

3 PROJECT DESCRIPTION

3.1 Introduction

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 m³, until the end of its life span, which is currently estimated to be 2035.

It has been determined, through 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 m³. Therefore, Hendrina Power Station proposes to extend its ashing facilities and associated infrastructure with the following development specifications:

- Additional airspace of 43.3 million m³
- 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. 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.

The following diagram (**Figure 3.1**) provides an overview of the activities on site and where this project fits within the process.

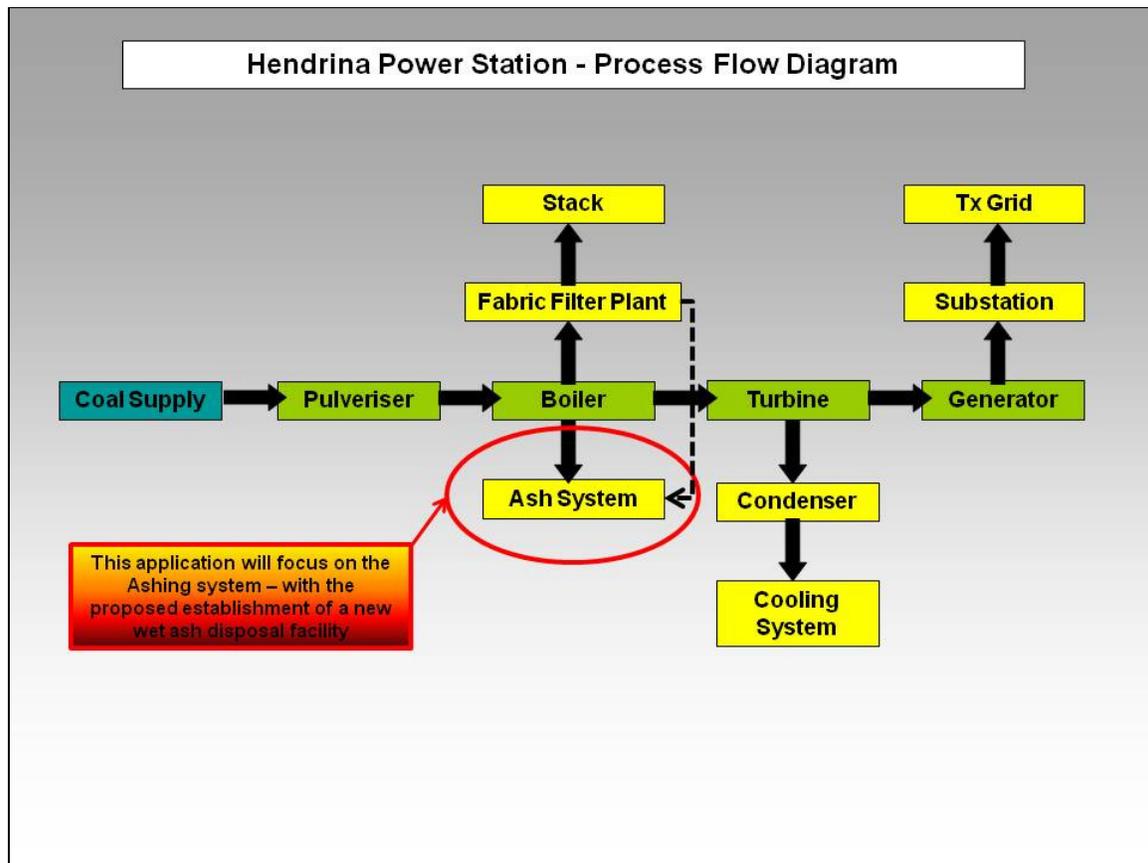


Figure 3.1: An overview of the activities on site and where this project fits within the process

3.2 Location of the proposed project

Hendrina Power Station is located in the Mpumalanga Province approximately 24 km south of Middleburg and 20 km North of the town of Hendrina. The power station and surrounds falls within the Steve Tshwete Local Municipality which forms part of the Nkangala District Municipality.

The regional location of the proposed project is indicated in **Figure 3.2**.

