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## Camden Power Station Ash Disposal Facilities Expansion Project

### DRAFT REPORT FOR STAKEHOLDER REVIEW

**Proponent:**

Eskom Holdings SOC Limited  
Megawatt Park  
Maxwell Drive, Sunninghill

DEA Reference Number: 12/12/20/2300

March 2013

Zitholele Project No: 12670

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# DRAFT ENVIRONMENTAL IMPACT REPORT

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## PURPOSE OF THIS DOCUMENT

Eskom is currently operating Camden Power Station as part of its electricity generation fleet. Throughout the operational life of the station, ash is generated at the station. This ash is being disposed of in an existing ash disposal facility within the Camden Power Station premises. The current ash disposal facilities have been providing disposal services since the establishment of the station (~44 years), and are reaching the end of their capacity. It has been calculated that as of the middle of 2014 a new ash disposal facility will be required to accommodate the remaining 19 years of operational life remaining.

To continue the practice of environmentally responsible ash disposal, this Environmental Impact Assessment (EIA) process is being undertaken, with the purpose of identifying, assessing, planning, and licensing a new ash disposal facility and its ancillary infrastructure. In order to comply with the necessary legal requirements of the National Environmental Management Waste Act (No 59 of 2008[NEM:WA]), the new ash disposal facility and associated structures must be appropriately designed and licensed, as ash disposal is a listed waste disposal activity. An integrated Environmental Impact Assessment (EIA) and Waste Management License Application process is being undertaken in line with the requirements of the EIA regulations promulgated under the National Environmental Management Act (No 107 of 1998 [NEMA]).

Eskom Holdings SOC Limited has appointed Zitholele Consulting (Pty) Ltd, an independent company, to conduct the EIA process required, to evaluate the potential environmental and social impacts of the proposed project, and undertake the necessary waste licensing processes. The Environmental Assessment Practitioner (EAP) is Mr Warren Kok of Zitholele Consulting.

According to the EIA Regulations, Interested and Affected Parties (I&APs) must have the opportunity to comment on the proposed project, and verify that all the issues raised to date have been recorded and addressed. To date this has been achieved through the public participation process (PPP) undertaken throughout the Scoping phase. The PPP included initial public notification, and a Draft Scoping Report (DSR) including comments from all stakeholders received during the announcement phase of the project was developed, and was available for comment for the period 18 July 2011 to 22 August 2011. Comments received were used to produce the Final Scoping Report, which was submitted to the Competent Authority (CA), the Department of Environmental Affairs (DEA) for review and acceptance. The CA issued an acceptance letter for the FSR on the 13 June 2011, and specialist studies were then commenced.

This Report, the Draft Environmental Impact Report (Draft EIR), documents the detailed studies, impacts, mitigation measures, and recommendations of the EAP, for consideration by all stakeholders. The comments received will be utilised to produce the Final EIR which will be submitted to the CA for decision-making.

### Summary of what the Draft EIR Contains (adapted from the EIA Regulations [2010])

- All of the information necessary for the authority to make a decision;
- Details of the Environmental Assessment Practitioner, and his expertise to carry out the EIA;
- A detailed description of the proposed activities;
- A description of the location and property on which the development is proposed;
- A description of the receiving environment that may be affected by the activity, including the manner in which it will be affected (physical, biological, social, economic, cultural aspects);
- Details of the Public Participation Process;
- A Description of the need and desirability of the proposed activity;
- A description of the identified potential alternatives to the proposed activity;
- An indication of the impact assessment methodology;
- A description and comparative assessment of all alternatives;
- A summary of specialist findings and recommendations;
- A description of all environmental issues that were identified and an assessment of the significance of each issue;
- An assessment of each identified potentially significant impact;
- A description of any assumptions, uncertainties, and gaps in knowledge;
- A reasoned opinion as to whether the activity should or should not be authorised;
- An environmental impact statement; and
- A draft Environmental Management Programme;
- Copies of any specialist studies must be attached; and
- Specific information required by authorities.

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Appendix F : Comments, Response Report

Appendix G : Specialist Study - Avifaunal Impact Assessment

Appendix H : Specialist Study - Aquatic Impact Assessment

Appendix I : Specialist Study - Biophysical Impact Assessment

Appendix J : Specialist Study - Conceptual Design Report

Appendix K : Specialist Study - Geo-Hydrological Impact Assessment

Appendix L : Specialist Study - Heritage Impact Assessment

Appendix M : Specialist Study - Social Impact Assessment

Appendix N: Specialist Study – Air Quality Assessment

Appendix O: Impact Matrix

Appendix P: Draft EMPr

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## ABBREVIATIONS

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ARL.....	Acceptable Risk Levels
CA.....	Competent Authority
CAR.....	Co-ordinated Avifaunal Road count project
CO <sub>2</sub> .....	Carbon Dioxide
DMR.....	Department of Mineral Resources
DEA.....	Department of Environmental Affairs
DWA.....	Department of Water Affairs
DWEA.....	Department of Water and Environmental Affairs (Ministry)
IEA.....	Integrated Environmental Authorisation
EAP.....	Environmental Assessment Practitioner
ECA.....	Environment Conservation Act
EIA.....	Environmental Impact Assessment
EIR.....	Environmental Impact Report
GCL.....	Geo-Synthetic Clay Liner
GIS.....	Geographic Information System
GNR.....	Government Notice Regulation
HDPE.....	High Density Polyethylene
HDI.....	Historically Disadvantaged Individuals
I&APs.....	Interested and Affected Parties
IEM.....	Integrated Environmental Management
IEP.....	Integrated Energy Plan
ISEP.....	Integrated Strategic Electricity Planning
kV.....	Kilo Volts
LCT.....	Leach Concentration Thresholds
MVA.....	Mega Volt Ampere
NEMA.....	National Environmental Management Act
NEM:WA.....	National Environmental Management: Waste Act
NERSA.....	National Energy Regulator of South Africa
NIRP.....	National Integrated Resource Plan
QDGC.....	Quarter-Degree Grid Cell
RO.....	Reverse Osmosis
SABAP1.....	Southern African Bird Atlas Project 1
SABAP2.....	Southern African Bird Atlas Project 2
SAR.....	South African Railways
SIA.....	Social Impact Assessment



SO<sub>2</sub> ..... Sulphur Dioxide  
SR.....Scoping Report  
TC..... Total Concentration  
ToR..... Terms of Reference  
WMCO.....Waste Management Control Officer  
WMLA..... Waste Management License Application

---

## 1 INTRODUCTION

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### 1.1 WHO IS THE PROPONENT?

Eskom Holdings SOC (Ltd) is the main South African utility that generates, transmits and distributes electricity. Eskom supplies ~95% of the country's electricity, and ~60% of the total electricity consumed on the African continent. Eskom plays a major role in accelerating growth in the South African economy by providing a high-quality and reliable supply of electricity.

### 1.2 CAMDEN ASH DISPOSAL FACILITIES EXPANSION PROJECT

Eskom is currently operating Camden Power Station as part of its electricity generation fleet. Throughout the operational life of the station, ash is generated. This ash is being disposed of in an existing ash disposal facility within the Camden Power Station premises.

The current ash disposal facilities have been providing disposal services for the last 44 years. This ash disposal site is now reaching the end of its life and as of the middle of 2014; a new ash disposal facility will be required to service the rest of the station life.

In order to establish a new ash disposal site within close proximity to the power station property and the current ashing site, a site selection exercise was undertaken in line with the Minimum Requirements for the Disposal of Waste by Landfill (both the 2<sup>nd</sup> Edition (1998) <sup>1</sup> and the Draft 3<sup>rd</sup> edition (2005)<sup>2</sup> were taken into account during the identification of the most feasible site alternatives, and design of the facility).

The new ash disposal facility (and its associated infrastructure) will need to cater for an estimated 12,86 million m<sup>3</sup> of ash up to 2023, plus 5 years contingency (2028). It is anticipated that additional structures/ancillary infrastructure will include *inter alia* Ash Water Return Dams (AWRD) and channels, pipelines, roads and fences.

### 1.3 PROJECT LOCATION

The proposed project area is located adjacent to the Camden Power Station which is approximately 12 km outside the town of Ermelo in the Mpumalanga Province. The area is within the boundaries of the Msukaligwa Local Municipality in the Gert Sibande District Municipality, refer to the project locality map shown in Figure 1-1.

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<sup>1</sup> Department of Water Affairs & Forestry (DWA), (1998) *Waste Management Series. Minimum Requirements for Waste Disposal by Landfill*, 2<sup>nd</sup> Ed, Government Printer, Pretoria.

<sup>2</sup> DWA, (2005) *Waste Management Series. Minimum Requirements for Waste Disposal by Landfill*, Draft 3<sup>rd</sup> Ed, Government Printer, Pretoria

