co-ordination of public participation process.
Mark Stewart and Gary Morgan of SRK Consulting	Hydrogeology and Hydrology
Dr Johan van der Waals of Terra Soil Science	Soils and Agricultural Potential
Riaan Robbeson and Dewald Kamfer of Bathusi	Ecological assessment (flora & fauna)

Name and Organisation	Specialist study to be undertaken
Environmental Consulting (BEC)	
Paul da Cruz – SiVEST	Wetland delineation study
Dr Raylene Watson of Bohlweki-SSI Environmental (Air Quality Unit)	Air Quality Assessment
Derek Cosijn of Jongens Keet Associates	Noise Impact Assessment
Nonka Byker and Raoul de Villiers of MasterQ Research	Social Impact Assessment and Micro-economic study
Dawie van Vuuren of MetroGIS	Visual Impact assessment and GIS mapping
Dr Johnny van Schalkwyk	Heritage Impact Assessment
Mike Oberholzer of Riscom	Risk Assessment
Melanie Wright of SSI Engineers and Environmental Consultants	Traffic Impact Assessment