10 PLAN OF STUDY FOR ENVIRONMENTAL IMPACT ASSESSMENT

10.1 Introduction

10.1.1 Project Background

Eskom's core business is the generation, transmission and distribution of electricity throughout South Africa. Electricity by its nature cannot be stored and must be used as it is generated. Therefore electricity is generated according to supply-demand requirements. The reliable provision of electricity by Eskom is critical to industrial development and other poverty alleviation initiatives in the country.

If Eskom is to meet its mandate and commitment to supply the ever-increasing needs of end-users in South Africa, one of Eskom's options is to extend the life of its infrastructure of generation capacity and transmission and distribution powerlines.

Tutuka Power Station, a coal fired power generation facility commissioned between 1985 – 1990, is located 25 km North of Standerton in the province of Mpumalanga. Tutuka Power Station currently disposes of ash in a dry (20% moisture content) form by means of conveyors, spreader and a stacker system from the station terrace to the Ash Disposal site. The ash disposal site covers an area of 2500 ha (Existing & Remaining ash dump & pollution control canals) and is located approximately 4.5 km east of the station terrace.

Ideally, Tutuka Power Station, envisages the continuation of dry ash disposal over Eskom owned land, which was purchased before the commencement of environmental laws, the Environment Conservation Act, in particular. As part of its planning processes, Eskom developed designs which were approved internally, during this time. With the promulgation of the environmental laws, and the National Environmental Management Waste Act, Act 59 of 2008, in particular, Eskom would like to align its continued ashing activities with the requirements of the waste licensing processes.

10.1.2 Purpose of the Plan of Study for EIA

This document is intended to provide a summary of the key findings of the Scoping Phase of the EIA and to describe the activities to be undertaken in the Impact Assessment Phase of the EIA. Legislatively, the document is required to provide the following:

- A description of the environmental issues identified during scoping phase that may require further investigation and assessment;
- A description of the feasible design and placement alternatives identified during scoping that may be further investigated;
- An indication of additional information required to determine the potential impacts of the proposed activity on the environment;
- A description of the proposed method of identifying these impacts; and
- A description of the proposed criteria for assessing the significance of these impacts.

The requirements of Regulation 28 of Government Notice R.543 promulgated in terms of section 24 of the National Environmental Management Act, 1998 (Act 107 of 1998) have been reviewed in order to ensure compliance therewith. These requirements are as follows:

- A description of the tasks that will be undertaken as part of the environmental impact assessment process, including any specialist reports or specialised processes, and the manner in which such tasks will be undertaken;
- An indication of the stages at which the competent authority will be consulted;
- A description of the proposed method of assessing the environmental issues and alternatives, including the option of not proceeding with the activity;
- Particulars of the public participation process that will be conducted during the environmental impact assessment process; and
- Any specific information required by the competent authority.

In addition, there are a number of other requirements which the PoS for EIA must address. These include the following:

- The DEAT EIA Regulations Guideline Document (April 1998);
- The DEA response to the Final Scoping Report and Plan of Study for EIA (when received).

10.1.3 Details of Applicant

The details of the applicant are shown in **Table 10.1** below.

Table 10.1: Details of the applicant

Name of Applicant:	Eskom Holding SOC Limited
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Name of Power Station:	Tutuka Power Station
Contact person:	Mr Ryno Lacock (Power Station Manager)
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10.1.4 Details of Environmental Assessment Practitioner

The details of the Environmental Assessment Practitioner are shown in **Table 10.2** below.

Table 10.2: Details of the Environmental Assessment Practitioner

Name of Consultant:	Lidwala Consulting Engineers (SA) (Pty) Ltd
Contact person:	Mr. Frank van der Kooy / Ms. Ashlea Strong
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E-mail:	environmental@lidwala.com / astrong@lidwala.com

10.1.5 Details of Authorities

The details of the relevant authorities are shown in **Table 10.3** below.

Table 10.3: Details of the relevant authorities

Name:	National Department of Environmental Affairs
Contact person:	Pumeza Skepe-Mngcita
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Fax:	+27 (0) 12 320 7539
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Name:	Mpumalanga Department of Economic Development, Environment and Tourism
Contact person:	Bhekinkosi E Mndawe
Physical Address:	13 De Jager Street, Ermelo
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Tel:	017 811 3951
Email:	bemndawe@mpg.gov.za
Name:	Department of Water Affairs
Address:	185 Schoeman Street, Pretoria
Tel:	012 336 8664

10.2 Summary of Project Description

The project involves the proposed continuous ashing at the existing ash disposal facilities at the Tutuka Power Station in the Mpumalanga Province.

Tutuka Power Station, a coal fired power generation facility commissioned between 1985 – 1990, is located 25 km North of Standerton in the province of Mpumalanga. Tutuka Power Station currently disposes of ash in a dry (20% moisture content) form by means of conveyors, spreader and a stacker system from the station terrace to the ash disposal site. The ash disposal site covers an area of 2 500 ha (Existing & Remaining ash dump & pollution control canals) and is located approximately 4.5 km east of the station terrace.

The coal-fired power generation process results in large quantities of ash, which is disposed of in an ash disposal facility. Generally, Eskom has access to coal of a low grade (called middlings coal) which produces a larger mass of ash during combustion. Over time,

the quality of the coal provided to Eskom has degraded, due to higher ash quantities in the coal. With regards to ash management, Tutuka Power Station utilises a dry ashing disposal method.

The waste is deposited onto the disposal site by means of a stacker, which handles some 85% of the total ash whilst the remaining 15% is placed by a standby spreader system.

Currently, the ash disposal progresses from west to east. In the event that the existing ash disposal facility continues, the two extendible conveyors will be extended to its final lengths of 4 000 m each. The ash disposal facility is built out in two layers. The front stack is deposited by the stacker and spreader to a height of approximately 45 m. The ash is bulldozed out to a slope of 1:3 for dust suppression and rehabilitation purposes. The stacker then moves around the head – end of the shiftable conveyor to dump another 10 m high back stack.

As the ash disposal advances, the topsoil is stripped ahead of the activities and is taken by truck and placed on top of the final dump height. Grass is then planted in this top soil.

The ash disposal facility has the required dirty and clean water channels and the clean storm water flows to the north and south clean water dams. The dirty water flows to the south settling dam and then to the south dirty water dam

The proposed continuous development is an ash disposal facility with the following specifications:

- Capacity of airspace of 353,1 million m^3 (Existing and remaining); and
- Ground footprint of 2 500 ha (Existing & Remaining ash dump & pollution control canals)

Figure 10.1 below illustrates the ash disposal site layout as currently constructed (blue) and outlines the footprint of the proposed future extent of the facility (orange), which is also the Eskom land identified and purchased for ashing.

The power station also require the expansion / upgrade of their existing emergency ashing area called TT02 with a size increase from 1 880m^2 to 20 785m^2 (including foundation works, installation of steel reinforcement, pouring of concrete slab, channels, silt traps etc.).