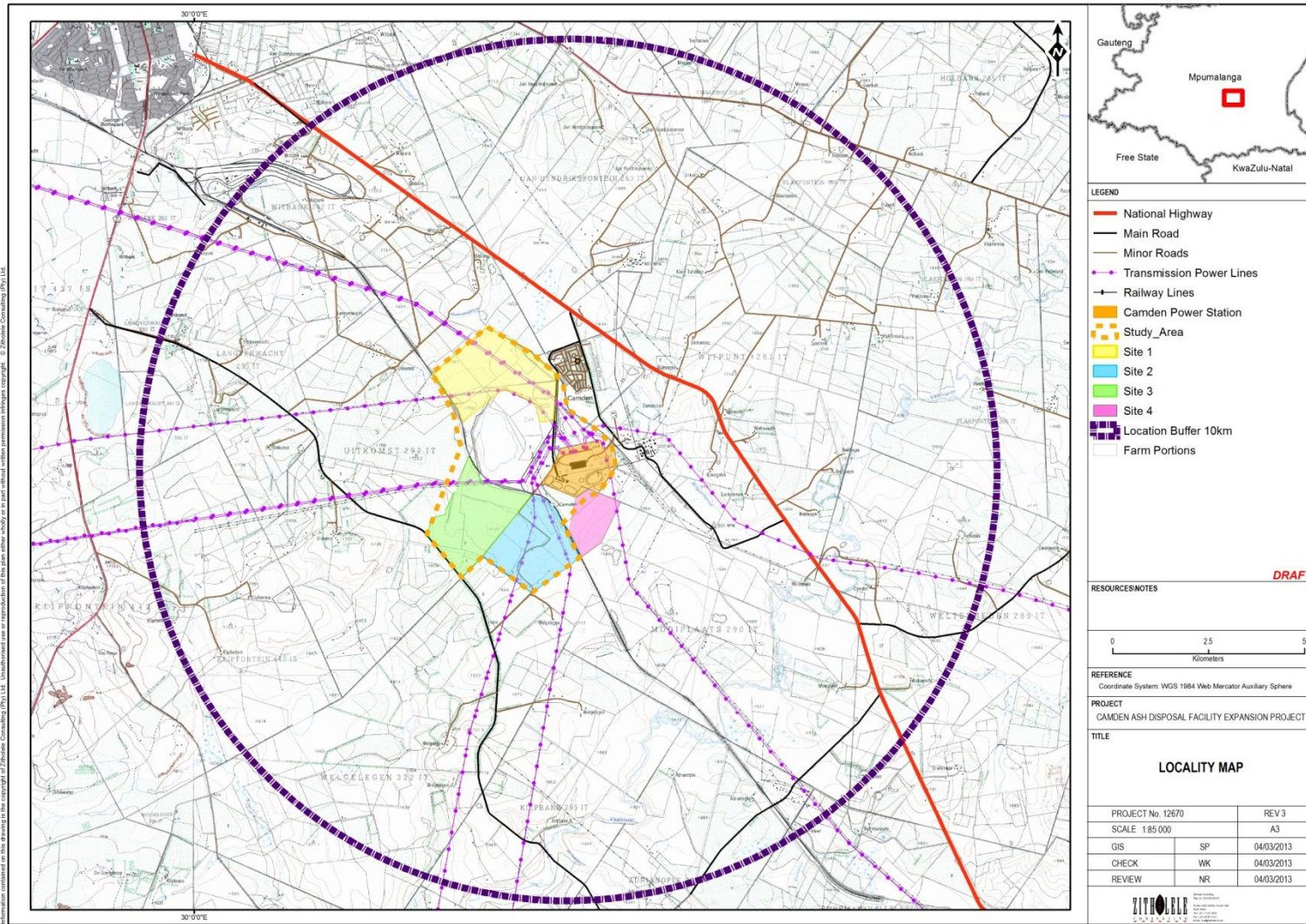


Figure 1-1: Location of the Camden Ash Disposal Facility Project

## 1.4 AUTHORISATION PROCESS PROGRESS

The proposed Camden Ash Facility Expansion project triggers listed activities in terms of the National Environmental Management Act ([NEMA] No 107 of 1998) and the National Environmental Management Waste Act ([NEM:WA] Act No 59 of 2009). In terms of these Acts a Waste Management License (WML) and Environmental Authorisation (EA) are required prior to the commencement of construction and operation. In order to obtain these authorisations an Environmental Impact Assessment (EIA) process must be undertaken. In terms of the aforementioned legislation and associated regulations Eskom needs to apply to the Department of Environmental Affairs (DEA) for an integrated WML and EA.

The EIA process for this project is divided into four main phases: (1) Scoping; (2) Impact Assessment; (3) Environmental Impact Reporting; and (4) Decision-making.

- (1) The Scoping Phase of this project has been completed, which included the following:
  - Pre-application consultation with relevant stakeholders and authorities;
  - Completion and submission of the relevant EIA Application documentation;
  - Placement of advertisements;
  - Compilation and distribution of a Background Information Document;
  - Site selection process?
  - Hosting public meetings, and allowing public participation;
  - Compilation of a Draft Scoping Report; and
  - Compilation, submission and acceptance of the Final Scoping Report and Plan of Study for EIA.
  
- (2) The Impact Assessment Phase of the project has also been completed, and consisted of the following:
  - Specialist Studies;
  - Comparative Impact Assessment of Feasible Alternatives; and
  - Conceptual Engineering / Conceptual Project Design.
  
- (3) We are currently in the Environmental Impact Reporting Phase, which consists of the following:
  - Compilation of a Draft Environmental Impact Report (EIR) and Draft Environmental Management Programme (Draft EMP);
  - Compilation of the waste application supporting documentation;

- Public participation process; and
  - Finalisation, submission, and decision-making of the Final EIR and EMP.
- (4) The next step in the process will be the Decision-making Phase, and will consist of the following:
- Authority and stakeholder review of the Final EIR and EMP;
  - Issuing of a decision on the finally submitted documentation; and
  - An appeal process will be undertaken to all Interested and Affected Parties (I&APs) to appeal the decision.

## **1.5 CONTEXT OF THIS REPORT**

This report is the Draft Environmental Impact Report (Draft EIR), a key component of the Integrated WML and EA process for the proposed establishment of new ash disposal facilities, at the Camden Power Station.

This report addresses the requirements for the Impact Assessment Phase for the EIA as outlined in the NEMA regulations. The aim of this Draft EIR is to:

- Provide information to the authorities as well as Interested and Affected Parties (I&APs) on the proposed project; including details on the:
  - Alternatives that are being considered;
  - Receiving environment; and
  - Assessing and ranking methodology;
- Indicate how I&APs have been, and are still being, afforded the opportunity to contribute to the project, verify that the issues they raised to date have been considered, and comment on the findings of the impact assessments;
- Provide proposed mitigation measures in order to minimise negative impacts and enhance positive impacts; and
- Present the findings of the Impact Assessment Phase in a manner that facilitates decision-making by the relevant authorities.

## 1.6 ENVIRONMENTAL IMPACT ASSESSMENT PRACTITIONER (EAP) DETAILS

In terms of the NEMA and associated Environmental Impact Assessment (EIA) Regulations (2010), the proponent must appoint an Environmental Assessment Practitioner (EAP) to undertake the environmental assessment of an activity regulated in terms of the aforementioned Act.

In this regard, Eskom appointed Zitholele Consulting to undertake the EIA for the proposed expansion of the Camden Power Station ash disposal facilities, in accordance with the EIA Regulations promulgated and amended in June 2010 in terms of the NEMA. This process also complies with the NEM:WA requirements for licensing of waste disposal facilities as the proposed activity is listed in the waste regulations (R718 Category B).

Zitholele Consulting is an empowerment company formed to provide specialist consulting services primarily to the public sector in the fields of Water Engineering, Integrated Water Resource Management, Environmental and Waste Services, Communication (public participation and awareness creation) and Livelihoods and Economic Development.

Zitholele Consulting has no vested interest in the proposed project and hereby declares its independence as required by the EIA Regulations. The details of the EAP representatives are listed below, refer to Appendix A for a copy of his *curricula vitae*.

### Warren Kok, BA Hon. (Geography and Environmental Management, RAU, 2000)

Name:	Warren Kok
Company Represented:	Zitholele Consulting (Pty) Ltd.
Address:	P O Box 6002, Halfway House, 1685
Telephone:	071 250 5371
Fax:	086 674 6121
E-mail:	WarrenK@zitholele.co.za

**Warren Kok** will be the designated Project Director on behalf of Zitholele. Warren will ensure regulatory compliance, quality assurance and overseeing the Technical Environmental Team. Warren holds a B.Hons degree in Geography and Environmental Management from Rand Afrikaans University (2000) and a Higher Certificate in Project Management from Damelin. He is a certified Environmental Assessment Practitioner (EAP) who is registered with EAPASA. Warren has in excess of 11 years' experience in environmental consulting in South Africa. His experience spans both the public and private sector. Warren has successfully undertaken countless integrated EIA processes that require integration of the MPRDA, NEM:WA, WULA and NEMA regulatory processes. Many of these projects are considered landmark projects in South Africa's environmental mining sector and included several hazardous waste facilities. He is ideally skilled and experienced to manage this project to its conclusion.

## 2 LEGAL REQUIREMENTS

Environmental legislation in South Africa was promulgated with the aim of, at the very least, minimising and, at the most, preventing environmental degradation. The Acts and Regulations applicable to the Camden Ash Disposal Facilities Expansion Project are summarised in Table 2-1. A discussion of the most relevant legislation is given in the sections that follow.

**Table 2-1: Summary of relevant legislation**

Legislation	Sections	Relates to
The Constitution Act (No 108 of 1996)	Chapter 2	Bill of Rights
	Section 24	Environmental rights
	Section 25	Rights in property
	Section 27	Health care, food, water and social security
	Section 32	Administrative justice
	Section 33	Access to information
National Environmental Management Act (No 107 of 1998) as amended	Section 2	Defines the strategic environmental management goals, principles and objectives of the government. Applies throughout the Republic to the actions of all organs of state that may significantly affect the environment
	Section 24	Provides for the prohibition, restriction and control of activities which are likely to have a detrimental effect on the environment.
	Section 28	The developer has a general duty to care for the environment and to institute such measures as may be needed to demonstrate such care
NEM: Protected Areas Act (No 57 of 2003)	The Act came into operation on 01 November 2004. The aim of the Act is to provide for the protection and conservation of ecologically viable areas representative of South Africa's biological diversity, natural landscapes and seascapes. In 2004, the National Environmental Management: Protected Areas Amendment Act 31 of 2004 was promulgated to amend Act 57 of 2003 with regard to the application of that Act to national parks and marine protected areas. The NEM: Protected Areas Amendment Act was published for public information on 11 February 2005 and came into operation on 01 November 2005. The NEM: Protected Areas Act, as amended by the NEM: Protected Areas Act 31 of 2004 repeals sections 16, 17 & 18 of the ECA as well as the National Parks Act with the exception of section 2(1) and Schedule 1.	
The Conservation of Agricultural Resources Act (No 43 of 1983) and regulations	Section 6	Implementation of control measures for alien and invasive plant species
National Heritage Resources Act (No 25 of 1999)	Section 34	No person may alter or demolish any structure or part of a structure which is older than 60 years without a permit issued by the relevant provincial heritage resources authority.
	Section 35	No person may, without a permit issued by the responsible heritage resources authority destroy, damage, excavate, alter, deface or otherwise disturb any archaeological or paleontological site.



Legislation	Sections	Relates to
	Section 36	No person may, without a permit issued by the South African Heritage Resource Agency (SAHRA) or a provincial heritage resources authority destroy, damage, alter, exhume, remove from its original position or otherwise disturb any grave or burial ground older than 60 years which is situated outside a formal cemetery administered by a local authority. "Grave" is widely defined in the Act to include the contents, headstone or other marker of such a place, and any other structure on or associated with such place.
	Section 38	This section provides for Heritage Impact Assessments (HIAs), which are not already covered under the ECA. Where they are covered under the ECA the provincial heritage resources authorities must be notified of a proposed project and must be consulted during the HIA process. The Heritage Impact Assessment (HIA) will be approved by the authorising body of the provincial directorate of environmental affairs, which is required to take the provincial heritage resources authorities' comments into account prior to making a decision on the HIA.
Atmospheric Pollution Prevention Act (No 45 of 1964) and regulations	Sections 27 – 35	Dust control
	Section 36 -40	Air pollution by fumes emitted by vehicles
National Environmental Management: Air Quality Act (No 39 of 2004)	Section 32	Control of dust
	Section 34	Control of Noise
	Section 35	Control of offensive odours
Occupational Health and Safety Act (No 85 of 1993) and regulations	Section 8	General duties of employers to their employees
	Section 9	General duties of employers and self-employed persons to persons other than their employees
National Environmental Management: Biodiversity Act, 2004 (Act 10 of 2004) (NEMBA),	Strategy for achieving the objectives of the United Nation's Convention on Biological Diversity, to which South Africa is a signatory	
	Sections 65-69	These sections deal with restricted activities involving alien species; restricted activities involving certain alien species totally prohibited; and duty of care relating to alien species
	Sections 71 and 73	These sections deal with restricted activities involving listed invasive species and duty of care relating to listed invasive species.
National Forests Act (No 84 of 1998) and regulations	Section 7	No person may cut, disturb, damage or destroy any indigenous, living tree in a natural forest, except in terms of a licence issued under section 7(4) or section 23; or an exemption from the provisions of this subsection published by the Minister in the Gazette.



