

3 EIA PROCESS AND METHODOLOGY

3.1 Introduction

The Environmental Impact Assessment (EIA) and Waste Licence Application process for the proposed Majuba Continuous Ashing project is comprised of three main phases, namely the Application phase, Scoping phase and Impact Assessment phase (which includes the Waste License Report and the Conceptual Designs). This EIA report documents the tasks which have been undertaken as part of the Impact Assessment 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.

3.2 Scoping Phase

3.2.1 Introduction

The Scoping Phase of an EIA serves to define the scope of the detailed assessment of the potential impacts and all feasible alternatives of a proposed project. The Environmental Scoping Phase was undertaken in accordance with the requirements of sections 24 and 24D of the National Environmental Management Act (NEMA) (Act 107 of 1998), as read with Government Notices R 543 (Regulations 26-30), 544, 545 and 546 of the NEMA and GN 921 of the National Environmental Management Waste Act (NEMWA).

Lidwala undertook the Scoping Phase of the project between **June 2012** and **January 2013**. The public review of the Draft Scoping Report ran for a period of **30 calendar days** from **8 November 2012** to **7 December 2012**. The responses and comments from I&APs on the draft Scoping Report were captured in the Final Environmental Scoping Report. The final Environmental Scoping Report was submitted to DEA for review and decision-making on 8 January 2013.

3.3 Authority Consultation

3.3.1 Consultation with Authorities

The relevant Key commenting authorities, DWA and MDEDET, required to review the proposed project and provide comment to enable the Competent Authority to make a

decision were consulted from the outset of this study, and have been engaged throughout the project process. The competent authority for this project is the National DEA. The DWA and MDEDET are noted as key commenting authorities.

The Final EIR will be presented to the relevant authorities (DEA) with the inclusion of the preferred site alternative. The Final Environmental Scoping Report was accepted in writing on **20 March 2013**. The letter of acceptance is included in **Appendix A**.

3.3.2 Public Participation

A comprehensive Public Participation Process (PPP) was implemented as part of the Scoping Phase. The Project and environmental assessment process was widely announced with an invitation to the general public to register as I&APs and to actively participate in the PPP. The main activities undertaken as part of the PPP in the Scoping Phase were as follows:

- Print media advertisements in English, Afrikaans, Zulu that were placed in the "The Recorder" and "Cosmos News" newspapers to announce the EIA Process;
- Key Stakeholders were contacted telephonically and informed of the Project and the EIA process;
- A Background Information Document (BID) and comment sheet were produced in English, Afrikaans, Zulu and Pedi detailing the proposed Project and explaining the EIA process. The BID was emailed and posted to I&APs and uploaded on the website;
- Copies of the BID were made available to I&APs as and when requested. Public documents were also made available in public libraries and other local public venues, including:
 - Amersfoort Library
 - Perdekop Library
 - Volksrust Library
 - Vukuzakhe Library
 - Majuba Power Station
 - Lidwala and Eskom Website
- General project notices were erected at the following locations:
 - Majuba Power Station: Reception
 - Amersfoort Local Municipal Offices
 - Amersfoort Library, Amersfoort
 - Perdekop Public Library, Perdekop
 - Schulspruit Supermarket, Amersfoort

- Volksrust Library, Volksrust
- Vukuzakhe Library, Vukuzakhe
- The official site notices were erected as per the NEMA EIA Regulations at the Majuba power station, and distributed to neighbouring I&AP's within a 100m radius from the border of Eskom property.
- Public open day and meeting was held at the Ezamokhuhle Community Hall, Amersfoort on **20 November 2012**.
- Two focus group meeting were held, one with the Local Municipality (**20 November 2012** at the Municipality) and one with the landowners (**20 November 2012** at the Amersfoort Country Club)
- A key stakeholders workshop was held on the **21 November 2012** at the Highveld visitors center, Ermelo

A **30 calendar day** commenting period (**8 November 2012** to **7 December 2012**) was allowed for I&APs to comment on the Draft Scoping Report (DSR). All comments received were captured and responded to in the Comment and Response Report.