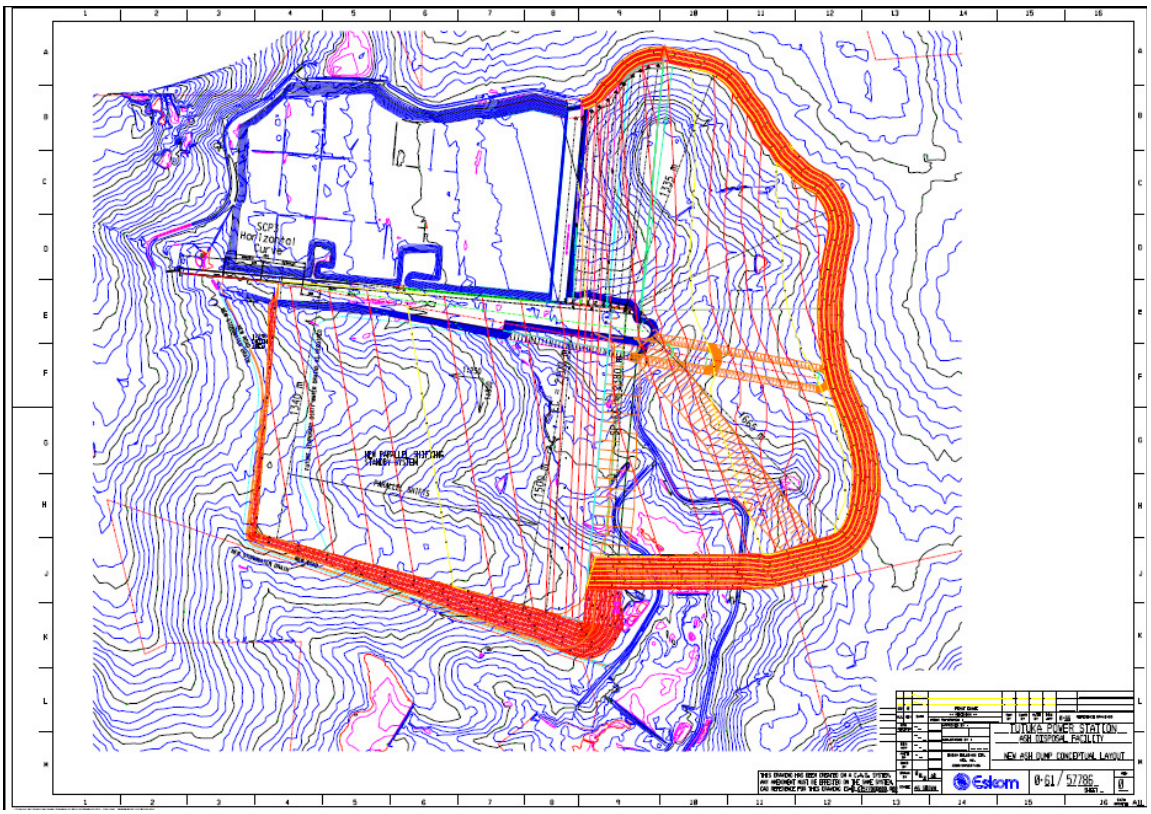

Figure 10.1: The ash disposal facility layout as currently constructed and the footprint of the proposed future extent of the facility.

10.3 Summary of the Legislation Context

The legislative framework applicable to this project is diverse and consists of a number of Acts, Regulations and Treaties which must be complied with. A summary of the key legislation is provided hereunder.

- National Environmental Management: Waste Act No 59 of 2008
- The National Environmental Management: Air Quality Act No 39 of 2004;
- National Water Act No 36 of 1998;
- GN R1179 (GG 16536 of 25 August 1995) – Hazardous Chemical Substances Regulations promulgated in terms of the Occupational Health and Safety Act No 85 of 1993;
- Hazardous Substances Act No 15 of 1973
- Constitution of South Africa, 1996 (with reference to noise)
- Explosives Act No 26 of 1956 and Regulation 1604 of 8 September 1972;
- National Environmental Management Act No 107 of 1998 (with reference to noise and prevention of pollution)
- National Environmental Management: Biodiversity Act No 10 of 2004 (in respect of Fauna, Flora and National Heritage Resources)
- Conservation of Agricultural Resources Act No 43 of 1989 (in respect of Fauna, Flora and National Heritage Resources)
- National Forest Act No 84 of 1998 (in respect of protected trees)
- National Veld and Forest Fire Act No 101 of 1998

- National Heritage Resources Act No 25 of 1999
- Promotion of Access to Information Act No 2 of 2000 (in respect of record-keeping and interested and affected parties and monitoring of environmental impacts)

A full legal review will be undertaken during the EIA phase of the project.

10.4 Summary of the Scoping Phase

10.4.1 Description of the Study Area

Tutuka Power Station is located approximately 25 km northnortheast (NNE) of Standerton in the Mpumalanga Province. The power station falls within the Lekwa Local Municipality which falls within the Gert Sibande District Municipality.

The proposed study area, utilised in the screening study, is within an 8 km radius of the centre point of the Tutuka Power Station Site (**Figure 10.2. and 10.3**). A greater part of the study area is made up of agricultural, mining and power generation activities.

Figure 10.2: Tutuka Power Station forms the centre point of the study area, as the source of ash

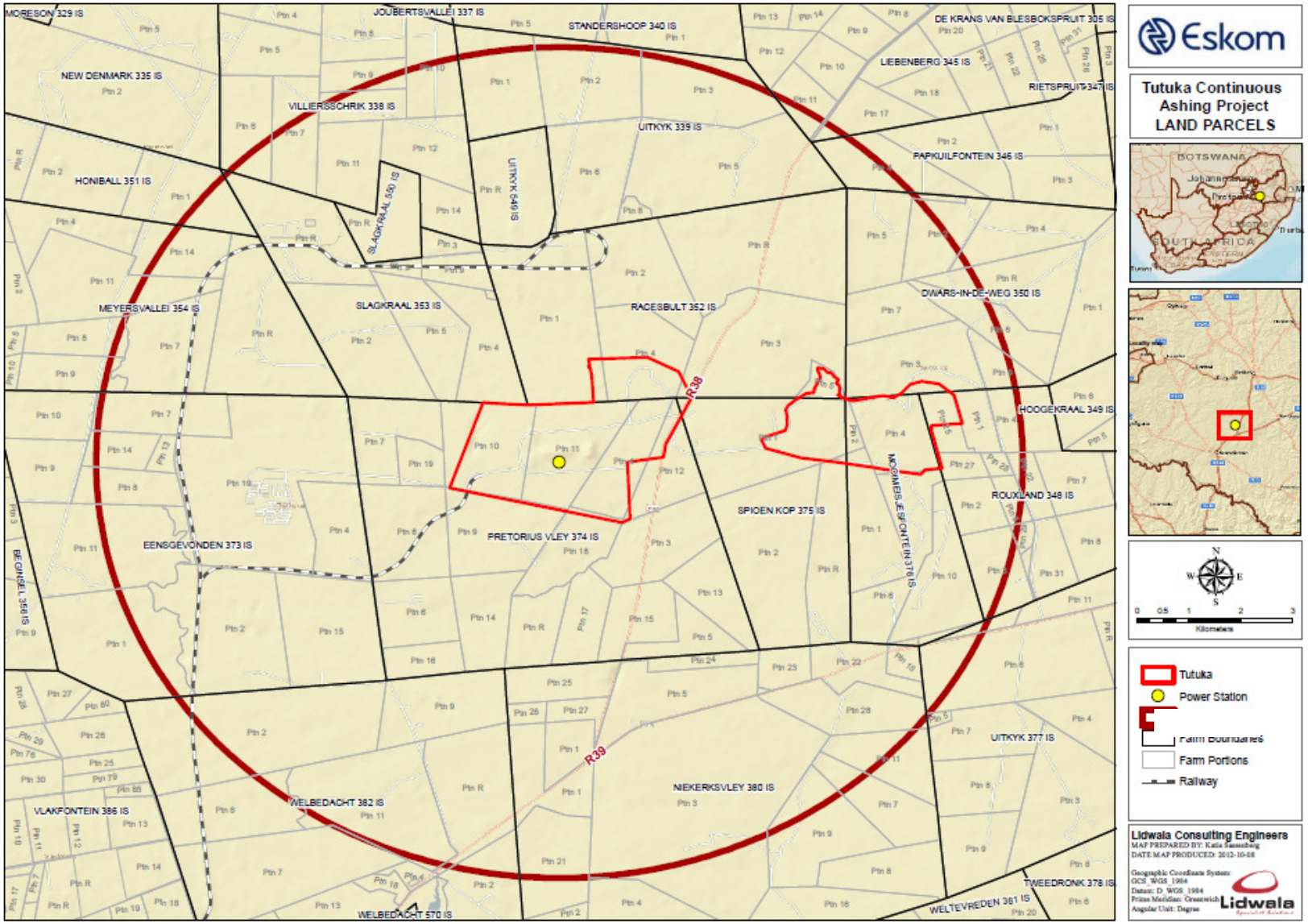

Figure 10.3: The greater study area

10.4.2 Description of the Baseline Environment

The particular area required for the continuous ashing facility is approximately 759 ha, which is located on the eastern and southern portion of the existing Tutuka Power Station ash disposal facility. However, in order to allow for a robust environmental process, all land within a radius of 8 km was assessed in order to identify potential alternatives sites should sensitive environmental aspects limit the suitability of this particular portion of land. The Tutuka Continuous Ashing EIA study area is therefore located within an eight (8) kilometre radius around a centre point within the Tutuka Power Station. The study area is approximately 200 square kilometres in size and includes a total of 24 different farms divided into 128 farm portions.