Legislation	Sections	Relates to
	Sections 12-16	These sections deal with protected trees, with the Minister having the power to declare a particular tree, a particular group of trees, a particular woodland, or trees belonging to a particular species, to be a protected tree, group of trees, woodland or species. In terms of section 15, no person may cut, disturb, damage, destroy or remove any protected tree; or collect, remove, transport, export, purchase, sell, donate or in any other manner acquire or dispose of any protected tree, except under a licence granted by the Minister.
Fencing Act (No 31 of 1963)	Section 17	Any person erecting a boundary fence may clean any bush along the line of the fence up to 1.5 metres on each side thereof and remove any tree standing in the immediate line of the fence. However, this provision must be read in conjunction with the environmental legal provisions relevant to protection of flora.
National Water Act (No 36 of 1998) and regulations	Section 19	Prevention and remedying the effects of pollution.
	Section 20	Control of emergency incidents
	Chapter 4	Use of Water and licensing
Hazardous Substances Act (No 15 of 1973) and regulations	Provides for the definition, classification, use, operation, modification, disposal or dumping of hazardous substances	
Fertilisers, Farm Feeds, Agricultural Remedies and Stock Remedies Act (No 36 of 1947) and regulations	Sections 3 to 10	Control of the use of registered pesticides, herbicides (weed killers) and fertilisers. Special precautions must be taken to prevent workers from being exposed to chemical substances in this regard.
All relevant Provincial Legislation and Municipal bylaws		

## 2.1 THE CONSTITUTION OF THE REPUBLIC OF SOUTH AFRICA (ACT 108 OF 1996)

Section 24 of the Constitution states that: Everyone has the right

- a) to an environment that is not harmful to their health or well-being; and
- b) to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that-
  - prevent pollution and ecological degradation;
  - promote conservation; and
  - secure ecologically sustainable development and use of natural resources, while promoting justifiable economic and social development

The current environmental laws in South Africa concentrate on protecting, promoting, and fulfilling the Nation's social, economic and environmental rights; while encouraging public participation, implementing cultural and traditional knowledge and benefiting previously disadvantaged communities.

Section 27 of the Constitution states that:

1. Everyone has the right to have access to
  - a) health care services, including reproductive health care;
  - b) sufficient food and water; and
  - c) social security, including, if they are unable to support themselves and their dependants, appropriate social assistance.
2. The state must take reasonable legislative and other measures, within its available resources, to achieve the progressive realisation of each of these rights.

## **2.2 NATIONAL ENVIRONMENTAL MANAGEMENT ACT (ACT 107 OF 1998)**

The EIA for this proposed project is being conducted in terms of the EIA Regulations that were promulgated in terms of Section 24 (5) of the NEMA, as amended. The NEMA can be regarded as the most important piece of general environmental legislation. It provides a framework for environmental law reform and covers three areas, namely:

- Land, planning and development;
- Natural and cultural resources, use and conservation; and
- Pollution control and waste management.

This law is based on the concept of sustainable development. The objective of the NEMA is to provide for co-operative environmental governance through a series of principles relating to:

- The procedures for state decision-making on the environment; and
- The institutions of state which make those decisions.
- The NEMA principles serve as:
  - A general framework for environmental planning;
  - Guidelines according to which the state must exercise its environmental functions; and
  - A guide to the interpretation of NEMA itself and of any other law relating to the environment.

### 2.2.1 What are the NEMA principles?

Some of the most important principles contained in NEMA are that:

- Environmental management must put people and their needs first;
- Development must be socially, environmentally and economically sustainable;
- There should be equal access to environmental resources, benefits and services to meet basic human needs;
- Government should promote public participation when making decisions about the environment;
- Communities must be given environmental education;
- Workers have the right to refuse to do work that is harmful to their health or to the environment;
- Decisions must be taken in an open and transparent manner and there must be access to information;
- The role of youth and women in environmental management must be recognised;
- The person or company who pollutes the environment must pay to clean it up;
- The environment is held in trust by the state for the benefit of all South Africans; and
- The utmost caution should be used when permission for new developments is granted.

The National Department Environmental Affairs (DEA) is the Competent Authority (CA) responsible for issuing environmental authorisation for the proposed project. The Mpumalanga Department of Economic Development, Environment and Tourism (MDEDET) is a key commenting authority along with the Department of Water Affairs (DWA).

### 2.2.2 Environmental Impact Assessment Regulations: 543-546 of 18 June 2010

Even though the main activity of the proposed ash disposal facilities triggers the NEM: WA, certain proposed activities (see below) are also listed activities in terms of NEMA regulations. These are described below.

In terms of Government Notice (GN) R. 545 of 2010, the following listed activities require that a full EIA be undertaken and are applicable to this proposed project:

Activity 8: The construction of facilities or infrastructure for the transmission and distribution of electricity with a capacity of 275kiloVolt (kV) or more, outside an urban area or industrial complex.

Activity 15: Physical alteration of undeveloped, vacant or derelict land for residential, retail, commercial, industrial or institutional use where the total area to be transformed is 20 hectares or more;

Activity 19: The construction of a dam where the highest part of the dam wall, as measured from the toe of the wall to the highest part of the wall, is 5 metres or higher, or where the high water mark of the dam covers an area of 10 hectares or more.

In terms of Government Notice (GN) R. 544 of 2010, the following listed activities require that a Basic Assessment be undertaken for the proposed project (these activities having a lesser impact than those of the activities requiring an EIA will result in one EIA being undertaken for the proposed project):

Activity 9: The construction of facilities or infrastructure exceeding 1000 metres in length for the bulk transportation of water, sewage or storm water –

- I. With an internal diameter of 0.36 metres or more; or
- II. With a peak throughput of 120 litres per second or more.

Activity 11: The construction of -

- i) canals;
- ii) channels;
- iii) bridges;
- iv) dams;
- v) weirs;
- vi) bulk storm water outlet structures;
- vii) marinas;
- viii) jetties exceeding 50 m<sup>2</sup> in size;
- ix) slipways exceeding 50m<sup>2</sup> in size;
- x) buildings exceeding 50m<sup>2</sup> in size;
- xi) infrastructure or structures covering 50m<sup>2</sup> or more;

where such construction occurs within a watercourse or within 32 metres of a watercourse, measured from the edge of a watercourse, excluding where such construction will occur behind the development setback line.

Activity 22: The construction of a road outside urban areas

- i. With a reserve wider than 13,5 metres;

- ii. Where no reserve exists where the road is wider than 8 metres, or
- iii. For which an EA was obtained for the route determination in terms of Activity 5 of GN 387 of 2006 or Activity 18 of GN 545 of 2010.

Activity 24: The transformation of land bigger than square 1000 metres in size, to residential, retail commercial, industrial or institutional use, where at the time of coming into effect of this Schedule or thereafter such land was zoned as open space, conservation or has an equivalent zoning.

Activity 27: The decommissioning of existing facilities or infrastructure, for:

- i) electricity generation with a threshold of more than 10MW;
- ii) Electricity transmission and distribution with a threshold of more than 132kV;

Activity 29: The expansion of facilities for the generation of electricity where:

- ii) Regardless the increased output of the facility, the development footprint will be increased by 1 hectare or more.

Activity 37: The expansion of facilities or infrastructure for the bulk transportation of water, sewage or storm water where –

- i) The facility or infrastructure is expanded by more than 1 000 metres in length; or
- ii) Where the throughput capacity of the facility or infrastructure will be increased by 10% or more.

Activity 39: The expansion of -

- i) canals;
- ii) channels;
- iii) bridges;
- iv) weirs;
- v) bulk storm water outlet structures;
- vi) marinas;

within a watercourse or within 32 metres of a watercourse, measured from the edge of a watercourse, where such expansion will result in an increased development footprint but excluding where such expansion will occur behind the development setback line.

Activity 38: The expansion of facilities for the transformation and distribution of electricity where the expanded capacity will exceed 275kV and the development footprint will increase.

Activity 47: The widening of a road by more than 6 metres, or the lengthening of a road by more than 1 kilometre

- i) With a reserve wider than 13,5 metres;
- ii) Where no reserve exists where the road is wider than 8 metres,
- iii) Excluding widening or lengthening inside urban areas.

**Therefore, for the proposed project, a Scoping and EIA had to be undertaken. NEMA provides for a single integrated process for all the listed activities on site. Since the project comprises activities that require both a Basic Assessment and EIA levels of investigation, all activities will be assessed to the detail required for a Scoping and EIA process.**

### **2.3 NATIONAL ENVIRONMENTAL MANAGEMENT: WASTE ACT (NEM:WA) (ACT 59 OF 2008)**

With the recent proclamation (July 2009) of the National Environmental Management: Waste Act (NEM: WA) some waste related activities previously listed under the NEMA EIA listings have been repealed and are now listed in the ambit of the NEM:WA. The Minister of Environmental Affairs published Regulation 718 in terms of Section 19 (1) of the NEM: WA. These regulations highlight the waste management activities that require waste licensing. The regulations comprise two Categories, namely Category A, which identifies activities that require a Basic Assessment process; and Category B, which identifies activities that require a full scoping and EIA process to be followed. In terms of these regulations the following activities which require a Waste Management Licence authorisation, are applicable to this project:

#### **Regulation 718 - Category B**

Activity 1 The storage of hazardous waste in lagoons.

Activity 9: The disposal of any quantity of hazardous waste to land.

Activity 11: The construction of facilities for activities listed in Category B of Schedule 19(1) ~ GNR718.

## Regulation 718 - Category A

Activity 19: The expansion of facilities of or changes to existing facilities for any process or activity, which requires an amendment of an existing permit or license or a new permit or license in terms of legislation governing the release of pollution, effluent or waste.

As described in Regulation 718 “a person who wishes to commence, undertake or conduct an activity listed under this Category, must conduct an environmental impact assessment process, as stipulated in the environmental impact assessment regulations made under section 24(5) of the National Environmental Management Act, 1998 (Act No. 107 of 1998) as part of a waste management license application”.

**Therefore the proposed infrastructure requires the submission of a WML Application as well as a full Scoping and EIA to the National Department of Environmental Affairs.**

## 2.4 ENVIRONMENT CONSERVATION ACT (ACT 73 OF 1989)

The Environment Conservation Act (ECA) is a law that relates specifically to the environment. Although most of this Act has been replaced by the NEMA there are still some important sections that remain in operation. These sections relate to:

- Protected natural environments;
- Special nature reserves;
- Limited development areas; and
- Regulations on noise, vibration and shock.

## 2.5 THE NATIONAL WATER ACT (NO. 36 OF 1998)

***It should be noted upfront that any water uses that may require licensing in terms of the National Water Act ([NWA] No 36 of 1998) are being addressed by Eskom. The consultant has however included, for the sake of completeness, the potential water uses that may be triggered by this project.***

The list of potential water uses that will require licensing is given in Table 2-2.