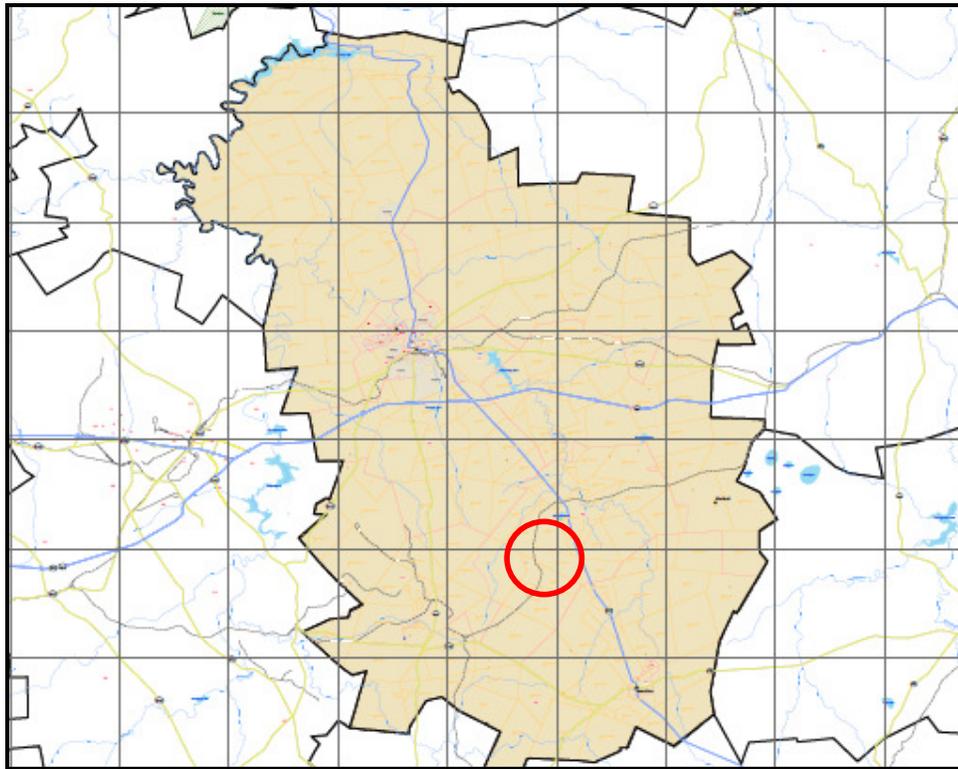


Figure 3.2: Locality of Hendrina Wet Ash Disposal Facility Study Area within the Steve Tshwete Local Municipal area of Mpumalanga.

A greater part of the study area is made up of agricultural and mining activities (**Figure 3.3**) with the rest natural veldt. The proposed site for the proposed new wet ash disposal facility at Hendrina Power station is located directly adjacent to the existing wet ash disposal facilities and is currently utilised for agriculture (**Figure 3.4**).



Figure 3.3: The agricultural and mining activities that form the greater part of the study area