The study area is characterised by the strong undulating character typical of the Mpumalanga province with low ridges east of the study area. The natural topography of the area has been disturbed as a result of various agricultural and power generation activities.

The climate in the study area can be described as typical highveld conditions with summers that are moderate and wet, while winters are cold and dry. Severe frost and snow are sometimes experienced. The area also falls within the mist belt. The mean annual precipitation is approximately 580 mm/year, with rain experienced predominantly in the summer months (October to April). Annual average maximum, minimum and mean temperatures for the site are given as 31.5°C, 0.9°C and 15.3°C, respectively. The prevailing wind direction is recorded as being eastsoutheaserly winds.

Tutuka Power Station and surrounding area (8km radius) is underlain by rocks of Permian to Jurassic age. More specifically:

- Permian Ecca Group - Vryheid Formation;
- Karoo Supergroup – Karoo Dolerite.

The study site corresponds to the Grassland Biome as defined by Mucina & Rutherford (VegMap, 2006). This unit is found in the eastern, precipitation-rich regions of the Highveld. Grasslands of these parts are regarded 'sour grasslands'. The vegetation of the study area corresponds to an ecological type known as Soweto Highveld Grassland.

The study area considered in the screening and scoping phases encompasses an 8 km radius around the current infrastructure, and falls over three quaternary catchments in the Upper Vaal Water Management Area (WMA), with the Tutuka Power Station located in the C11K quaternary catchment, draining southwards towards the Grootdraai Dam via the Leeuspruit. The study area is located in an Upstream Management Catchment (NFEPA – Nel et al., 2011). According to the MBCP (Ferrar & Lötter, 2007) the study area is located in an 'Ecosystem Maintenance' sub-catchment. The main rivers in the 8 km radius of the

Tutuka Power Station include a tributary of the Leeuspruit and a tributary of the Vaal River.

The DWA 1:500 000 scale hydrogeology map of the area (Sheet 2526 Johannesburg) shows that the area within an 8 km radius of the Tutuka site is entirely classified as "D2", suggesting the underlying aquifer is inter-granular and fractured and the average borehole yield ranges between 0.1 and 0.5 litres per second (L/s). There are no major groundwater abstractions shown on the hydrogeological map within 8 km of the site.

10.4.3 Summary of Alternatives

- *No-Go Alternative*

Ideally, Tutuka Power Station envisages the continuation of dry ash disposal over Eskom owned land, which was purchased before the commencement of environmental laws, the Environment Conservation Act, in particular. As part of its planning processes, Eskom developed designs which were approved internally, during this time. With the promulgation of the environmental laws, and the National Environmental Management Waste Act, Act 59 of 2008, in particular, Eskom would like to align its continued ashing activities with the requirements of the waste licensing processes.

The need for this project is to allow the Tutuka Power Station to continue ashing in an environmentally responsible and legally compliant manner for the duration of the operating life of the Power Station.

In the event that the continuous ashing project does not proceed either the power station will run out of land to legally dispose of its ash and the power station will ultimately be required to close down, which would contribute negatively to the provision of reliable base load power to the national grid or the power station will be required to dispose of its ash in a non-compliant manner which is contrary to Eskom's policies.

Even though the no-go alternative is considered to be unfeasible, the 'no go' alternative will, still be investigated further in the EIA phase as an alternative as required by the EIA Regulations.

- *Technical Alternatives*

Due to the fact that Tutuka Power Station utilises a dry ashing disposal method, it stands to reason that in order to continue ashing a dry ashing method should still be utilised.

A further technical alternative to limit the need for ash disposal facilities includes the use of higher grade coal which may reduce the amount of ash produced in the power generation process. The power station was originally designed for 35 years and now its life time is extended to 60 years. The boilers are designed to use lower grade coal and the

boiler plant would require a redesign for higher grade coal. In order for this alternative to be implemented would require the complete redesign and reconstruction of the power station. The combination of the costs involved in the reconstruction of the power station as well as the higher price of the higher grade coal would have a knock on effect in terms of the country's electricity prices. Therefore, this alternative is therefore not considered feasible.

- *Location Alternatives*

A screening study was initiated in order to assess where potential alternative sites are located within the study area that would be suitable for use for the proposed continuous ashing project. The study area was demarcated using an 8 km radius around the Tutuka Power Station.

In order to ensure that sites are identified in the most objective manner possible, a sensitivity mapping exercise was undertaken for the study area. The purpose of such an exercise was to identify suitable areas within the study area that could accommodate the proposed ash disposal facility and associated infrastructure and to pro-actively identify sensitive areas (i.e. fatal flaws) that should be avoided.

Figure 10.4 shows the final sensitivity map that was utilised to identify the alternative sites (**Figure 10.5**) that require more detailed studies.

