1 INTRODUCTION

Hendrina Power Station is located at Pullenshope (near Hendrina) in the Mpumalanga Province and falls within the Steve Tshwete Local Municipality (**Figure 1.1**) which falls within the Nkangala District Municipality.

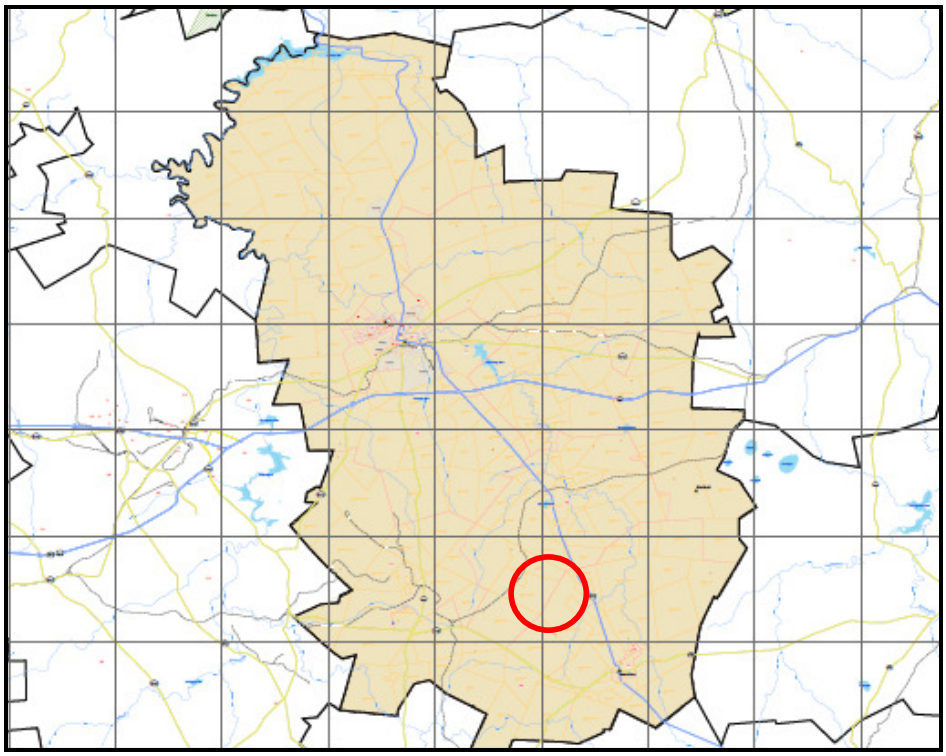

Figure 1.1: Steve Tshwete Local Municipality

Eskom Holdings Limited is planning to expand the current ashing system at the Hendrina Power Station with the development of a proposed new wet ash disposal facility and associated infrastructure.

Eskom Holdings Limited, in line with the requirements of the National Environmental Management Act Environmental Impact Assessment (NEMA EIA) regulations, required the services of an environmental consultant to conduct the necessary Environmental Impact Assessment (EIA), to provide adequate and relevant information for the authorities to make an informed decision.

Lidwala SA was appointed as their independent Environmental Assessment Practitioner (EAP) and has been commissioned by Eskom Holdings Limited to conduct the scope of work, including the EIA, as required by the National Environmental Management Act (Nr. 107 of 1998) and the National Environmental Management Waste Act (59 of 2008). Details of all the relevant role-players, including the expertise of Lidwala SA to carry out the required processes, are included in **Chapter 2** of this report. This EIA report is

prepared according to NEMA Regulation 543 Section 31: *Environmental impact assessment reports*.

1.1 Need and Justification for the Project

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

If Eskom is to meet its mandate and commitment to supply the ever-increasing needs of end-users, one of its options is to extend the life of its infrastructure of generation capacity and transmission and distribution powerlines. This expansion includes not only the building of new power stations but also expanding and upgrading existing power stations to ensure that the operating life of the power stations can be extended.

The Hendrina Power Station, in the Mpumalanga Province currently uses a wet ashing system for the disposal of ash. Hendrina Power Station currently has five wet ash disposal facilities, of which two (Ash dam 3 and 5) are currently in operation, the other three (Ash dam 1, 2 & 4) are not in use for the following reasons:

- Having reached full capacity (Dam 1)
- Stability issues (Dam 2)
- Temporary decommissioning (Dam 4).