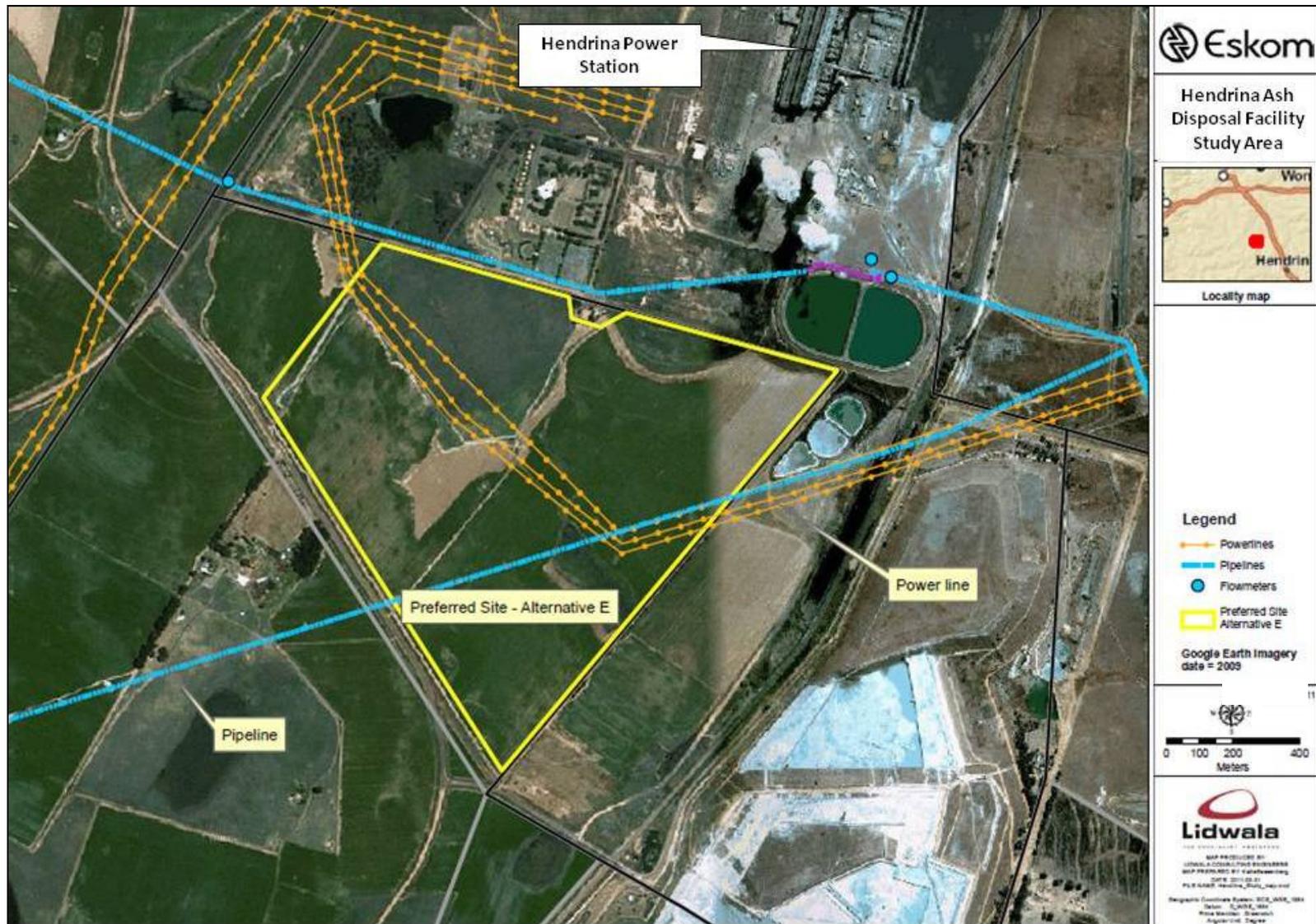


Figure 3.4: Proposed Site for the proposed new wet ash disposal facility

3.3 Detailed Description of the Project

The project includes the expansion of the wet ash disposal facility facilities at the Hendrina Power Station in the Mpumalanga Province.

The coal-fired power generation process results in large quantities of ash, which is disposed of in wet ash disposal facilities. Generally, Eskom has access to coal of a low grade (called middlings coal) which produces a larger amount of ash during combustion. Over time, the quality of the coal provided to Eskom has degraded, due to higher ash quantities in the coal. With regards to ash management, Hendrina Power Station utilises a wet ashing disposal method. This process entails the hydraulic conveyance of ash where ash is mixed with water and pumped in the form of slurry via steel pipelines. The slurry is allowed to settle in the wet ash disposal facilities, and the water decanted to storage and return dams, and channels, for re-use in the ashing process.

The wet ash disposal facility expansion will need to be big enough to dispose of 43.3 million m³ of ash until the end of station life. 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. The final shape and design of the footprint is captured in the detailed engineering report and design. The conceptual design report is included in **Appendix C**.

In addition to the expansion of the wet ash disposal facilities the project will also include the expansion of the associated infrastructure for the ashing system, including:

- Ash water return dams
- Ash and ash water return pipelines
- Solution trenches
- Pump stations
- Seepage recovery dam
- Seepage water collection system
- Access roads

Due to the fact that the preferred site, identified during the scoping phase, is Alternative E, the following additional infrastructure changes are also required:

- Re-alignment of the DWS pipeline to the Komati Power Station;
- Re-routing of four 132kV Power Lines

During this EIA process, Site E was identified as the preferred ash facility site. Three 132kV powerlines run through the middle of this site (Figure 1). Therefore, as part of the EIA, three alternative corridors were identified to deviate the power lines outside of the proposed ash footprint.



Figure 1. 132kV Powerlines within the proposed ADF footprint

Later in the process, the project team was informed by Eskom Distribution that they had received environmental authorisation to construct a new 132kV power line from Hendrina town to Hendrina power station parallel to the three 132kV power lines mentioned above. As a result a corridor for four 132kV power lines is now required to align the power lines around the proposed ash facility.