3.3.3 Potential Environmental Impacts Identified during Scoping

Environmental issues and impacts identified during the scoping phase, which were considered to require further assessment, are listed below:

Table 3.1: List of environmental and socio-economic issues identified during Scoping

| Environmental Issues Identified |
|--|
| <p>Geology</p> <ul style="list-style-type: none"> • Impacts related to the construction-related earthworks as well as the pollution of geological features in case of spillage/leakage of hydrocarbon and other hazardous material from storage facilities have been identified as having a medium significance (preliminary significance rating). • Mitigation measures are required to be identified. |
| <p>Topography</p> <ul style="list-style-type: none"> • Change to drainage patterns due to construction-related earthworks and additional stormwater drainage patterns. • Mitigation measures are required to be identified. |

Soil

- Pollution of soil due to handling, use and storage of hazardous substances during construction and operation.
- The loss of available top soil, through clearing or erosion.
- Mitigation measures are required to be identified.

Land Capability

- 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 soils with high agricultural potential.
- Mitigation measures are required to be identified.

Avifauna

The greatest predicted impact of the ash disposal facility on avifauna is the destruction of habitat and disturbance of birds during construction. During the construction phase, habitat destruction and alteration inevitably takes place. Habitat destruction is anticipated to be the most significant impact in this study area. However, this can be minimized and mitigated should the smallest alternative be chosen. Similarly, the above mentioned construction and maintenance activities impact on bird through disturbance, particularly during bird breeding activities. Disturbance of birds is anticipated to be of lower significance than habitat destruction. Leachate from fly ash disposal facilities can contain heavy metals (Theism and Marley, 1979) which could result in contamination of surrounding water sources, used by water birds in the study area. Correct placing of the new facility, away from wetlands, fresh water dams and water bodies, will help to mitigate this impact.

In addition to the continuation of the ash disposal activities the project will also include the continuation of the relevant infrastructure associated with the ashing system, such as pipelines, storm water trenches, seepage water collection systems, pump stations, seepage dams etc. The impacts of such associated infrastructure on avifauna are predicted to be minimal, so long as the infrastructure is within the proposed ash disposal facility footprint.

Biodiversity

Ten impacts were identified that are of relevance to a development of this nature in a natural environment. Impacts were placed in three categories, namely:

- Direct impacts:
 - Destruction of threatened and protected flora species;

| |
|--|
| <ul style="list-style-type: none"> ○ Direct impacts on threatened fauna species; ○ Destruction of sensitive/ pristine habitat types; ○ Direct impacts on common fauna species; • Indirect Impacts: <ul style="list-style-type: none"> ○ Floristic species changes subsequent to development; ○ Faunal interactions with structures, servitudes and personnel; ○ Impacts on surrounding habitat/ species; • Cumulative Impacts: <ul style="list-style-type: none"> ○ Impacts on SA's conservation obligations & targets (VEGMAP vegetation types); ○ Increase in local and regional fragmentation/ isolation of habitat; and ○ Increase in environmental degradation. <p>Other, more subtle impacts on biological components, such as changes in local, regional and global climate, effects of noise pollution on fauna species, increase in acid rain and ground water deterioration are impacts that cannot be quantified to an acceptable level of certainty and is mostly subjective in nature as either little literature is available on the topic or contradictory information exist</p> |
| <p>Surface Water</p> <ul style="list-style-type: none"> • Contamination of surface water from seepage and run off. • Loss of aquatic biodiversity. • Loss of runoff into the catchment. • The detailed aquatic ecological impact assessment will quantify the significance of possible impacts associated with the preferred site |
| <p>Groundwater</p> <ul style="list-style-type: none"> • Contamination of ground water due to hydrocarbon spillage, ash and seepage into groundwater reserves, affecting groundwater quality. • Mitigation measures are required to be identified. • Further construction of infrastructure and compaction of the area will further contribute to reduced water infiltration rates to replenish groundwater aquifers. Mitigation measures are required to be identified. |
| <p>Noise</p> <p>Change in ambient noise levels during both construction and operation</p> |
| <p>Air Quality</p> <ul style="list-style-type: none"> • Increase in dust generating activities during construction and operation including exceedances of PM10 concentrations and exceedances of dust fall rates. |

| |
|---|
| <ul style="list-style-type: none"> • Mitigation measures may be required to be identified if required. |
| <p>Socio-Economic Issue Identified</p> |
| <ul style="list-style-type: none"> • Visual impacts of preferred site • Disturbance of cultural or historical sites • Economic benefits through employment • Continued generation of Electricity over the long term at Majuba Power Station • Health risks from elevated PM10 concentrations and dust fall rates • Loss of groundwater resource to local users (in terms of potential groundwater contamination) • Inflow of temporary workers. • Mitigation measures are required to be identified |

These potential impacts were further investigated during the EIA phase of the project by means of the following processes and methodology.