**Table 2-2: Potential applicable Section 21 Water Use Licenses**

Water Use	Description	Potential Section 21 Water Uses
Section 21 (a)	Taking of water from a water resource.	Using water for dust suppression on roads or waste disposal facility; and Borehole water abstraction. Dewatering shallow perched aquifers.
Section 21 (b)	Storing of water.	Storing of water in return water dams, pollution control dams, and or storm-water control dams.
Section 21 (c)	Impeding or diverting the flow of water in a water course.	Activities within or near wetlands, or activities affecting wetlands.
Section 21 (e)	Engaging in a controlled activity: S37(1)(a) irrigation off any land with waste, or water containing waste generated through any industrial activity or by a water work.	Water used for dust suppression.
Section 21 (g)	Disposing of waste in a manner which may impact on a water resource.	Construction of the waste disposal facility. Storage of contaminated water in a pollution control dam / balancing dam / evaporation dam.
Section 21 (h)	Disposing in any manner of water which contains waste from, or which has been heated in, any industrial or power generation process.	Construction of the waste disposal facility in which ash and blow down water from the Camden Cooling tower will be disposed of.
Section 21 (i)	Altering the bed, banks, course, or characteristics of a watercourse. This includes altering the course of a watercourse (previously referred to as a river diversion).	Activities within or near wetlands, or activities affecting wetlands.



## 2.6 ADDITIONAL ACTS AND FRAMEWORKS

In addition to the ECA, NEMA and NEM: WA, the following Acts have some bearing on the proposed activities:

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

The proposed construction of the waste disposal site comprises certain activities (e.g. changing the nature of a site exceeding 5 000m<sup>2</sup> and linear developments in excess of 300m) that require authorisation in terms of Section 38 (1) of the Act. Section 38 (8) of the Act states that, if heritage considerations are taken into account as part of an application process undertaken in terms of the ECA, there is no need to undertake a separate application in terms of the National Heritage Resources Act. The requirements of the National Heritage Resources Act have thus been addressed as an element of the EIA process, specifically by the inclusion of a Heritage Assessment.

### Department of Environmental Affairs and Tourism<sup>3</sup> Integrated Environmental Management Information Series

The Department of Environmental Affairs (DEA) Information Series of 2002 and 2006 comprise 23 information documents. The documents were drafted as sources of information about concepts and approaches to Integrated Environmental Management (IEM). The IEM is a key instrument of the NEMA and provides the overarching framework for the integration of environmental assessment and management principles into environmental decision-making. The aim of the information series is to provide general guidance on techniques, tools and processes for environmental assessment and management.

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<sup>3</sup> The Department of Environmental Affairs and Tourism is now referred to as the Department of Environmental Affairs (DEA).

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### **3 ENVIRONMENTAL IMPACT ASSESMENT PROCESS**

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#### **3.1 STUDY APPROACH AND PROGRESS TO-DATE**

The EIA Process being followed for this project complies with the EIA Regulations as amended and administered by the DEA and promulgated in July 2010 in terms of the Section 24 (5) of the NEMA. The technical and public participation process undertaken for this EIA is summarised below and schematically represented in Figure 3-1.

#### **3.2 PRE-APPLICATION CONSULTATION**

On notification and receipt of the appointment letter from Eskom, a project inception meeting was held on 13<sup>th</sup> April 2011 between Eskom and the Zitholele Consulting Project Team. During this project kick-off meeting the following was discussed:

- Project Scope and Requirements;
- Project Schedule;
- Identification of key stakeholders and role players; and
- Analysis of the preliminary ash disposal sites.

#### **3.3 SUBMISSION OF AN APPLICATION FOR AUTHORISATION**

The DEA Integrated EIA and WML application form (Appendix B) for the proposed project was submitted to the DEA on 19th May 2011. Copies of the application form and notification of this application form were forwarded to the MDEDET as a key commenting authority. As a point of departure, the I&AP database available from Camden Power Station was used for initial project notification and ground-truthed by the Zitholele team to identify additional I&APs on the 16th May 2011.

#### **3.4 SITE VISIT**

A site visit was conducted on the 16<sup>th</sup> of May 2011 with the objective of familiarising the project team with the area, undertaking the site selection and to distribute BID's to landowners.

#### **3.5 DRAFT SCOPING REPORT AND PLAN OF STUDY FOR EIA**

The Draft Scoping Report (Draft SR) was prepared with information and issues identified during the Scoping Phase activities. The Plan of Study (PoS) for EIA and the Terms of Reference (ToR) for the envisaged specialist studies were included in Chapter 8 of that report. The Draft SR and PoS for EIA was then updated with the comments received from key commenting authorities, public review and comments obtained from I&APs.

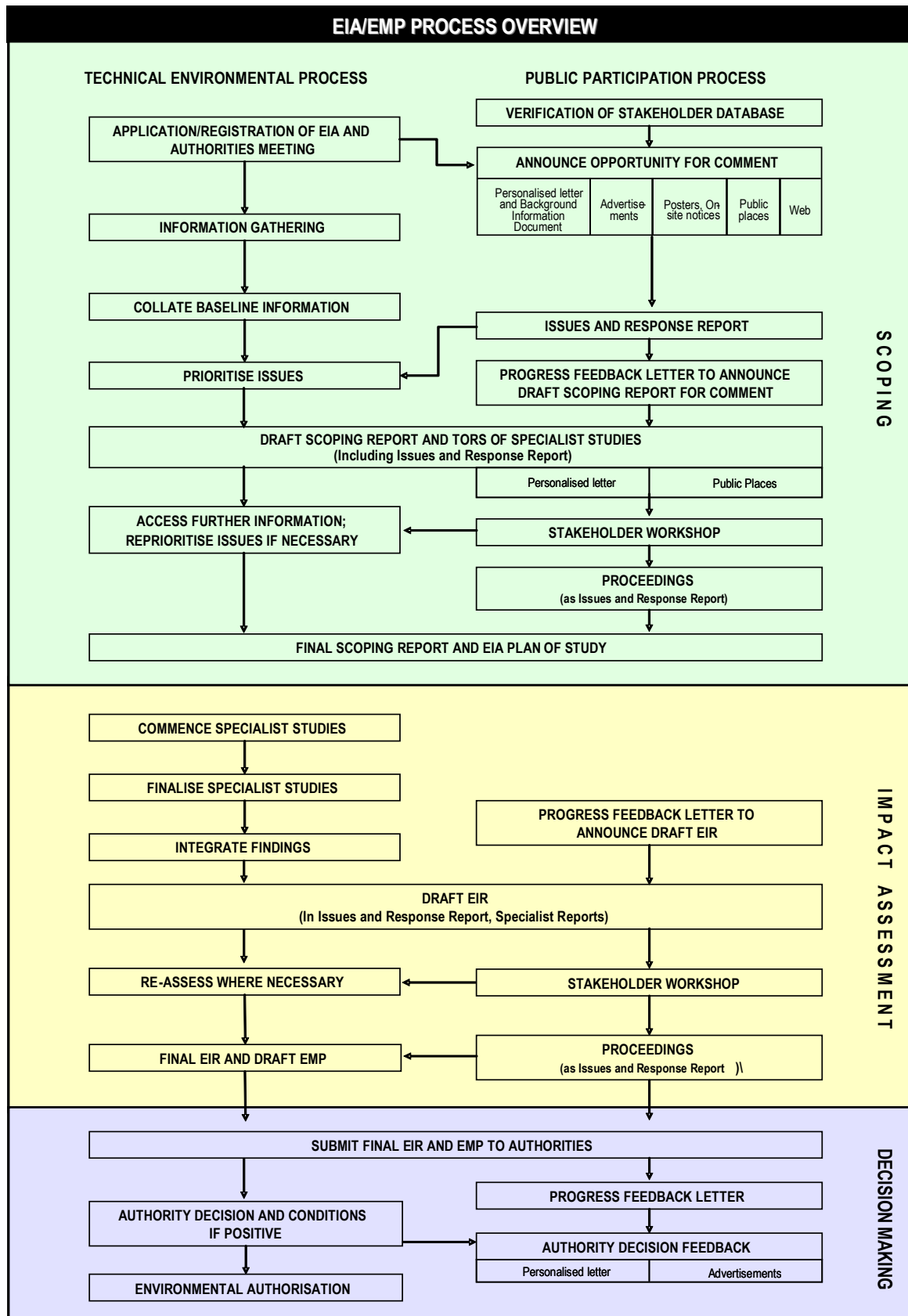


Figure 3-1: Technical and public participation process and activities for this project

### **3.6 FINAL SCOPING REPORT AND POS EIA**

The comments from the review of the Draft SR and PoS for EIA were used to compile a Final Scoping Report (Final SR). The Final SR was submitted to the CA for decision-making. An acceptance letter from the CA was received and is attached in Appendix C

### **3.7 SPECIALIST STUDIES**

In the PoS for EIA several specialist studies were suggested and accepted by the DEA. These studies have been used to inform the compilation of this report, and include:

- Ash Classification;
- Ash Site Conceptual Design and compilation of an Operational Manual;
- Geotechnical Investigations (Phase 1);
- Topographical Survey;
- Soils and Land Capability Assessment;
- Terrestrial Ecology (Fauna and Flora);
- Avifauna Assessment;
- Surface Water and Wetland Delineation and Assessment;
- Groundwater Assessment;
- Traffic Impact Opinion (*pending completion*);
- Air Quality Impact Opinion (*pending completion*);
- Noise Impact Opinion (*pending completion*);
- Heritage and Paleontological Assessment; and
- Visual Assessment.

These studies are attached as Appendix G to Appendix M.

### **3.8 IMPACT ASSESSMENT PHASE**

#### **3.8.1 Approach to Impact Assessment**

The impact assessment was not a discrete process happening in isolation, but was rather conducted throughout the entire EIA process. Once a final preferred layout and design for the facility has been proposed, the final impact assessment statement for the various environmental elements was written up in this EIR report.

### 3.8.2 Impact Assessment Methodology

In order to ensure uniformity, a standard impact assessment methodology has been utilised so that a wide range of impacts can be compared. The impact assessment methodology makes provision for the assessment of impacts against the following criteria:

- Direction of Impact (Positive / Negative);
- Magnitude / Significance;
- Spatial scale;
- Duration / Temporal scale;
- Probability of Impact Occurring; and
- Degree of certainty.

A combined quantitative and qualitative methodology was used to describe impacts for each of the afore-mentioned assessment criteria. A summary of each of the qualitative descriptors along with the equivalent quantitative rating scale for each of the aforementioned criteria is given in Table 3-1.

**Table 3-1: Quantities rating and equivalent descriptors for the impact assessment criteria.**

Rating	Magnitude	Extent scale	Temporal scale
1	VERY LOW	<i>Isolated Site / Development site</i>	<u>Incidental</u>
2	LOW	<i>Study area</i>	<u>Short-term</u>
3	MODERATE	<i>Local</i>	<u>Medium-term</u>
4	HIGH	<i>Regional / Provincial</i>	<u>Long-term</u>
5	VERY HIGH	<i>National</i>	<u>Permanent</u>

The impact assessment methodology is explained in detail in Section 3.8.2 of this report.

In order to make the report easier to read the following notation format is used to highlight the various components of the assessment:

- Significance or magnitude- **IN CAPITALS**
- Duration – in underline
- Probability – in italics and underlined.
- Degree of certainty - **in bold**
- Spatial Scale – *in italics*

### **3.8.3 Mitigation and Management Measures**

The development of mitigation and management measures was undertaken throughout the course of the process, from the assessment of the first alternative to the selection of a preferred design. Mitigation measures through the design review iterations and development of the preferred options have been recorded. In addition best practices were considered when identifying mitigation and management measures for potential impacts.