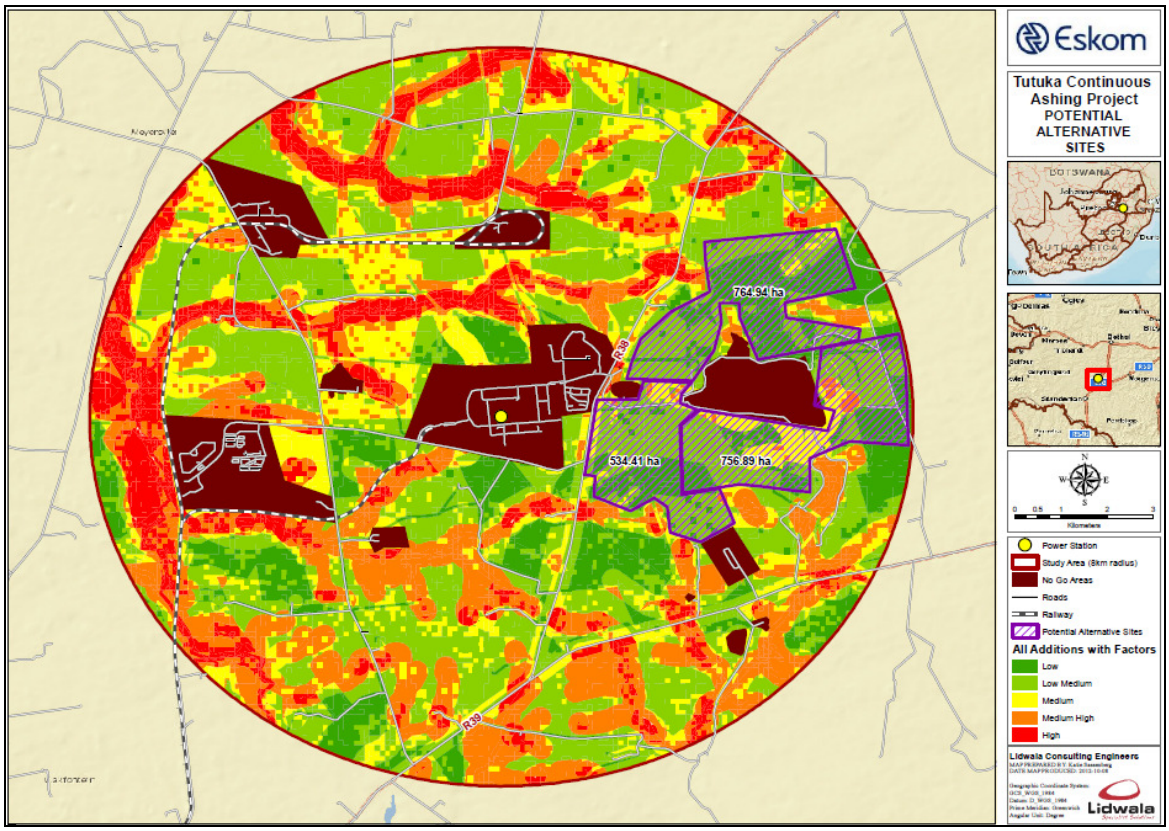

Figure 10.4: Potential alternative sites available for the ash disposal facility

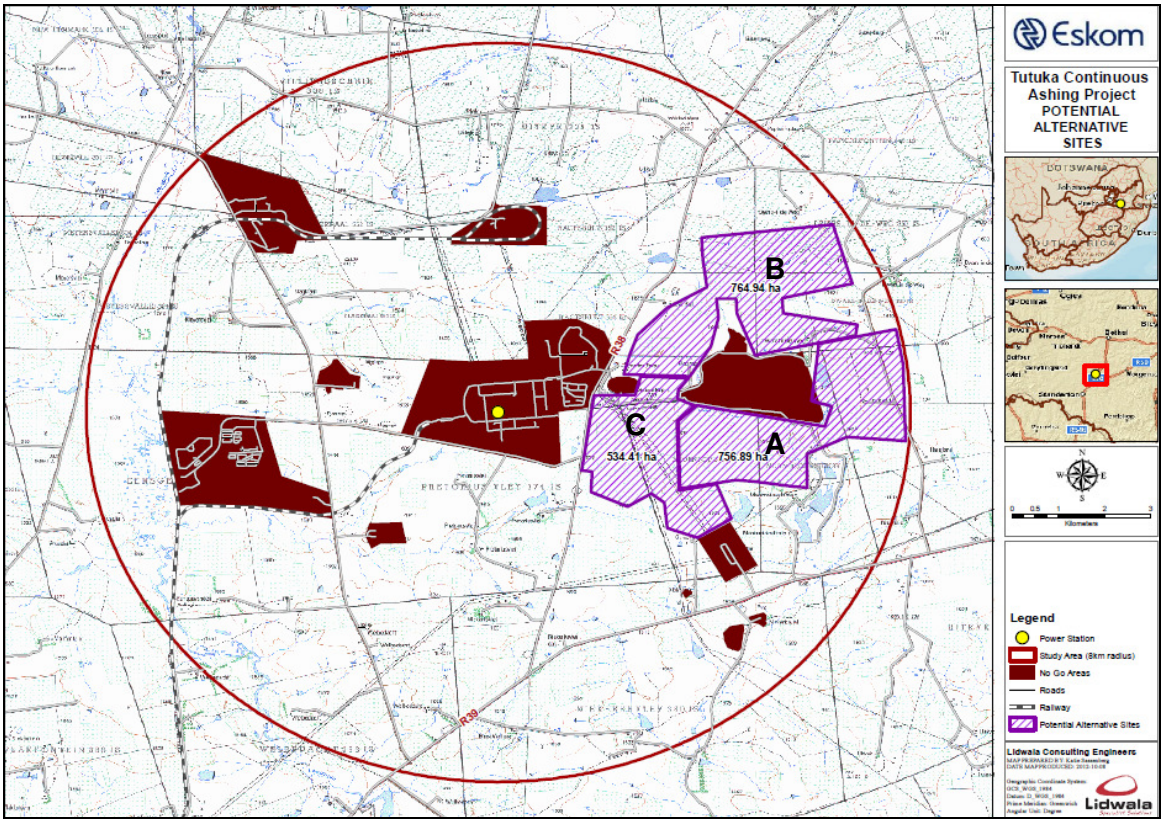

Figure 10.5: The Alternative sites for further consideration during the EIA Phase

10.4.4 Summary of Public Participation to date

The Environmental Impact Assessment (EIA) process for the proposed continuous ashing project is comprised of two main phases, namely the Scoping phase and Impact Assessment phase. This report documents the tasks which have been undertaken as part of the Scoping phase of the EIA. These tasks include the public participation process and the documentation of the issues which have been identified as a result of these activities.

To date, tasks that have commenced include the:

- Identification of stakeholders or I&APs;
- Notification and advertisements;
- Background Information Documents; and
- Ongoing consultation and engagement

More detail on the above is available in Chapter 3.

The Draft Scoping Report was released for public review and comment from **8 November 2012 to 7 December 2012**. During the review period a public participation process (PPP) will be undertaken, allowing Interested and Affected Parties (I&APs) to engage with the project proponents and independent environmental consultants. The PPP will consist of a public open day and meeting as well as one-on-one interactions where required. Issues raised by I&APs during the public participation process will be

documented and included in the Final Scoping Report.

The relevant authorities required to review the proposed project and provide an Environmental Authorisation were consulted from the outset of this study, and have been engaged throughout the project process. The National Department of Environmental Affairs (DEA) is the competent authority for this Project. The Department of Water Affairs (DWA), and the Mpumalanga Department of Economic Development, Environment and Tourism (MDEDET) are noted as key commenting authorities. For a comprehensive list see Chapter 2 and 3.

The Scoping Phase of an EIA serves to define the scope of the detailed assessment of the potential impacts of a proposed project. The Environmental Scoping Phase has been undertaken in accordance with the requirements of sections 24 and 24D of the National Environmental Management Act (NEMA) (Act 108 of 1998), as read with Government Notices R 543 of the 2010 EIA Regulations. The objectives of the Scoping Phase are to:

- Ensure that the process is open and transparent and involves the Authorities, proponent and stakeholders;
- Identify the important characteristics of the affected environment;
- Ensure that feasible alternatives are identified and selected for further assessment;
- Assess and determine possible impacts of the proposed project on the biophysical and socio-economic environment and associated mitigation measures; and
- Ensure compliance with the relevant legislation.

10.5 Description of Environmental Issues Identified During Scoping

The following impacts have been identified for additional study during the EIA phase and are deemed to be issues of potentially **medium to high significance** or those anticipated to require specific mitigation measures:

- **Biophysical Impacts**
  - *Geology*
    - Impacts related to the construction-related earthworks
    - Impacts related to the pollution in case of spillage/leakage of hydrocarbon and other hazardous material from storage facilities
  - *Groundwater*
    - Contamination of ground water due to hydrocarbon spillage and seepage into groundwater reserves, affecting groundwater quality.
    - Further construction of infrastructure and compaction of the area will further contribute to reduced water infiltration rates to replenish groundwater aquifers.
  - *Soil and agricultural potential*
    - Pollution of soil due to handling, use and storage of hazardous substances during construction and operation.

        - The loss of available top soil.
        - Key variables that determine the land capability of the study area such as soil fertility reduced and disturbed due to the potential activities related to the ash disposal facility.
        - The loss of viable agricultural land.
    - *Avifauna*
        - Ash disposal facility
            - Destruction of habitat and disturbance of birds
        - Associated Infrastructure such as powerlines
            - Electrocutions
            - Collisions
            - Habitat destruction
            - Disturbance
    - *Surface Water*
        - Impacts on surface water quality;
        - Impacts on hydrology;
        - Impacts related to erosion and sedimentation;
        - Impacts on aquatic biota; and
        - Impacts on aquatic ecosystem services.
    - *Biodiversity*
        - Direct impacts on threatened flora species;
        - Direct impacts on protected flora species;
        - Direct impacts on threatened faunal taxa;
        - Direct impacts on common fauna species/ faunal assemblages (including migration patterns, corridors, etc.);
        - Human - Animal conflicts;
        - Loss or degradation of natural vegetation/ pristine habitat (including ecosystem functioning);
        - Loss/ degradation of surrounding habitat;
        - Impacts on SA's conservation obligations & targets;
        - Increase in local and regional fragmentation/ isolation of habitat; and
        - Increase in environmental degradation, pollution (air, soils, surface water)..