3.4 Impact Assessment Phase

3.4.1 Introduction

The purpose of the Impact Assessment Phase of an EIA is as follows¹ :

- Ensure that the process is open and transparent and involves the Authorities, proponent and stakeholders;
- Address issues that have been raised during the preceding Scoping Phase (**Chapter 8** and **9**);
- Assess alternatives to the proposed activity in a comparative manner (see **Chapter 7**);
- Assess all identified impacts and determine the significance of each impact (see **Chapter 9**); and
- Formulate mitigation measures (see **EMPr – Appendix D**).

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.

¹DEA (2010), Companion to the EIA Regulations 2010, Integrated Environmental Management Guideline Series 5, Department of Environmental Affairs DEA), Pretoria, South Africa

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 following²:

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

3.4.2 Specialist Studies

Table 3.2 provides a list of the Specialists that are involved in this study and their areas of expertise.

Table 3.2: 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 (ARC) |
| 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 (EWT) |
| Impacts on bats | Endangered Wildlife Trust (EWT) |
| Visual impact assessment | MetroGIS |
| Conceptual Design | Lidwala Consulting Engineers (SA) and Alan Robinson |
| Geotechnical Studies | Alan Robinson |

² DEA (2010), Companion to the EIA Regulations 2010, Integrated Environmental Management Guideline Series 5, Department of Environmental Affairs (DEA), Pretoria, South Africa

| Specialist Study | Organisation Responsible for the Study |
|--------------------|--|
| GIS | Lidwala Consulting Engineers (SA) |
| Land Survey | Global Geomatics |
| Ash Classification | Jones & Wagener |

3.4.3 Public Participation Process

The main objectives of the PPP in the Impact Assessment Phase are to:

- Inform Interested and Affected Parties (I&APs) about the proposed project and the EIA process;
- Establish lines of communication between IAPs and the project team;
- Provide an opportunity to all parties to exchange information and express their views and concerns;
- Obtain contributions of IAPs and ensure that all issues, concerns and queries raised are fully documented; and
- Identify all the significant issues that need to be addressed in the EIA, if warranted.

PPP during the impact assessment phase revolves around the review and findings of the EIA, which were altogether presented in the Draft Environmental Impact Report (EIR). All I&APs have been notified of the progress to date and availability of the Draft EIR, via mail, email and advertisements in local newspapers (**Appendix E**) as detailed in **Table 3.3** below.

Table 3.3: Date on which the adverts were published for the review of the Draft EIR

| Newspaper | Publication Date | Language |
|-------------|-------------------------|--------------------------|
| Cosmos News | Wednesday, 16 July 2014 | English, Afrikaans |
| Recorder | Friday, 18 July 2014 | English, Afrikaans, Zulu |

The I&AP register was used to capture all I&AP details and interactions which were updated as and when information was distributed to or received from I&APs. This ongoing and up-to-date record of communication is an important record-keeping requirement of the EIA legislation and was undertaken for the duration of the Impact Assessment. The full I&AP register is included in **Appendix F**. A comments and response report, documenting all comments and concerns raised by I&APs throughout the process has also been included in **Appendix G**

A legislated period of **40** consecutive days (excluding public holidays) was allowed for public comment on the DEIR. Reports were made available in the following ways:

- Distribution for comment at central public places, which were used during the scoping phase. Provision was made for the placement of the reports at five venues, namely please refer to **par. 3.3.2**.
- The document was made available to download from the Lidwala (www.lidwala.com) website; and
- Copies of the report on CD were made available on request.

A public meeting was held during this phase (as shown in **Table 3.4**). The meeting was facilitated by key members of the PPP project team. The purpose of the public meeting was to present the findings of the impact assessment where I&APs are given the opportunity to debate and discuss key issues and concerns. Additional stakeholder meetings were also planned and conducted (as shown in **Table 3.4**).