## **3.9 DRAFT EIR AND EMP COMPILATION**

### **3.9.1 Draft Environmental Impact Report**

Upon completion of the specialist studies and impact assessment the results of the studies were documented in this draft EIR (this Report) and made available for stakeholder review prior to finalisation and submission to authorities. The contents of the EIR are determined by the NEMA EIA Regulations and at a minimum include the following:

- Introduction (details of the EAP who prepared the report and his/her expertise);
- Motivation for the proposed project based on economic and environmental considerations;
- A detailed description of the proposed development;
- A detailed description of the proposed development site;
- A description of the environment that may be affected by the activity and the manner in which physical, biological, social, economic and cultural aspects of the environment may be affected by the proposed development;
- A description of the need and desirability of the proposed development and the identified potential alternatives to the proposed activity;
- A summary of the methodology used in determining the significance of potential impacts;
- A description and comparative assessment of all alternatives identified during the environmental impact assessment process;
- A summary of the findings of the specialist studies;
- A detailed assessment of all identified potential impacts;
- A list of the assumptions, uncertainties and gaps in knowledge;
- An opinion by the EAP as to whether the development is suitable for approval within the proposed site;
- An environmental management plan that complies with Regulation 34 of Act 107 of 1998;
- Copies of all specialist reports appended to the EIA report;
- An environmental awareness plan; and

- Any further information that will assist in decision making by the authorities.

In addition, as required by the new EIA Regulations, the PPP report will be attached to the final EIR as an appendix and will include:

- details of the public participation process conducted, *inter alia* –
  - a list of all the potential interested and affected parties that were notified;
  - the steps that were taken to notify potentially interested and affected parties;
  - proof that notice boards, advertisements and notices notifying potentially interested and affected parties, and (if applicable) the owner or person in control of the land, of the application have been displayed, placed or given;
  - a list of all persons, organisations and organs of state that were registered as interested and affected parties in relation to the application;
  - Comments and Response Reports containing summaries of the issues raised by interested and affected parties, the date of receipt of and the response of the EAP to those issues (or the reason for not addressing an issue); and
  - copies of all the comments received from interested and affected parties.

### **3.9.2 Environmental Management Programme (EMP)**

EMP, in the context of the new EIA Regulations, is a tool that takes a project from a high level consideration of issues, down to detailed workable mitigation measures that can be implemented in a cohesive and controlled manner.

The objectives of an EMP are to minimise disturbance to the environment, present mitigation measures for identified impacts, maximise potential environmental benefits, assign responsibility for actions to ensure that the pre-determined aims are met, and to act as a “cradle to grave” document.

The EMP has been drafted according to the findings of this draft EIR and is published as a separate report.

### **3.10 FINAL EIR AND EMP COMPILATION**

The Draft EIR and EMP will be made available for review by stakeholders. The comments received from the review phase will be used to finalise the reports.

### **3.11 SUBMISSION AND DECISION-MAKING**

Upon finalisation, the EIR and EMP will be submitted to the CA for decision-making and approval.

### **3.12 PUBLIC PARTICIPATION PROCESS (PPP)**

Public participation is an essential and legislative requirement for environmental authorisation. The principles that demand communication with society at large are best embodied in the principles of the NEMA. In addition, Section 24 (5), Regulation 54-57 of Government Notice Regulation (GNR) 543 under the NEMA, guides the public participation process that is required for an Environmental Impact Assessment (EIA) process.

The public participation process for the proposed Camden ash disposal facilities has been designed to satisfy the requirements laid down in the above legislation and guidelines. Figure 3-1 provides an overview of the EIA technical and public participation processes, and shows how issues and concerns raised by the public are used to inform the technical investigations of the EIA at various milestones during the process.

#### **3.12.1 Objectives of public participation in an EIA**

The objectives of public participation in an EIA are to provide access to sufficient information to I&APs in an objective manner so as to:

- During Scoping:
  - Assist I&APs to identify issues of concern, and providing suggestions for enhanced benefits and alternatives;
  - Contribute their local knowledge and experience;
  - Verify that their issues have been considered and to help define the scope of the technical studies to be undertaken during the Impact Assessment;
- During Impact Assessment:
  - Verify that their issues have been considered either by the EIA Specialist Studies, or elsewhere; and
  - Comment on the findings of the EIA, including the measures that have been proposed to enhance positive impacts and reduce or avoid negative ones.

The key objective of public participation is to ensure transparency throughout the process and to promote informed decision making.

#### **3.12.2 Identification of Interested and Affected Parties (I&APs)**

The identification of stakeholders is on-going and is refined throughout the process. As the “on-the-ground” understanding of affected stakeholders improves through interaction with various stakeholders in the area the database is updated. The identification of key stakeholders and community representatives (land owners and occupiers) for this project is important as their contributions are valued. The identification of key stakeholders was done in



collaboration with Eskom (through the I&AP database for the EIAs in the area), the local municipalities and other organisations in the study area.

The stakeholders' details are captured in an electronic database management software programme that automatically categorises every mailing to stakeholders, thus providing an on-going record of communications - an important requirement by the authorities for public participation. In addition, comments and contributions received from stakeholders are recorded, linking each comment to the name of the person who made it.

According to the NEMA EIA Regulations, a register of I&APs (Regulation 55 of GNR 543) must be kept by the public participation practitioner. Such a register has been compiled and is being kept updated with the details of involved I&APs throughout the process (See appendix D)

### 3.12.3 Announcement of opportunity to become involved

The opportunity to participate in the EIA was announced on the 16<sup>th</sup> May 2011 as follows:

- Distribution of a letter of notification to the neighbours of Camden Power Station, a letter of invitation to stakeholders to become involved was distributed, which was addressed to individuals and organisations, accompanied by a Background Information Document (BID) containing details of the proposed project, including a map of the project area, and a registration sheet (Appendix E and Figure 3-2).



Figure 3-2: BID documents placed on neighbouring landowners

Advertisements were placed in the following newspapers as seen in Table 3-2 (Appendix D)

**Table 3-2: Advertisements placed during the announcement phase**

NEWSPAPER	DATE
Ekasi News	20 May 2011
Highvelder	19 May 2011
Highveld Tribune	24 May 2011
Beeld	23 May 2011
Citizen	20 May 2011

- Site notice boards were positioned at prominent localities during May 2011 on all roads around the Camden Power Station. These notice boards were placed at conspicuous places and at various public places (Figure 3-3).



**Figure 3-3: Site notice boards were put up in the study area**

#### 3.12.4 Obtaining comment and contributions

The following opportunities to contribute were available to I&APs during the Scoping Phase:

- Completing and returning the registration / comment sheets on which space was provided for comment;
- Providing comments telephonically or by email to the public participation office; and
- Attending the Open House session and Public Meeting that was widely advertised (see Table 3-3 below) and raise comments there.

**Table 3-3: A Stakeholder meeting was advertised and was held as part of the public review period of the Draft Scoping Report**

DATE	TIME	AREA	VENUE AND ADDRESS
27 July 2011	11:00 – Open House	ERMELO	Indawo Lodge
27 July 2011	16:00 – Public Meeting	ERMELO	Indawo Lodge

### 3.12.5 Issues and Response Report

The issues raised in the announcement phase of the project were captured in an Issues and Responses Report (IRR) Version 1 and appended to the Draft SR. The report was updated to include additional I&AP contributions received throughout the the Scoping Phase. The issues and comments raised during the public review period of the Draft SR was added to the report as Version 2 of the IRR. Version 3 of the IRR is attached to the Draft EIR and Version 4 will be attached to the Final EIR.

### 3.12.6 Draft Scoping Report

The purpose of the Draft SR was to enable I&APs an opportunity to verify that their contributions had been captured, understood and correctly interpreted, and to raise further issues. At the end of the Scoping Phase, the issues identified by the I&APs and by the environmental technical specialists, were used to define the Terms of Reference for the Specialist Studies that have been conducted during the Impact Assessment Phase of the EIA.

In addition to media advertisements and site notices that announced the opportunity to participate in the EIA, the opportunity for public review was announced as follows:

- In the Background Information Document (May 2011).
- In advertisements published (see Table 3-4 below and Appendix D)
- to announce the review of the Draft SR and inviting stakeholders to attend a public meeting; and
- In a letter sent out in May 2011, and addressed personally to all individuals and organisations on the stakeholder database.

**Table 3-4: A public meeting was advertised and was held as part of the public review period of the Draft Scoping Report**

NEWSPAPER	DATE
Ekasi News	15 July 2011
Highvelder	21 July 2011
Highveld Tribune	19 July 2011
Beeld	14 July 2011
Citizen	14 July 2011

The Draft SR, including the Issues and Response Report Version 1, were distributed for comment as follows:

- Left in public venues within the vicinity of the project area (these are listed in Table 3-5 below);
- Published on the Eskom and Zitholele websites;
- Mailed to stakeholders;

- Mailed to I&APs who requested the report; and
- Copies have been made available at the stakeholder meeting.

I&APs could comment on the report in various ways, such as completing the comment sheet accompanying the report, and submitting individual comments in writing or by email.

**Table 3-5: List of public places where the Draft Scoping Report was available**

PLACE	CONTACT PERSON	TELEPHONE	ADDRESS
Ermelo Public Library	Mr Stanley Dondolo	(017) 801-3621	Cnr Church and Taute Street, Civic Centre, ERMELO
Visitor Centre, Camden Power Station	Ms Thandiwe Mzoyi	017 827 8000	Camden Power Station

### 3.12.7 Final Scoping Report

The Final Scoping Report was updated with additional issues raised by I&APs. The Final SR was submitted to the Competent Authority (CA) (DEA) and I&APs, and to those individuals who specifically requested a copy.

### 3.12.8 Public participation during the Impact Assessment

The purpose of the public participation process during the Impact Assessment Phase is to ensure that the Draft EIR is made available to the public for comments. I&APs will be requested to comment on the findings of the EIA, including the measures that have been proposed to enhance positive impacts and reduce or avoid negative ones.

The Draft EIR includes the IRR (Version 3), which lists every issue raised with an indication of where the issue is dealt with in the technical evaluations, and the relevant findings. It also includes a full description of the EIA process, including the necessary appendices.

The draft EIR will be reviewed by the public as described for the SR above. In summary stakeholders will be notified of the availability of the report and afforded an opportunity will be provided for stakeholders to engage with the report and the team. An Open House session and public meeting will be held and the draft report will be freely available in electronic format. The report will also be made available in Eskom and Zitholele websites.

### 3.12.9 Notification to I&APs of the Submission of the final EIR

Once the Final EIR and EMP reports are submitted to the CA, a letter will be sent to I&APs that the reports have been submitted and are available should they request copies of the reports. The letter will additionally outline the next steps in the process.

### **3.12.10 Announcement of Environmental Authorisation**

Once the decision is issued Eskom must, in writing, within 12 days of the date of the decisions (i.e. within 12 days after the date the decision was made by the DEA and not within 12 days of having been notified of the decisions) notify the registered I&APs of the outcome of the decisions, refer to the DEA's reasons for the decisions as contained in the copies of the DEA's decisions to be attached to the notice, and draw their attention to the fact that appeals may be lodged against the decisions.