- **Social Impacts**
    - *Air Quality*
        - Increase in dust generating activities during construction and operation including exceedances of PM10 concentrations and exceedances of dustfall rates.
    - *Visual*
        - Impact on the current visual landscape.
        - Impact on sensitive receptors,
    - *Heritage*
        - identify the potential heritage sites within the study area

- identify any impacts (if any) that may occur on these sites as a result of the continuous ashing project

- *Socio-Economic*
  - Perceptions and fears associated with the proposed power line; and
  - Local, site-specific issues.

The above mentioned impacts will be investigated in more detail during the EIA phase of the project.

10.6 Impact Assessment Phase

10.6.1 Introduction

The purpose of the Impact Assessment Phase of an EIA is as follows:

- Address issues that have been raised during the Scoping Phase;
- Assess alternatives to the proposed activity in a comparative manner;
- Assess all identified impacts and determine the significance of each impact; and
- Formulate mitigation measures.

Numerous acceptable approaches and methodologies exist by which the above purpose can be achieved. The legislation in South Africa, including the guideline documents published in support thereof, does not provide a specific methodology for the assessment of impacts. Rather, an assessment framework is provided within which environmental assessment practitioners are expected to structure a project-specific assessment methodology. This assessment framework recognises that there are different methodologies available for assessing the impact of a development but that the specific methodology selected must provide for the following:

- A clear process for impact identification, prediction and evaluation;
- The specification of impact identification techniques;
- Criteria for evaluating the significance of impacts;
- The design of mitigation measures to address impacts;
- Defining types of impacts (direct, indirect or cumulative); and
- Specification of uncertainties.

This section of the Final Plan of Study for EIA serves to describe the manner in which Lidwala EPS intends undertaking the Impact Assessment Phase of the EIA.

10.6.2 Decision-Making Framework

A number of authorisations, permits and other development approvals are required to be obtained by Eskom Holdings SOC Limited. **Table 10.4** provides a summary of the development approvals required and the current status of the applications for these approvals.

Table 10.4: Development approvals, Authorisations and Permits required for the Proposed Project

Approval Document Required	Department Responsible for Issuing Approval	Status of Application
Environmental Authorisation in of the National Environmental Management Act (Act 107 of 1998)	National Department of Environmental Affairs (DEA)	An integrated application was submitted and an integrated authorisation will be provided to Eskom at the end of the process.
Waste Management Licence in terms of the National Environmental Management: Waste Act No 59 of 2008	National Department of Environmental Affairs (DEA)	
Water use licence in terms of the National Water Act, 1998 (Act 36 of 1998)	Department of Water Affairs (DWA)	Application to be compiled by Eskom. However discussions with DWA are ongoing.

10.6.3 Impact Assessment Methodology

The objective of the assessment of impacts is to identify and assess all the significant impacts that may arise as a result of the proposed continuous ashing project. The process of assessing the impacts of the project encompasses the following four activities:

- Identification and assessment of potential impacts;
- Prediction of the nature, magnitude, extent and duration of potentially significant impacts;
- Identification of mitigation measures that could be implemented to reduce the severity or significance of the impacts of the activity; and
- Evaluation of the significance of the impact after the mitigation measures have been implemented i.e. the significance of the residual impact.

The possible impacts associated with the project were primarily identified in the Scoping Phase through on-site and desktop study and public consultation. In the Impact Assessment Phase, additional impacts will be identified through the more in-depth specialist investigations to be undertaken and through the ongoing consultation process with interested and affected parties.

In accordance with Government Notice R.543, promulgated in terms of section 24 of the National Environmental Management Act, 1998 (Act 107 of 1998), specialists will be required to assess the significance of potential impacts in terms of the following criteria:

- Cumulative impacts;
- Nature of the impact;
- Extent of the impact;
- Intensity of the impact;

- Duration of the impact;
- Probability of the impact occurring;
- Impact non-reversibility;
- Impact on irreplaceable resources; and
- Confidence level.

Issues are assessed in terms of the following criteria:

- The **nature**, a description of what causes the effect, what will be affected and how it will be affected;
- The physical **extent**, wherein it is indicated whether:
  - 1 - the impact will be limited to the site;
  - 2 - the impact will be limited to the local area;
  - 3 - the impact will be limited to the region;
  - 4 - the impact will be national; or
  - 5 - the impact will be international;
- The **duration**, wherein it is indicated whether the lifetime of the impact will be:
  - 1 - of a very short duration (0–1 years);
  - 2 - of a short duration (2-5 years);
  - 3 - medium-term (5–15 years);
  - 4 - long term (> 15 years); or
  - 5 - permanent;
- The **magnitude of impact on ecological processes**, quantified on a scale from 0-10, where a score is assigned:
  - 0 - small and will have no effect on the environment;
  - 2 - minor and will not result in an impact on processes;
  - 4 - low and will cause a slight impact on processes;
  - 6 - moderate and will result in processes continuing but in a modified way;
  - 8 - high (processes are altered to the extent that they temporarily cease); or
  - 10 - very high and results in complete destruction of patterns and permanent cessation of processes;
- The **probability of occurrence**, which describes the likelihood of the impact actually occurring. Probability is estimated on a scale where:
  - 1 - very improbable (probably will not happen;
  - 2 - improbable (some possibility, but low likelihood);
  - 3 - probable (distinct possibility);
  - 4 - highly probable (most likely); or
  - 5 - definite (impact will occur regardless of any prevention measures);
- the **significance**, which is determined through a synthesis of the characteristics described above (refer formula below) and can be assessed as low, medium or high;
- the **status**, which is described as either positive, negative or neutral;
- the degree to which the impact can be reversed;
- the degree to which the impact may cause irreplaceable loss of resources; and
- the degree to which the impact can be mitigated.

The **significance** is determined by combining the criteria in the following formula:

S = (E+D+M)*P; where

S = Significance weighting
E = Extent
D = Duration
M = Magnitude
P = Probability

The **significance weightings** for each potential impact are as follows:

- **< 30 points:** Low (i.e. where this impact would not have a direct influence on the decision to develop in the area),
- **31-60 points:** Medium (i.e. where the impact could influence the decision to develop in the area unless it is effectively mitigated),
- **> 60 points:** High (i.e. where the impact must have an influence on the decision process to develop in the area).

10.6.4 Public Participation Process (PPP)

PPP during the impact assessment phase revolves around the review and findings of the EIA, which will be presented in the Draft Environmental Impact Report (EIR). All I&APs will be notified of the progress to date and availability of the Draft EIR, via mail, email and advertisements in local newspapers. A legislated period of 40 consecutive days will be allowed for public comment. Reports will be made available in the following way:

- Distribution for comment at central public places, which were used during the scoping phase. Provision has been made for the placement of the reports at three venues;
- The document will be made available to download from Lidwala's website; and
- Copies of CDs will be made available on request.

Either a public meeting or an open day (depending on specific requests) is proposed to be held during this phase (venue to be confirmed). The meeting / open day will be facilitated by key members of the PPP project team. The purpose of the public meeting or open day will be to present the findings of the impact assessment. Focus group meetings will be held, if required, in accordance with topics of concern raised during the scoping phase as well as the assessment phase. I&APs will be given the opportunity to debate and discuss key issues and concerns.

All comments received during the EIA phase will be recorded in the comments and response report, which will be included in the draft and final EIR. The final EIR will

incorporate public comment received on the Draft EIR and will be made available for public review with hard copies distributed mainly to the authorities and key stakeholders.

Notification of Environmental Authorisation
All I&APs will receive a letter at the end of the process notifying them of the authority's decision, thanking them for their contributions, and explaining the appeals procedure.

10.6.5 Consultation with DEA

It is envisaged that consultation with DEA and MDEDET will coincide with the compilation of the following key documents:

- PoS for EIA;
- Draft EIR and EMP and Waste Licence Report (WLR); and
- Final EIR and EMP and WLR.

Consultation outside of the above deliverables will be undertaken as necessary in order to ensure that DEA and MDEDET are aware of the status of the project.

10.6.6 Terms of Reference for Specialist Studies

Table 10.5 provides a list of the Specialists that are involved in this study and their areas of expertise.