At the current rate of disposal on Dams 3 and 5, the rate-of-rise will exceed 4m/year in 2018, which is not acceptable in terms of structural stability. The Hendrina Power Station is anticipated to ash approximately 64.2 million m^3 until the end of its life span which is currently estimated to be 2035.

It has been determined, through technical studies, that the existing ashing facilities are not capable to provide sufficient ash disposal capacity for this amount of ash for the full life of the station. The existing facilities (Ash Dams 3 and 5) allow for the disposal of 20.9 million m^3. Therefore, Hendrina Power Station proposes to extend its ashing facilities and associated infrastructure with the following development specifications:

- Additional airspace of 43.3 million m^3
- Wet ash disposal facility ground footprint of 139 ha
- Ground footprint of associated infrastructure such as Ash Water Return Dams, ash water return channels, pump stations, drainage channels, access roads, switchgear room, ash lines of 70 ha

The need for this extension is to allow the Hendrina Power Station to continue ashing in an environmentally responsible way for the duration of the operating life of the Power Station. Further, the need for the extension is related to the deteriorating coal quality, higher load factors, the installation of the Fabric filter plant (to meet requirements in terms of the National Environmental Management: Air Quality Act (Act 39 of 2004)) and the need to extend station life, among others.

1.2 Project Background

The project includes the expansion of the wet ash disposal facilities at the Hendrina Power Station in the Mpumalanga Province. The wet ash disposal facility expansion will need to be big enough to dispose of 43.3 million m^3 ash. The footprint of the proposed expansion (including the wet ash disposal facility and associated infrastructure) is estimated to be in the order of 209 ha. However, the final shape and design of the footprint is still to be determined through conceptual engineering and design.

In addition to the expansion of the wet ash disposal facilities the project will also include the expansion of the relevant infrastructure associated with the ashing system, such as an ash water return dam system, pipelines, solution trenches, seepage water collection systems, pump stations, and a seepage recovery dam. The project also involves the relocation of the current powerlines and the water pipeline that occurs within the footprint area for the proposed facility. The route alternatives for the powerlines have been assessed by all the relevant specialist and incorporated into this EIA report.

In terms of the EIA Regulations published in Government Notice R543 of 2 August 2010 in terms of Section 24 (5) of the National Environmental Management Act (Act No. 107 of 1998), certain listed activities as set out in Government Notices R544 and R545 and in GN 718 of the National Environmental Management: Waste Act (NEMWA) require environmental authorisation and waste management license before they can proceed. The process will also be done in consultation with the Mpumalanga Department of Economic Development, Environment and Tourism (MDEDET), as well as the Department of Water Affairs (DWA).

As mentioned above, Eskom has appointed the Environmental and Planning Services Department of Lidwala Consulting Engineers (SA) (Pty) Ltd (Lidwala EPS) as their independent EAP to manage the application and to undertake environmental studies together with a team of specialists. Through this process Lidwala EPS and the relevant specialists will identify and assess all potential environmental impacts associated with the proposed Project. In order to obtain authorisation for all aspects of this project, comprehensive, independent environmental specialist studies are required to be undertaken in accordance with the EIA Regulations.

The environmental studies will follow a three-phased approach in accordance with the EIA Regulations published in terms of the EIA Regulations published in Government Notice

R543 of 2 August 2010 in terms of Section 24 (5) of the National Environmental Management Act (Act No. 107 of 1998) i.e.:

- Phase 1: Application
- Phase 2: Environmental Scoping Study
- Phase 3: Environmental Impact Assessment

The Environmental Scoping Study identified potential environmental impacts associated with all aspects of the proposed Project. This Environmental Impact Assessment now evaluates and assesses these impacts in terms of their significance. In terms of the EIA Regulations, *feasible and reasonable* alternatives have been discussed within the EIA Study (refer to **Chapter 4**).

1.3 Summary of the EIA Process

1.3.1 EIA Process

The EIA process is controlled through Regulations published under the Government Notice No. R. 543, R. 544, R 545 and R. 546 and associated guidelines promulgated in terms of Chapter 5 of the National Environmental Management Act (Act 107 of 1998). There are three phases to the EIA process that are typically recognised:

- Application Phase;
- Scoping Phase; and
- EIA or Assessment Phase.