Table 3.4: Public Meeting

| Province | Area | Venue | Time | Date |
|------------|------------|-----------------------------|---------------|---------------|
| Mpumalanga | Amersfoort | Ezamokuhle Community Hall | 17:00 – 19:00 | 30 July 2014 |
| Mpumalanga | Standerton | Highveld Conference Centre | 10:00 – 12:00 | 30 July 2014 |
| Mpumalanga | Amersfoort | Majuba Power Station - Lapa | 10:00 – 12:00 | 7 August 2014 |

All registered Interested and Affected Parties (I&APs) were notified, in writing, of the availability of the Draft Environmental Impact Report in the week of **15 July 2014 (Appendix H)**. In addition the DEIR was made available for public review and comment at the following public venues:

| Venue | Working Hours | Street Address | Contact No. |
|---------------------------|-----------------|---|--------------|
| Amersfoort Public Library | 07: 45 – 16: 30 | Cnr Plein and Bree Street, Amersfoort | 017 753 1006 |
| Perdekop Public Library | 08: 00 - 16: 30 | Cnr Paarl and Durban Street, Perdekop | 017 785 1128 |
| Volkstrust Public Library | 08: 30 – 16: 30 | Cnr Adelaide Street and Nelson Mandela Drive, Volkstrust | 017 734 6109 |
| Vukuzakhe Public Library | 08: 30 – 16: 30 | Mavuso Street, Vukuzakhe, Volkstrust (next to the clinic) | 017 734 6100 |

| | | | |
|-------------------------------------|-----------------|---------------------------------|--------------|
| Majuba Power Station Reception Area | 07: 30 – 16: 45 | On the Perdekop-Amersfoort Road | 017 799 3111 |
|-------------------------------------|-----------------|---------------------------------|--------------|

A **40** day period was provided for public review and comments from the **21 July 2014** to the **01 September 2014**. Comments received during the review period are included in this Final EIA Report.

The final EIR incorporates public comments received on the Draft EIR and will be made available for public review with hard copies distributed to the authorities.

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.

3.4.4 Consultation with Authorities

The relevant authorities required to review the proposed project and provide comments/ input were consulted from the outset of this study, and have been engaged throughout the project process. The competent authority for this project is DEA. The DWA and MDEDET are noted as key commenting authorities.

Background information regarding the proposed Project was provided to the other relevant authorities, together with a registration and comment form formally requesting their input into the EIA process. The authorities include *inter alia*:

- Mpumalanga Department of Economic Development, Environment and Tourism (MDEDET);
- Department of Water Affairs (DWA);
- Department of Agriculture, Forestry and Fisheries (DAFF)
- Pixley ka Seme Local Municipality;
- Gert Sibande District Municipality;
- South African Heritage Resources Agency (SAHRA) – Head Office and Provincial Office;
- Please refer to **Appendix F** for stakeholder list

3.4.5 Impact Assessment Methodology

In accordance with Regulation 31 of Government Notice R.543, promulgated in terms of section 24 of the National Environmental Management Act, 1998 (Act 107 of 1998), Lidwala

were required to assess the significance of potential impacts in terms of the following criteria:

- Cumulative impacts;
- Nature of the impact;
- Extent and duration of the impact;
- Probability of the impact occurring;
- 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.

Issues were 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),
- **30 - 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).

3.4.6 Draft Environmental Management Programme

A Draft Environmental Management Programme (EMPr) has been compiled and is attached as **Appendix D**.

This EMPr serves as a document for the mitigation measures applicable during construction, operation and decommissioning of the proposed infrastructure to ensure safe work

procedures and prevent environmental impacts. The EMPr contains guidelines, operating procedures and rehabilitation/pollution control requirements which will be binding after approval of the EMPr. It is essential that the EMPr be carefully studied, understood, implemented and adhered to at all times. Expansion or adaptation of this management plan may be required in specific circumstances. The document describes mitigation measures for possible impacts associated with the proposed infrastructure.

3.5 Conclusion

This chapter discussed the various tasks that have been undertaken up to the EIA phase of the process. The main components include the Public Participation Process and assessment of identified impacts and alternatives that have been undertaken as part of the EIA.

The Draft EIR was made available for public comment. The availability of the DEIR report was announced to all registered I&APs via site notices, personalised letters and telephonic notification of key stakeholders. The Draft EIR has been distributed to suitable public venues with comment sheets which was collected at the end of the **40 day** comment period. Comments on the Draft EIR were captured and responded to in the updated Comments and Response Report. Thereafter, the Draft EIR was finalised into a Final EIR which is submitted to DEA for decision making. All registered I&APs will be informed by personalised letter of the availability of the Final EIR, and of the National DEA's decision and associated conditions by personalised letters.