Table 10.5: List of Specialist Studies

Specialist Study	Organisation Responsible for the Study
Impacts on groundwater	SLR Consulting
Impacts on surface water and aquatic fauna & flora	Ecotone Freshwater Consultants
Impacts on terrestrial fauna & flora	Bathusi Environmental
Impacts on soils & agricultural potential	Agricultural Research Council
Impacts on heritage resources	Johnny van Schalkwyk
Impacts on air quality	Airshed Planning Professionals
Impacts due to noise	Francois Malherbe Acoustic Consultants
Impacts on the social environment	Lidwala Consulting Engineers (SA)
Impacts on avifauna	Endangered Wildlife Trust
Visual impact assessment	MetroGIS
Conceptual Design	Lidwala Consulting Engineers (SA) and Alan Robinson
Geotechnical Studies	Alan Robinson
GIS	Lidwala Consulting Engineers (SA)
Survey	Global Geomatics

The terms of reference for each of the above mentioned specialist studies during the EIA phase of the project are detailed below. All specialist studies will be required to investigate all alternative sites, rank the sites utilising a prescribed site ranking methodology and recommend a suitable site for the ash disposal facility.

- **Biodiversity (Bathusi Environmental)**

In order to address existing information gaps and satisfy legal requirements of EIA investigations, it is suggested that an over-arching approach be followed to allow for the capture of maximum data and adequate subsequent analysis thereof. The approach suggested here is based on separate austral winter and summer surveys during which a scientific approach to data assimilation will be followed. Botanical and faunal data will ultimately be captured in point samples (releveès) placed in a stratified random mean across the entire study area. Acquired data will be holistically analysed to illustrate the ecological interaction of plants and animals. Data analysis will be performed by PC-ORD for Windows, Version 6.07 (2011), allowing for an analysis through TWINSPAN, DECORANA, etc.

- *Botanical Impact Assessment*
  - Sampling Approach

    The number of sample plots to be distributed in a given area depends on various factors, such as the scale of the classification, environmental heterogeneity and the accuracy required for the classification (Bredenkamp 1982).

    Stratification of sample plots will be based on visual observations made during the initial site investigation as well as aerial imagery. The Zurich-Montpellier approach of phytosociology (Braun-Blanquet 1964) will be followed, which is a standardised and widely used sampling technique for general vegetation surveying in South Africa. During the surveys, all plant species in the sample plots and the cover and/or abundance of each species will be estimated according to the following Braun-Blanquet cover abundance scale:

    + infrequent, with less than one percent cover of total sample plot area
    1 frequent, with low cover, or infrequent but with higher cover, 1-5% cover of the total sample plot area
    2 abundant, with 5-25% cover of total sample plot area
    2A >5-12%
    2B >12-25%
    3 >25-50% cover of the total sample plot area, irrespective of the number of individuals
    4 >50- 75% cover of the total sample plot area, irrespective of the number of individuals
    5 >75% cover of the total sample plot area, irrespective of the number of individuals.

    In addition, a relevant selection of the following biophysical attributes will be recorded within each relevè:

    - Altitude- and longitude positions for each relevè - obtained from a GPS;

- Soil characteristics, including colour, clay content, etc;
- Topography (crests, scarps, midslopes, footslopes, valley bottoms, floodplains or drainage lines);
- Altitude, slope and aspect;
- Rockiness, estimated as a percentage;
- Rock size; and
- General observations (including the extent of erosion, utilisation, disturbances of the vegetation management practices, etc).

In addition to species captured within the sample plots, general observations will be made in order to compile a comprehensive species list that will include taxa that, because of low abundance levels, are unlikely to be captured within the sample areas. Particular reference is made to Red Data plants, which normally do not occur at great densities.

- Data Processing

  The combined floristic and faunal data sets will be subjected to the Two- Way Indicator Species Analysis technique (TWINSPAN) (Hill 1979) and subsequently refined by Braun-Blanquet procedures. TWINSPAN will be applied to derive a first approximation of the vegetation units. These classifications will be further refined by the application of Braun-Blanquet procedures to determine the plant communities.

  A phytosociological table showing the vegetation lines will be used to compile a synoptic table of the datasets. A synoptic table summarises and confirm the vegetation types/ habitat types and variations. Relevant descriptions will follow from the data analysis, based on the presence/ absence and abundance of taxa.

- *Faunal Impact Assessment*

Field investigations commonly employed for EIA studies are normally limited by time and budget and scientific approaches generally have to be adapted to allow for these limitations. Ecology and biodiversity are growing fields of science and much is still unknown. As always, information on the herpetofauna and invertebrates of the region and farms is lacking in detail and significant information gaps exist in this regard.

It is therefore strongly recommended that the following EIA study methods be implemented to gain an ecological understanding of the study area as well as the biodiversity contribution of the study area within a regional and provincial context.

- Invertebrates

  Invertebrates are by far the most important animals present anywhere. They are very useful bio-indicators and include meaningful surrogates, flagships and diversity indicators. The invertebrate studies will be twofold:

    - Firstly, sweep samples and pitfall samples of invertebrates would be used to compare sample plots in terms of species richness (number of species) and species diversity (relative abundances between species groups). Species recorder in these sampling bouts will also be included in the species inventory.
    - Secondly, a species inventory of the study area/s will be compiled using above-mentioned methods as well as active searches for scorpions (under rocks and using UV-lights), for butterflies (using a hand-held net) and beetles (under rocks, bark hand-netting etc.)
- Herpetofauna
  Frogs will be sampled using species-specific calls of males as identification; also, active searches for active adults during early evenings. Snakes, lizards and other reptiles will be sampled by active searches in likely habitats (under rocks, in inactive termitaria etc.)
- Mammals
  Visual sightings as well as ecological indicators such as tracks, dung, calls and diggings will be used to compile a species inventory of the mammals of the study area. Additionally, small mammal live traps will be used to sample for rodents and insectivores.
- Ecology
  Species inventory lists and indications of species richness and -diversity recorded with the aid of above-mentioned methods will be used to interpret the relative ecological status of the study area/s and to compare areas and variations in faunal habitats present. These comparisons are done in liaison with the vegetation characteristic in order to gain an ecological understanding of the study area and the potential impacts of the study area/s.

- **Avifauna (EWT)**

The following scope of work will be applicable:

- A detailed site visit will be conducted, and the actual affected farm portions will be traversed.
- The table showing SABAP2 data will be updated.
- All identified impacts will be rated according to a pre-determined set of criteria, as supplied by Lidwala Consulting Engineers.
- The sensitivity map will be "fine tuned" and revised if necessary.
- Details of associated infrastructure will be obtained, in order to thoroughly asses the possible impacts thereof.
- New or additional information, deemed relevant by the avifaunal specialist, will be added to the report.
- A final avifaunal EIA report will be compiled

- **Soil and Agricultural Potential (Agricultural Research Council)**

- Land type and digital elevation data would be manipulated to provide the following:
    - Land type map of the study area.
    - Slope class map.
    - Agricultural potential map, showing the distribution of dry land agricultural potential classes per land type.
    - Tables defining the dominant, sub-dominant and sub-sub dominant soils per land type. The average texture and depth of each category will be provided.
- A land cover class map will be produced from the National Land Cover Database
- A detailed survey of the study area will be undertaken
- A report will accompany the maps, and will contain tables and describe the methodology used.

- **Ground Water (SLR Consulting)**

The EIA phase will go into more detail, using existing data including the Department of Water Affairs' (DWA) GRA I and GRA II datasets, the NGDB and the WARMS database. A further site visit will be conducted, and water samples will be taken from accessible boreholes (up to eight samples) and submitted to an accredited laboratory for major and minor ion analysis. This will allow ambient groundwater quality to be characterised, prior to the establishment of the new ash storage facility.