The EIA process and appeal process as legislated in terms of NEMA is shown diagrammatically in **Figure 1.2**.

1.3.2 Application Phase

The Application Phase consisted of completing the appropriate application form by the Independent EAP and the proponent as well as the subsequent submission and registration of the project with the Competent Authority (CA). The DEA has been confirmed as the Competent Authority, in conjunction with commenting authorities the MDEDET, as well as DWA.

The application form was submitted to DEA on **2 February 2011**. The reference number allocated to this application is **12/12/20/2175.** This reference number is to appear on all official correspondence with the authorities regarding this project.

This phase has been completed.

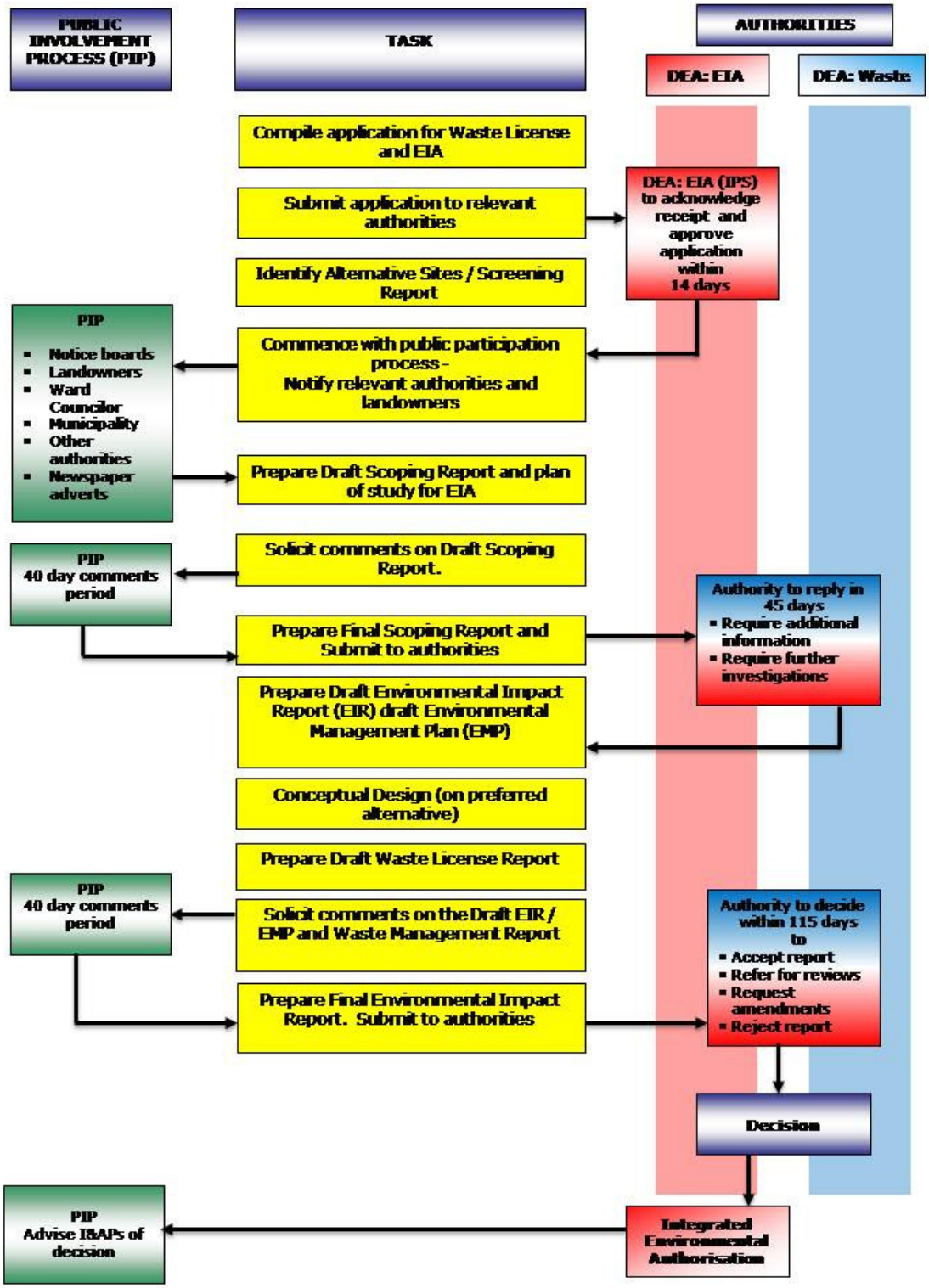

Figure 1.2: Environmental Impact Assessment Process

1.3.3 Scoping Phase

The scope of an environmental assessment is defined by the range of issues and alternatives to be considered, and the approach towards the assessment that will follow. The characteristics of a scoping exercise are as follows:

- It is an open process that involves the authorities, the proponent, stakeholders and I&APs;
- Feasible and reasonable alternatives are identified and selected for further assessment;
- Important characteristics of the affected environment are identified;
- Significant issues that are to be examined in the assessment procedure are identified; and
- It provides the basis for determining terms of reference for the assessment procedure.

At the end of the Scoping Phase a Scoping Report was compiled. As required by the EIA regulations, a Draft Scoping Report (DSR) was first compiled and availed to the public, which provided the public with an opportunity to comment prior to submission of the Final Scoping Report (FSR) to the authorities. The Final Scoping Report was submitted to the authorities on **30 August 2011** together with the Final Plan of Study for Environmental Impact Assessment (POS for EIA). The Final Scoping Report and POS for EIA were accepted by the DEA on **26 September 2011**. This letter has been included in **Appendix A**.

1.3.4 EIA or Assessment Phase

With the Final Scoping Report and the PoS for EIA having been submitted to and accepted by DEA the Project proceeded into its detailed EIA or Assessment Phase which involves specialist investigation.

Lidwala EPS has produced a Draft Environmental Impact Report (EIR) after the completion of all the specialist studies. The Draft EIR was subject to public comment for a period of 40 days. The Draft EIR provided an assessment of all the identified key issues and associated impacts from the Scoping Phase.

During the EIA phase the Waste License application report has also been compiled along with the conceptual designs for the preferred site. These reports are also subject to public review concurrently with the EIA Report.

a) Draft Environmental Impact Report

The Draft EIR contains, *inter alia,* the following*:*

- Contact details and expertise of the environmental assessment practitioner undertaking the EIA process (**Chapter 2**);
- A detailed description of the proposed activity (**Chapter 3**);
- A description of the need and desirability of the proposed activity (**Chapter 1 and 3**);
- A description of the ongoing public consultation process (**Chapter 6**);
- A comparative assessment of the feasible alternatives (**Chapter 4 and 9**);
- A description of the affected environment including a description of the affected properties (**Chapter 7**);
- An indication of the methodology used in determining the significance of potential environmental aspects (**Chapter 9**);
- A summary of the findings and recommendations of any specialist report or specialised processes (**Chapter 7, 8 and 9 as well as Appendices J to R**);
- An assessment of the impacts in terms of nature of the impact, extent, duration, intensity and probability (**Chapter 9**);
- An assessment of cumulative impacts (**Chapter 9**);
- The determination of the significance of the impacts (**Chapter 9**);
- A description of environmental management and mitigation measures (**Appendix E**);
- A description of assumptions, uncertainties and gaps in knowledge (in each Specialist study – **Appendices J to R**);
- An environmental impacts statement including a summary of the findings and a comparative assessment of the positive and negative implications of the Project activity and identified alternatives (**Chapter 11**);
- A draft Environmental Management Plan (EMPr) (**Appendix E**); and
- Copies of specialist reports and reports on specialized processes (**Appendices J to R)**.

b) Final EIR

Once the Draft EIR was reviewed by Interested and Affected Parties, comments collected and responded to, the report was amended accordingly and then finalised. **This report is the Final EIA Report.**

1.4 Way Forward

This Draft EIA Report was distributed for public comment for a period of **40** calendar days. All comments on the document were considered and a response thereto provided within the Comments and Response Report (CRR) prior to submission of the Final EIA Report to the relevant authorities for decision-making.

It is anticipated that MDEDET and DWA will provide comment to DEA on the adequacy of the Final EIA Report, and DEA will consider these comments prior to making a decision. If the report is adequate then DEA will make a decision in terms of whether to grant an environmental authorisation or not.