In addition to the notice to the registered I&APs, Eskom must also within 12 days of the date of the decisions place notice in the same newspaper(s) used for the placing of notices during the PPP that was undertaken, informing I&APs of the DEA's decisions, where the I&APs can access copies of the DEA's decisions (note that the proponent must give access to copies of the decisions to I&APs), and draw their attention to the fact that appeals may be lodged against the decisions, and the manner in which to lodge appeals against the decisions.

## 4 ISSUES AND CONCERNS RAISED

A detailed list of the issues and concerns raised is attached in the Issues and Response Report (Appendix F). A list of the issues raised during the project is given in Table 4-1 below along with a reference to where the issue is addressed in this report.

**Table 4-1: List of issues raised through the various phases of the project, and where they are addressed in this report.**

Issue / comment Raised	Response / Report Reference
<b>Project Phasing</b>	
Eskom notified stakeholders at the public meeting that an Environmental Control Officer will be appointed in the construction phase of the project. This must be documented in the EMP.	<i>An Environmental Control Officer (ECO) or Waste Management Control Officer (WMCO) will be appointed as per the EMP. Refer to Appendix N of this report.</i>
<b>Alternatives</b>	
Alternative ash disposal options must be investigated which will also allow for business opportunities.	<i>Eskom are always open to new uses of their ash, and on-going investigations are undertaken by Eskom. The volume of ash is too large to dispose of through alternative uses. Approximately 5% of Eskom's Ash is disposed of through other uses.</i>
The option of constructing the facility on an incline must put forward as an alternative.	<i>Noted. Refer to the attached Conceptual Engineering report that investigated site alternatives.</i>
Placement of the facility to take existing infrastructure into account must be an alternative.	<i>Noted. Refer to the attached Conceptual Engineering report that investigated site alternatives.</i>
<b>Description of the receiving environment</b>	
Which municipalities are involved?	<i>Msukaligwa Local Municipality in the Gert Sibande District Municipality. Refer to Section 1.3 of this report.</i>
What comments have been received?	<i>Refer to the attached Issues and Response Report, Appendix F</i>
Why have the officials from the municipalities not attended the public meetings?	<i>Authorities are invited and attend as and when they please. Authorities are however part of the process but are able to contribute in a variety of other means. Authorities often preferring written submissions to attendance at public meetings.</i>
Concerns with erosion - mitigation measures have to be included in EMP.	<i>Noted. Refer to Appendix N of this report..</i>
Concerns with seepage – the lining must be adequate to minimize any seepage and possible groundwater pollution.	<i>Noted. Refer to Section 6.7.3 of this report.</i>
Specific fish species no longer occur in the De Jagers Pan.	<i>Noted. The de Jagers pan will not be used as the AWRD for the proposed new facility. A separate AWRD will be constructed. Preventing polluted water</i>

	<i>from leaving the site, seeping through the site and entering the de Jagers Pan. See Section 6.8.2 of this report.</i>
The Ash from the current facility pollutes the air and has a negative impact on buildings, farming activities and human health.	<i>Noted. Air quality impacts associated with ash disposal facilities is widely reported. The air quality study is pending finalisation. Current literature indicates that if managed the extent of the impact can be severely limited, and thus health related impacts can be reduced significantly.</i>
Dust suppression needs to be more effective and alternative methods of dust suppression must be investigated.	<i>Noted. Camden continuously tries to use dust suppression processes to mitigate dust.</i>
What is the impact to land use and agricultural potential, including such factors as loss of land, loss of income, loss of land value, reduction in crop production,	<i>A total 138.2 ha of arable land will be lost, and 76.1 ha of grazing land will be lost. This impact is assessed in Section 8.5 of this report. Also see the Biophysical Specialist Study that addresses this impact in more detail, Appendix I.</i>
Visual Impact of the facility.	<i>The visual impact was assessed and is addressed in Section 0 of this report.</i>
Windblown dust / ash is a concern.	<i>This impact was assessed and is addressed in Section 10.2.8 of this report.</i>
Water pollution due to the overflow of the De Jagers Pan.	<i>Noted. The de Jagers pan will not be used as the AWRD for the proposed new facility. A separate AWRD will be constructed. Preventing polluted water from leaving the site and entering the de Jagers Pan. See the attached Conceptual Engineering Report, Appendix J.</i>
Potential increase in crime and security concerns.	<i>This impact was assessed and is addressed in Section 10.2.10 of this report. Also see social impact study, Appendix M.</i>
<b>Infrastructure</b>	
Alternative 3 is not suitable because of the water pipeline, transmission line, and railway line running through the proposed site.	<i>Noted. All three (3) sites were evaluated equally by all specialists, and the preferred/recommended alternative finally selected is Alternative 1.</i>
<b>Socio-Economic Environment</b>	
Sense of place.	<i>This impact was assessed and is addressed in Section 10.2.10 of this report. Also see social impact study, Appendix M</i>
San rock paintings and figures near the alternative sites.	<i>A heritage assessment was undertaken, and the preferred alternative selected will not result in impacts</i>

	<i>to any such features. Refer to the attached Heritage Report, Appendix L.</i>
<b>Public Participation</b>	
Illiteracy.	<i>People unable to read and write were able to raise their comments / concerns or ask questions verbally at public meetings that were held or telephonically to the PP officer. Translators were available.</i>
Inclusion throughout the whole EIA process must happen	<i>A thoroughly inclusive stakeholder engagement process was undertaken in line with the requirements of the NEMA.</i>
<b>Impact Assessment</b>	
Request for an economic assessment, agriculture vs. waste facility.	<p>All potential alternatives will result in similar impacts to agricultural activities. Thus agricultural economics do not play a differential role in site selection.</p> <p>The issue then becomes whether the economics of constructing a waste disposal facility outweigh the economics of alternative land uses. In all circumstances the impact is again the same, the waste facility does not generate any income.</p> <p>However, without the waste facility the Camden Power station will need to close down. This latter scenario is covered in the NO-GO Assessment, and therefore the EAP does not see the value of a separate Economic Assessment Specialist study.</p>
Request for a palaeontological assessment.	Noted. Refer to attached Heritage Impact Assessment specialist report , Appendix L
Request for a wetland delineation assessment.	Noted. Refer to attached Biophysical Assessment specialist report, Appendix I.



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## **5 ALTERNATIVES IDENTIFIED**

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Alternatives considered for the proposed Camden Ash Disposal Facility project can be divided into the following categories:

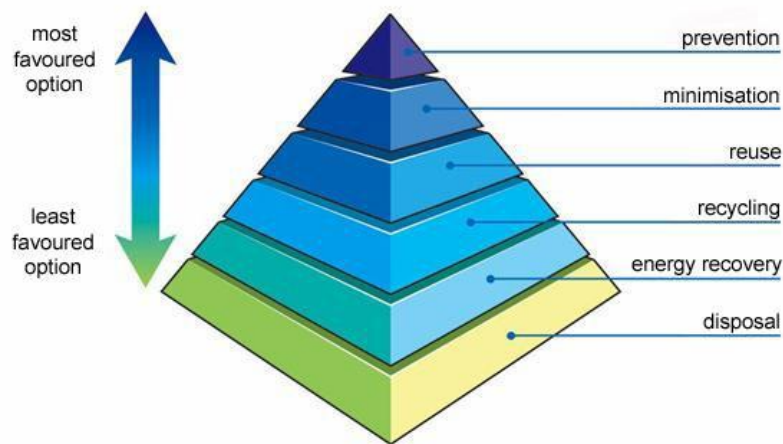
- Waste disposal alternatives;
- Site alternatives;
- Operation alternatives, and
- The No-Go (no development) alternative.

These are discussed in the sections below.

### **5.1 WASTE DISPOSAL ALTERNATIVES**

The waste management hierarchy is an internationally accepted guide to prioritise waste management options and aims to achieve optimal environmental results, and is also a General Duty of a Holder of Waste in NEMWA. The first priority should be to prevent the generation of waste. If not possible, waste should be minimised or re-used as far as possible. Refer to Figure 5-1 for an illustration of the waste hierarchy.

Ash from coal-fired power stations provides a unique challenge to waste minimisation. Ash in its various forms can be utilised in the building industry as a cement extender or aggregate. Although the ash is generated in large volumes, the classification of the ash according to legislation has posed several challenges as the ash was not considered when the classifications were developed. Using the leaching analysis, ash is mostly classified as hazardous according to the Minimum Requirements, which prevents the use/recycling of the ash prior to the delisting of the ash by the Department for a specific use. In addition the sheer volume of ash produced by power stations far exceeds the potential market for recycled ash products. At present there is no feasible recycling or reuse alternative for the ash being produced at Camden Power Station.



**Figure 5-1: Waste Hierarchy**

The Camden Ash Disposal Facility will form an integral part of the handling, re-use and disposal of water and waste at the Camden Power Station operations. The ash disposal facility is the last resort in the ash waste stream as it is a final disposal facility. Water from the wet ashing process is recycled via ash water return dams, from where the water is pumped to the power station and re-used in the process of ash transportation rather than using clean water. In the case of the ash, the waste disposal is currently the most feasible alternative for the Camden power station due to the fact that the combined sales the aforementioned uses would not reduce the waste stream by noticeable volume (less than 0.05%), or even reduce the footprint of a facility required to store the waste stream.

## 5.2 SITE ALTERNATIVES

A site identification and evaluation exercise was undertaken in line with the Minimum Requirements for the Disposal of Waste by Landfill, both the 2<sup>nd</sup> Edition (1998)<sup>1</sup> and the Draft 3<sup>rd</sup> Edition (2005)<sup>2</sup> were taken into account, technical engineering requirements were also used in the initial identification of the site alternatives and refined later in the conceptual engineering of the feasible alternatives. The identification and evaluation of site alternatives is a phased approach consisting primarily of the following:

- Identification of potential sites against a set of technical criteria;
- Fatal flaw analysis of potential site alternatives; and
- Screening and ranking of sites against economic, environmental and public criteria.

The site identification and evaluation exercise was undertaken by the environmental consultants (environmental, geotechnical and engineering) and Eskom personnel (site engineer, environmental manager station and environmental advisor head office).

### 5.2.1 Initial Site Identification

Potential sites alternatives were identified in a one day workshop at Camden Power Station using the government published 1:50 000 topo-cadastral maps of the area, site knowledge and available aerial photographs of the area surrounding the power station. Once the workshop was completed the sites were visited to confirm their feasibility.

The initial technical conditions utilised to identify potential sites were:

- It should be able to link easily into existing ash disposal infrastructure i.e. use existing pipelines and roads wherever possible;
- It must be within a 10 km radius of the station to minimise the distance that ash slurry needs to be transported; and
- Had to have a minimum footprint size of 120 ha<sup>4</sup> (including associated infrastructure) to accommodate a worse case growth rate in waste volumes over the next 20 years.

Four site alternatives were identified meeting the aforementioned criteria during a screening exercise hosted at the power station. The four site alternatives identified are shown in Figure 5-2 and are described briefly below.