Provision has also been made for the development of a numerical groundwater flow and transport model (modelling sub-phase), using suitable identified parameters, to allow for better quantification of groundwater impacts by the ash disposal facility, and to assist in the development or improvement of the groundwater monitoring network. The following parameters will be determined or estimated where possible, from available data, on-site measurements, or following the numerical modeling process:

- Aquifer hydraulic properties (T and S)
- Aquifer types according to accepted classifications
- Potential single and cumulative impacts of continuous ashing project on the groundwater (nature, extent, duration, intensity, probability and significance), along with level of confidence of assessment
- Assessment of identified alternatives will include evaluation of the "no-go" option
- Suggested mitigation measures and/or management actions
- Proposed groundwater monitoring programme

An estimate of groundwater vulnerability will be included in the assessment, as well as an estimate of the impact of groundwater pollution on nearby groundwater users. All deliverables will be in a format suitable for inclusion in the final Baseline and EIA reports. Provision has been made for a one-day site visit in the EIA phase and a meeting with the client / specialist one-day workshop. The primary deliverable of this phase will be the

groundwater component of an Environmental Impact Report (EIR), suitable for submission to the relevant authorities.

- **Surface Water (Ecotone Freshwater Consulting)**

An aquatic ecology survey will be undertaken to ascertain the PES and EIS of the rivers and wetlands located in the study area and relevant potential alternatives. The Scope of Work that will be encompassed to reach the objective is summarised and outlined below and the following information will be generated in the form of a detailed freshwater ecology report.

- *Rivers*

  Sites will be strategically chosen and biomonitoring methodology applied to ascertain the PES of the associated systems. This assessment will involve the characterisation of the aquatic environment and related biota, as well as the generation of PES data with the use of the following response and driver metrics:

  - Response metrics:
    - Aquatic macroinvertebrate assessment - using the South African Scoring System version 5 or SASS 5 (Dickens & Graham, 2002). In addition, the percentage of Ephemeroptera-Plecoptera-Trichoptera taxa (%EPT) will be determined.
    - Fish community assessment – using the Fish Response Assessment Index (FRAI - Kleynhans, 2007).
    - Riparian vegetation assessment – using the Riparian Vegetation Response Assessment Index (VEGRAI - Kleynhans et al., 2007b).
    - Diatom community assessment - collection according to Taylor et al. (2005) and analysis according to Lecointe et al. (1993).
  - Drivers:
    - Habitat assessment – Invertebrate Habitat Assessment System (IHAS - McMillan, 1998) and Index of Habitat Integrity (IHI - Kleynhans, 1996).
    - Water quality analysis - selected in situ variables (at all biomonitoring sites). These variables will include pH, conductivity, total dissolved solids, oxygen saturation and concentration.

- *Wetlands*
  - Wetland delineation and mapping (1:10 000) of wetlands associated with the potential Tutuka ash disposal facility continuation, using DWAF (2005) methodology.
  - Generation of PES and EIS data for the wetlands using Wet-EcoServices (Kotze et al., 2009) and Wet-Health (MacFarlane et al., 2009).
  - Identification of current impacts, including point and non-point source impacts.

- *Deliverables*
    - An analysis of habitat biotopes, diatom-, macroinvertebrate- and fish community structures and in situ water quality.
    - An analysis of the PES and EIS of relevant wetlands.
    - A wetland delineation and application of relevant buffer zones to delineated wetlands.
    - A detailed report on the status of the surface water ecology and wetlands.
    - Identification of current impacts on rivers and wetland systems, including point and non-point source impacts.
    - An impact assessment with regards to impacts of the proposed Tutuka continuous ashing facility on the surrounding aquatic ecosystems.
    - Mitigation of identified impacts

- **Heritage (Dr. J van Schalkwyk)**

A heritage impact assessment is not limited to archaeological artefacts, historical buildings and graves. It is far more encompassing and includes intangible and invisible resources such as places, oral traditions and rituals. The Act defines a heritage resource as any place or object of cultural significance i.e. of aesthetic, architectural, historical, scientific, social, spiritual, linguistic or technological value or significance. This includes the following wide range of places and objects:

- places, buildings, structures and equipment;
- places to which oral traditions are attached or which are associated with living heritage;
- historical settlements and townscapes;
- landscapes and natural features;
- geological sites of scientific or cultural importance;
- archaeological and palaeontological sites;
- graves and burial grounds;
- movable objects;
- battlefields; and
- traditional building techniques.

Reports in fulfilment of Section 27(3) of the Act must include the following information:

- the identification and mapping of all heritage resources in the area affected;
- an assessment of the significance of such resources in terms of the heritage assessment criteria set out in regulations;
- an assessment of the impact of the development on such heritage resources;
- an evaluation of the impact of the development on heritage resources relative to the sustainable social and economic benefits to be derived from the development;

- the results of consultation with communities affected by the proposed development and other interested parties regarding the impact of the development on heritage resources;
- if heritage resources will be adversely affected by the proposed development, the consideration of alternatives; and
- plans for mitigation of any adverse effects during and after completion of the proposed development

- **Visual (MetroGIS)**

The significance of the potential visual impacts on sensitive receptors be assessed in further detail in the EIA. Additional spatial analyses must be undertaken in order to create a visual impact index that will further aid in determining potential visual impact. Mitigation measures will be suggested to minimise and / or avoid visual impacts where possible. This recommended work must be undertaken during the Environmental Impact Phase of reporting for this proposed project. In this respect, the Plan of Study for EIA is as follows:

- *Visual exposure*
  The first step in determining the visual impact of the proposed ash disposal facility is to identify the areas from which the features and/or ancillary infrastructure would be visible. This is done by performing a viewshed analysis of the facility, taking into account the type of structures, the dimensions, the extent of operations, etc. of the ash disposal facility and its support infrastructure. A detailed digital terrain model, generated from the 20m interval contours (or 5m interval contours if available), is used to determine the visual exposure and to model the topography of the site and its surrounds. Mitigating features, such as vegetation, man-made topographical features and other existing structures (that make up the visual absorption capacity of the environment surrounding the proposed development), that might shield the facility, is built into the model to ensure that the result of the visibility analysis is as accurate as possible.

  Geographical Information Systems (GIS) software will be used to perform the analyses and to overlay relevant geographical data sets in order to generate a visual impact index.

- *Viewer incidence and viewer perception*
  The next GIS layer of information, used to create the visual impact index, is the identification of areas of high viewer incidence (i.e. main roads, residential neighbourhoods, etc), and to quantify the perceived perception of the observers in these identified areas. This is done in order to focus attention on areas were the perceived visual impact of the facility will be the highest and the perception of affected observers will be negative. Related to this data set, is a land use character map, that

further aids in identifying sensitive areas and possible critical features (i.e. tourist facilities, national parks, residential areas, etc.), that should be addressed.

- *Observer proximity*
  The observer's proximity to the facility also plays a role in determining the visual impact. Buffer radii are created in order to model the reduced impact over distance and to identify the point where the impact becomes negligible. The type of structure, colour, dimensions, nature of operations, etc. all play a role in the determination of the spatial extent of the visual influence of the facility.

- *Visual absorption capacity*
  The visual absorption capacity of the environment surrounding the proposed development will be determined in terms of the height and density of the natural vegetation cover and the presence of existing man-made structures. This will, together with the slope elevation of the topography, be incorporated with the previously mentioned facets of the visual assessment and will aid in the evaluation of the visual impact.

- *Visual impact index*
  The above datasets, both spatial and alphanumeric entities, are merged in order to calculate the weighted totals of the visual impact indexes. The visual impact index identifies the areas where the likely impact would occur and where the viewer perception would be negative.

- *Severity of impact*
  Once the areas of likely impact have been identified, the severity of impact for each area will be determined by adding non-spatial criteria to the equation. An example of non-spatial criteria, that would influence the severity of the visual impact, for instance, could be the potential to mitigate or reduce the impact through the utilisation of vegetation screening. Each area of visual impact would have to be evaluated according to its own opportunities and constraints for mitigation. Special circumstances that might further aggravate or mitigate the impact of the facility would also be identified during this phase of the visual impact assessment.

- *Reporting and map display*
  All the data categories, used to calculate the visual impact index, and the results of the analyses will be displayed as maps in the accompanying report. This will aid the reader in visualising the perceived visual impact of the proposed ash disposal facility and associated infrastructure and place it in spatial context.