#### Site 1

This site is located immediately north of the existing ash disposal facility and approximately 2.8 km north-west of the Camden Power Station. The Camden Village is located ~300 m to the east of the proposed site. The total area identified is ~272 hectares in size. The terrain is mostly sloping in the northerly direction (away from De Jagers Pan) at 2.6%.

#### Site 2

The second site is located ~1.2 km south of the Camden power Station and immediately south of the South African Railways (SAR) servitude for the Richards Bay Coal Line. There is an active coal mine located to adjacent and to the east of this site. The total area of this site is ~291 hectares. Natural drainage over the site is split in the north easterly and south easterly directions at approximately 4%. The site is situated within the headwaters of a non-perennial north flowing stream that flows into the Witpuntspruit approximately 3 km to the north-east.

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<sup>4</sup> This initial footprint of 120 ha had to be revised upward (Site 1= ~216.7 ha and Site 3= ~259.4 ha) in size once the topography of the area was taken into account.

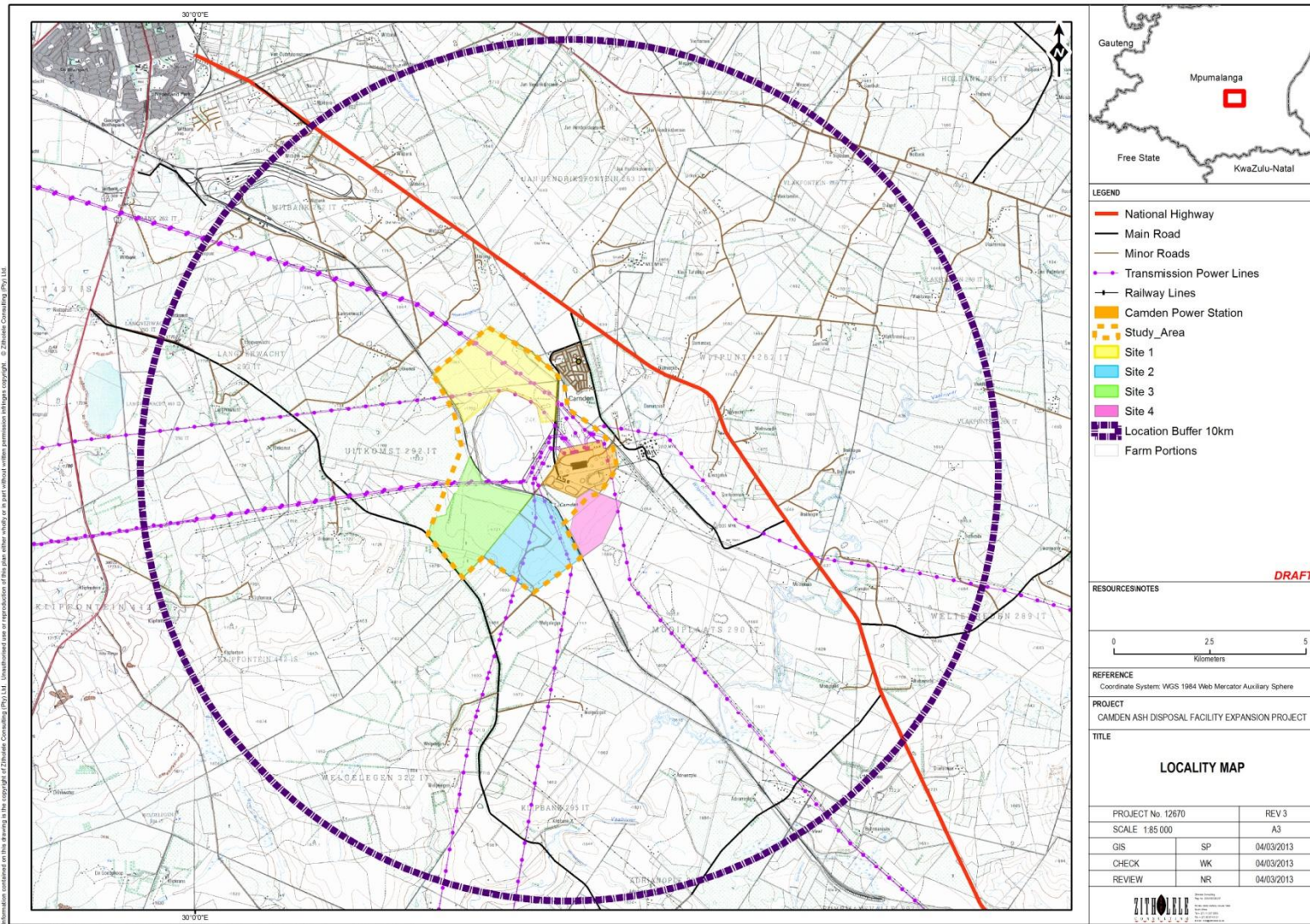


Figure 5-2: Site alternative locality map

### Site 3

This site is located immediately south of De Jagers Pan and the SAR servitude, and ~1 km south west of the Camden Power Station. Site 3 is adjacent and west of Site 2. The total area available for development is 322 hectares. A natural watershed divides the site, sloping in a north easterly direction towards De Jagers Pan and in a south westerly direction away from the Pan at a constant grade of 4%.

### Site 4

Site 4 is located immediately south-south east of the Camden Power Station. The site is north of the SAR servitude. The non-perennial stream originating on Site 2 flows directly through this site and joins the Witpuntspruit just to the northeast of the boundary of this site. The Witpuntspruit is a perennial water resource flowing in a northerly direction and is located within 1,2 km of the site. Coal is currently being mined immediately to the south of the site. The total area of Site 4 is ~135 ha.

## 5.2.2 Fatal Flaw Identification

Fatal flaws are features that would prevent the site alternative being utilised for an ash disposal site. These were extracted and adapted from the Minimum Requirements 2<sup>nd</sup> Ed (1998) and 3<sup>rd</sup> Ed (2005) and are shown in Table 5-1 below.

**Table 5-1: Fatal Flaws used in the site selection**

Ranking Component	
Fatal Flaws	500m from an airfield
	Within the 1:100 year flood line
	Areas in close proximity to significant surface water bodies
	Unstable / undermined areas
	Sensitive ecological and/or historical areas
	Areas of flat gradients, shallow or emergent ground water
	Areas within the secure power station area (National Keystone Infrastructure)
	Areas characterized by shallow bedrock with little soil cover
	Areas in close proximity to land-uses that are incompatible with disposal sites
	Areas immediately upwind of a residential area in the prevailing wind direction(s).
	Areas over which servitudes are held that would prevent the establishment of a ash disposal facility e.g. Eskom, Transnet, Water Board

The results of the fatal flaw assessment are show in Table 5-2. As indicated two sites identified (Site 2 and Site 4) have fatal flaws preventing them from being used for development of the Ash Disposal Facility:

- Site 2 was fatally flawed because of the presence of unstable geology, as reported in the attached Engineering Report, as well as the geotechnical report; and



- Site 4 was fatally flawed because it was located within the 1:100 year floodline of the Witpuntspruit surface water resource. Engineers from Camden Power Station also reported that based on their local knowledge Site 4 was likely undermined by historic coal mining activities in the area. This could not be verified, however the EAP felt it prudent to be cautious and has avoided the site.

**Table 5-2: Presence of Fatal Flaws on each of the identified site alternatives (indicated by a Red Cross)**

Fatal Flaw Criteria	Site 1	Site 2	Site 3	Site 4
Airfield	✓	✓	✓	✓
1:100 year flood line	✓	✗	✓	✗
Significant surface water bodies	✓	✓	✓	✓
Unstable / undermined areas	✓	✗	✓	✗
Sensitive ecological / historical areas	✓	✓	✓	✓
Flat gradients, Shallow groundwater	✓	✓	✓	✓
National Keystone Infrastructure	✓	✓	✓	✓
Shallow bedrock	✓	✓	✓	✓
Incompatible land use	✓	✓	✓	✓
Upwind of residential area	✓	✓	✓	✓
Servitudes preventing establishment	✓	✓	✓	✓
Notes:		Geology is geo-technically unstable – Refer to attached 1. Conceptual Engineering Report ( 2. Appendix J) 3. Geo-technical Specialist Report ( 4. Appendix J)		Refer to Figure 5-2 showing the location of the site and water body.  Undermining although reported was not confirmed on this site.

### 5.2.3 Site Screening

Upon completion of the fatal flaw assessment a screening assessment of each of the sites was undertaken. Site screening involved the compilation of a site screening rating matrix, a one-day site investigation, and a workshop between the environmental team and key Camden Power Station personnel to rate each of the potential sites. Economic, Environmental and Public Criteria were all taken into account. The site screening matrix is shown in Table 5-3

#### Economic Criteria

The economic criteria focussed on the establishment and operating cost associated with each specific site. This includes the distance to the site from the waste sources, the accessibility of the site, the ease of operations, the available footprint, the cost to establish the site, and security concerns.

According to the economic criteria Alternative 1 is the most preferred. This result was expected as Alternative 1 is located very close to the existing ash disposal site, which will allow very easy integration with current operations.

*It should be noted that a key finding from this analysis was that all the alternatives have existing transmission power lines running through the sites. The deviation of these transmission lines has been included in this EIA and the specialist studies that have been undertaken.*

*A further important factor to consider is the difficulty of crossing the Richards Bay Coal Line, a requirement of both Site 2 and 3. This will substantially increase the cost of both these options.*

### Environmental Criteria

The environmental criteria that were identified as important ranking components include the distance to ground or surface water features, presence of wetlands, geological instability, terrestrial ecological sensitivity, soil depth and agricultural potential, and potential presence of features of cultural / historical sensitivity.

The scoring from the matrix indicated that Alternative 1 had the lowest score. Scoring most preferred for all components except for terrestrial ecology.

### Public Criteria

The public criteria that were considered during the site evaluation was the possible displacements of local habitants, the visibility of the site, the sensitivity of the access road and the distance to the nearest residential area.

According to the evaluation of the public criteria, Alternative 3 was the most suitable site, as this site will present the least visibility of the disposal facility from the main roads and settlements in the area. In addition the Camden township is close to Alternative 1. In recent years this township has been vacated by residents to a large degree, but a few residents remain.

### Overall Site Scoring

The combined scores indicate which of the two sites is the most suitable in terms of the DWAF Minimum Requirements approach (2<sup>nd</sup> Ed [1998] and draft 3<sup>rd</sup> Ed [2005])<sup>1</sup>. The combined site ranking is shown in Table 5-3.

The results of the analysis show that Alternative 1 is the most preferred site. However, the NEMA EIA Regulations require assessment of all feasible alternatives, and thus both Site 1 and 3 have been investigated further in this EIA.