  The detailed rationale of the analyses, concluded results of the visual impact assessment and the recommended mitigation measures, for the construction, operational and decommissioning phases of the facility, will be addressed in the VIA report.

- **Social (Lidwala Consulting Engineers)**

The purpose of the Socio-economic impact assessment will be to conduct a systematic analysis in advance of the likely impacts that the project will have on the day-to-day life of individuals and communities. The assessment will serve to identify issues that will need to be addressed by avoidance or mitigation, as well as social impacts that cannot be resolved. Recommendations regarding mitigation measures will be developed for inclusion in the EMP. The socio-economic impact assessment will also highlight potential positive impacts of the project, so that these impacts may be enhanced.

The socio-economic impact assessment will draw on information obtained during the public participation process. In particular, the consultation with stakeholders will enable the project team to identify their needs, expectations and perceptions regarding the proposed development.

- *Socio-economic baseline assessment*

  The objective of this phase will be to determine the most up to date socio-economic variables and trends that are likely to mediate the impact of the project on the lives of people. Issues to be addressed in this baseline assessment include:
  - *Demographic profiles* of areas likely to be affected (including population sizes, economic activities, employment rates, livelihoods, access to services, etc.);
  - Current and planned *development activities*;
  - *Social characteristics* of potentially affected communities (e.g. community structures, social capital and cohesion, attitudes towards the project, future aspirations, etc.);
  - Relationships between potentially affected communities and the environment (including *sense of place*, historical or cultural ties, etc.)
  - *Assets* and *amenities* that may be lost, and productive activities that may be affected by the project;
  - *Public health status* (including communicable and sexually transmitted diseases); and
  - Current authority and capacity of *institutions* that may be involved in management and monitoring of the project's effects.

  Data sources for the socio-economic baseline assessment will include:
  - *Secondary* sources, such as existing publications and databases;
  - Primary data collected through the public participation process and focused consultation with stakeholders by the EIA team; and
  - Latest research from companies such as Global insight.

- *Projection and estimation of impacts*

  This phase of the EIA will concentrate on the anticipated impacts associated with the most-preferred site identified during the Scoping Study.

- *Conceptualising social impacts.* This will entail assessing the *differences* between (a) predicted conditions *without* the development (extrapolated from the baseline projection) and (b) predicted conditions *with* the development.
- *Predicting responses to impacts.* This will entail determining the *significance* that affected individuals, communities and institutions attach to the identified socio-economic impacts.
- *Indirect and cumulative impacts.* This will entail estimating likely consequences and ripple effects of direct impacts. These may result from the incremental impacts of an action added to other past, present and reasonably foreseeable future.
- *Rating impacts* in terms of their nature, extent, duration, intensity, probability, overall significance and mitigation potential.

- *Development of mitigation and management measures*
  This phase will involve the formulation of a detailed *Management Plan* containing the following:
  - Description of mitigation measures for whatever is relevant.
  - *Description of monitoring requirements.* This component of the plan will propose detailed arrangements required for monitoring impacts and the implementation of mitigating measures. It will include a description of monitoring methodology, specific operations and features to be monitored, monitoring reporting relationships, and other relevant arrangements.

- **Geotechnical study and Concept Design (Lidwala Consulting Engineers and Alan Robinson)**

The Geotechnical investigation will be a phase 1 investigation of the broader study area in order to identify those areas that will be suitable for the development of the proposed ash disposal facility

The conceptual design will include associated infrastructure but has excluded materials handling infrastructure. The following brief scope of work can be provided:

- **Phase 1 – Geotechnical Investigation and Conceptual design**
  - Locate and select the site for the ash facilities, in conjunction with other specialists.
  - Carry out conceptual design.
  - Evaluate the water balance of the ash facilities, including sizing of stormwater drains, and pollution control dams.
  - Size the facilities for 17,5x106 m^3 capacity, together with the associated stormwater control measures.
  - Preliminary assessment of 1:50 and 100 floodlines, and possible river diversions, by others.
  - Preliminary geotechnical investigation of the proposed sites for the disposal facility, and pollution control dams.

- **Phase 2 – Preliminary Design**
    - Confirm site selection.
    - Geotechnical investigation
    - Refine the water balance of the ash facilities, for the mine as a whole, including pollution control dams and stormwater control measures.
    - Refine the size and design the facilities for the selected site.
    - Prepare preliminary design drawings of pre-deposition civil work.
    - Others to carry an assessment of 1:50 and 100 floodlines, and possible river diversions.
    - Cost estimate for civil pre-deposition work. (70% accuracy)

- **Noise Impact (Professional Opinion) (Francois Malherbe)**

A full noise impact is not deemed to be required due to the nature of the ashing activities, however, a professional opinion regarding this issue will be obtained. The following methodology has been proposed:

- A site visit will be conducted in order to familiarise the consultant with the environment of the proposed development. Possible noise issues and the nearest noise sensitive receptors will be identified.
- Although major environmental noise measurements are not expected to be necessary, samples of the noise emission levels of existing noise sources, such as pumping stations, will help during the assessment of possible noise issues.
- In order to illustrate the reasoning behind the assessment of noise related issues, sample calculations will be made. Please note that no in-depth modelling will be made.
- The results of the observations and calculations will be assessed in terms of the applicable Mpumalanga noise regulations and the guidelines provided in SANS 10103:2008 'The measurement and rating of environmental noise with respect to annoyance and to speech communication'.
- A professional opinion will be written describing methodology, results and findings of the noise study.

10.6.7 Requirements for Waste License Report

The waste licensing process for listed activities under Schedule 1 in the National Environment Management Waste Act 2008 (NEMWA) is as defined in the Environmental Impact Assessment (EIA) regulations made under section 24(5) of the National Environmental Management Act (NEMA) No 107 of 1998.

The following information will be required to be submitted as supporting documentation when applying for the scheduled activities listed under Category B of GN 718 (Schedule 1 of NEMWA):

- Scoping and Environmental Impact Assessment Report which should include:
    - Description of the environment that may be affected by the proposed activity and the manner in which the geographical, physical, biological, social, economic and cultural aspects of the environment may be affected by the proposed activity
    - Description of significant environmental impacts, including cumulative impacts, that may occur as a result of the undertaking of the activity
    - Conducting public participation as outlined in EIA Regulations
    - Closure plan (report)
    - Operational plan
    - Waste disposal facility designs
    - Application and report documents
    - A3 size layout plans
    - Landfill conceptual designs
    - Geo-hydrological report
    - Consideration of alternatives
    - Description of mitigation measures and risk assessment
    - Any inputs made by specialists to the extent that may be necessary
    - Any specific information as may be required by the competent authority
- Plan of study for environmental impact assessment which must among others include:
    - Description of the tasks to be undertaken as part of the environmental impact assessment process, including specialist report or specialized processes, and a manner in which such tasks will be undertaken
    - An indication of stages of stages at which the competent authority will be consulted
    - Description of methods for assessing issues and alternatives, including the no-go alternative
    - Particulars of participation process that will be conducted during the EIA process
    - Draft environmental management plan
    - Copies of any specialist reports and specialized processes

The Waste License Report and relevant supporting documentation will be compiled and released to the public and authorities concurrently with the Environmental Impact Report.

10.6.8 Proposed Project Programme for the EIA

The programme for the EIA suggests the following timeframes with respect to the most important activities to be undertaken:

- Submission of the Draft EIR and WLR for public comment – May 2013
- Public meetings – May 2013
- Submission of the Final EIR and WLR to DEA – June 2013

The EIA process is iterative by nature and it should therefore be appreciated that the above dates are provided as guidance only and are subject to change.

10.7 Conclusions and Recommendations

This Plan of Study for EIA is aimed at meeting the requirements of the EIA Regulations and the guidelines issued in respect thereof as a minimum.

The methodologies proposed for obtaining the information required to effectively identify and assess the potential environmental impacts of the project are considered to be comprehensive and sufficient to allow for the compilation of an EIR and EMP which addresses I&AP concerns and which will provide the competent authority with the appropriate information necessary to allow for informed decision-making on the application for authorisation.