**Table 5-3: Sensitivity risk matrix for Alternative 1 and 3**

Ranking Component		Alt 1	Alt 3
Economic	The distance of the site from the ash/brine generation areas	3	1
	Access to the ash disposal site	3	1
	Size of available footprint	3	3
	Ease of operation	3	1
	Relocation of existing services to avoid facility	-1	-1
	Cost to establish infrastructure	1	1
	Land Owned Fully or Partially by Eskom	1	-1
	Security Concerns	1	0
<b>Total Economic</b>		<b>14</b>	<b>7</b>
Environmental	Surface Water and Wetland	3	3
	Groundwater	3	3
	Soils and Land Capability	3	1
	Terrestrial Ecology (Fauna and Flora)	1	1
	Archaeology, Cultural Historical, and Paleontological	3	3
<b>Total Environmental</b>		<b>13</b>	<b>11</b>
Public	The displacement of local inhabitants.	1	1
	Exposed sites with high visibility	-1	1
	Sensitivity of access road(s) passes	1	1
	The distance to the nearest residential area	-1	1
<b>Total Public</b>		<b>0</b>	<b>4</b>
<b>Overall Site Scoring</b>		<b>27</b>	<b>22</b>
3	Very suitable		
1	suitable		
0	unknown		
-1	unsuitable		
-3	very unsuitable		
-10	Fatal flaw		

### 5.3 DESIGN ALTERNATIVES

It should be noted that ash disposal facilities are not a new solution for ash disposal and Eskom has developed this technology for a number of their power stations between 1960 and 1980 however, the requirements for lining of the ash disposal facilities is new. This lining requirement poses new challenges to the operating methods of ash disposal facilities. With the introduction of a liner system the management of compartments becomes critical, as it will not be practical to line the entire facility on initiation as the risk of liner damage will be high. The number and sequencing of compartments have a direct impact on the layout and number of decant penstocks. For each of the alternative sites the different construction and lining options were investigated. Either a H:H barrier system as per the DWAF Minimum Requirements or a Class C barrier system as per the DEA's draft regulations is proposed, depending on the applicable legislation at the time of authorisation, and project execution.



#### **5.4 THE NO-GO ALTERNATIVE**

This alternative presents that, in the case that the project does not take place, the power station will have to stop operating all together, since Eskom cannot dispose of the ash generated illegally.

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## **6 PROJECT DESCRIPTION**

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The proposed project is the extension of ash disposal facilities and associated infrastructure for the Camden Power Station. A detailed description of the project components is given in this section for both Alternative 1 and 3. For more detail about the alternative assessment refer to Section 5. For further details of each alternative refer to the Conceptual Engineering Report attached in appendix J.

### **6.1 PROJECT COMPONENTS AND LAYOUT**

It is envisaged that the Camden Ash Disposal Facility Expansion project will consist of the following components:

- A suitably designed and lined ash containment facility (wet facility) able to accommodate the ~19 years of ash still to be generated by Camden Power Station;
- Clean and dirty water separation and containment facilities, including:
  - Ash Water Return Dams (AWRD) and trenches / drains;
  - Storm water drainage canals and discharge; and
  - Monitoring boreholes;
- Pipelines for the transportation of ash slurry to the disposal facility (containment dam);
- Access roads around the facility, fencing around the facility and access control;
- Relocation of existing service infrastructure (including power lines and roads); and
- Rehabilitation of redundant infrastructure.

A simplified site layout plan for both Alternative 1 and 3 showing all of these project elements is included below as Figure 6-1 and Figure 6-2 respectively.

It should be noted that entire waste stream can be accommodated within a single facility on Site 1; whereas the topography requires that two facilities be constructed on Site 3 to accommodate the same volume of waste. Site 3 is therefore labelled Site 3A and Site 3B on diagrams and in the textual discussions below. The reader must note that both Site 3A and Site 3B will need to be built if Site 3 is selected as the preferred alternative.



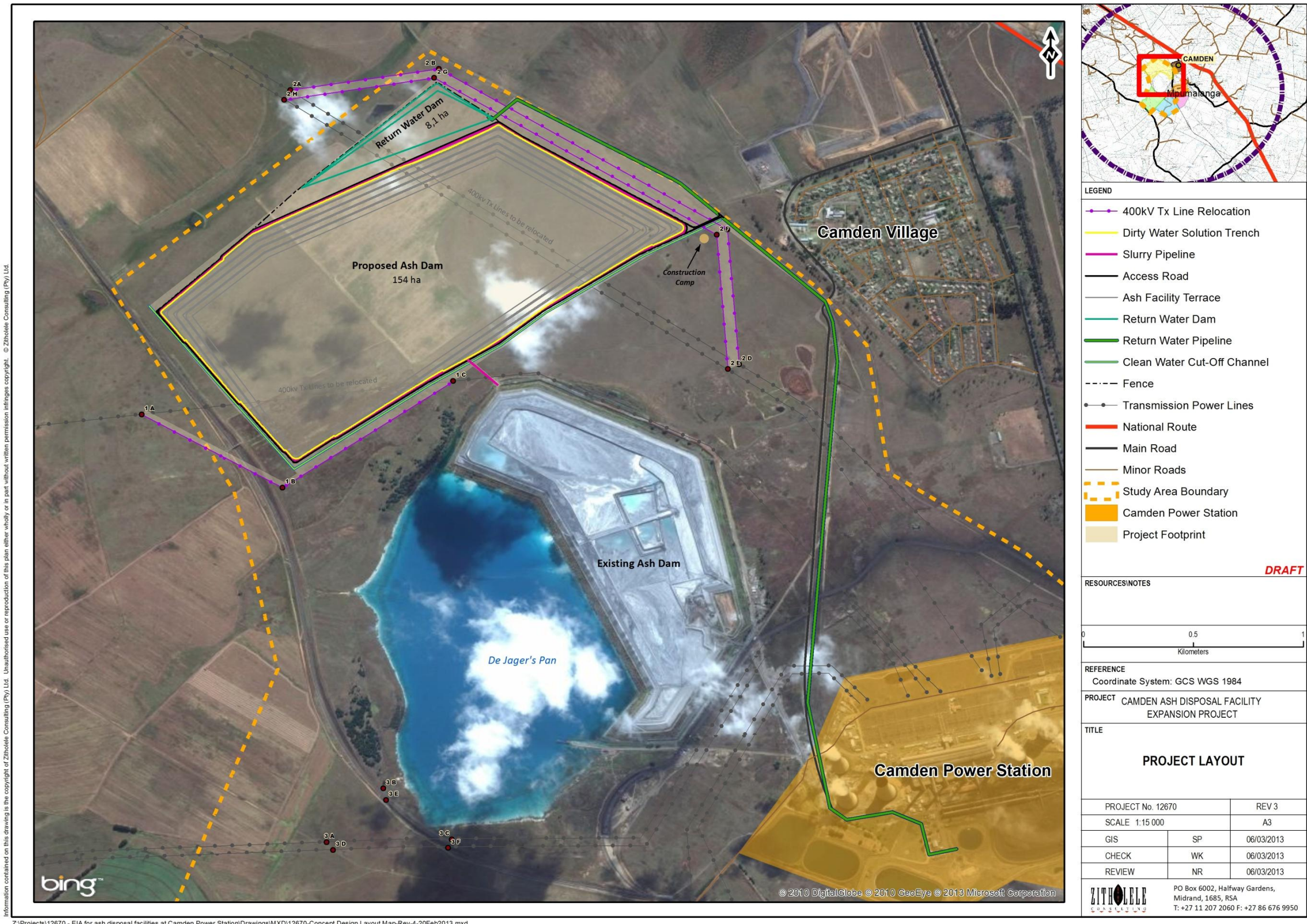
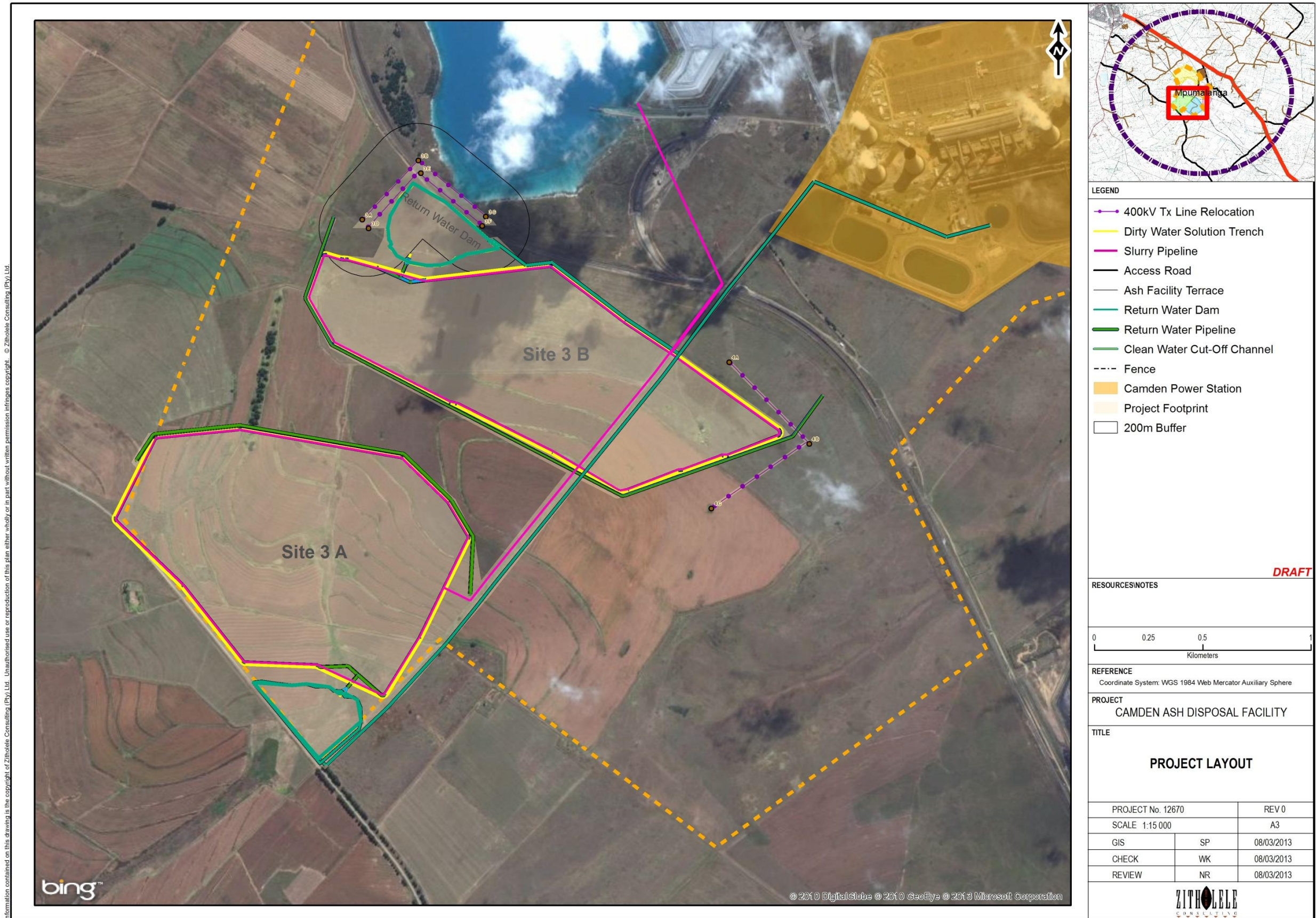


Figure 6-1: Camden Ash Disposal Facility Expansion Project Layout Map for Site 1





Z:\Projects\12670 - EIA for ash disposal facilities at Camden Power Station\Drawings\MXD\12670-Concept Design Layout Map- Site3-Rev-4-8March2013.mxd

Figure 6-2: Camden Ash Disposal Facility Expansion Project Layout Map for Site 3