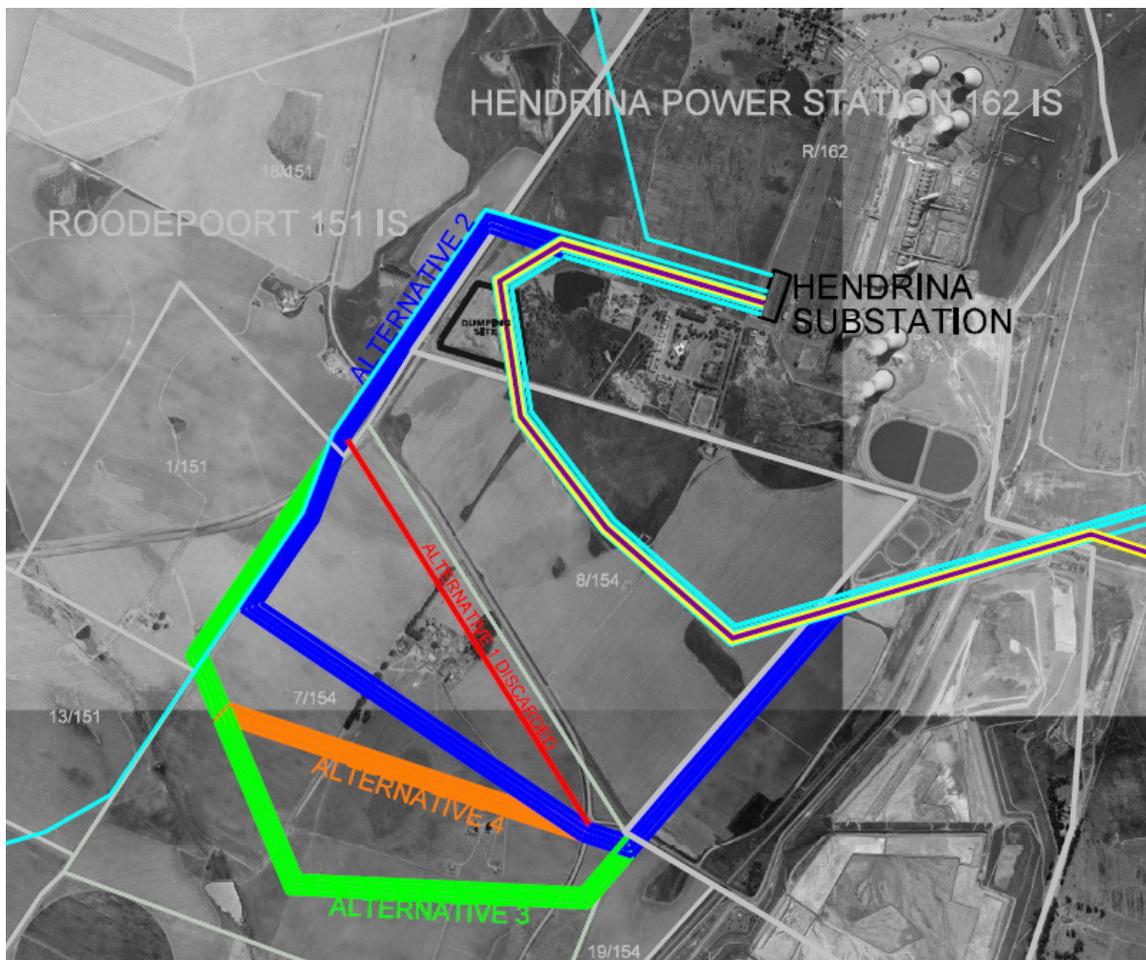


Figure 2. Proposed corridor alternatives for the four 132kv powerlines

Eskom land and rights visited the landowner on 17 July 2013 to discuss compensation arrangements for the ash facility and the power line alignment. At this meeting the landowner discussed his concerns with regards to the location of the proposed 132kV power line deviation alternatives (Figure 2). He stated that the power line alternative to the east of his house was unacceptable as it would be located on his front door step (**Alternative 1** has subsequently been discarded), and further added that the second alternative to the east of his property would go over his farm worker's houses (**Alternative 2** have been re-aligned to avoid the farm workers houses). Furthermore, on closer inspection it was noticed that in order to place four 132kV power lines within alternative corridor 2, the distance to the graves on the landowner's property would not be acceptable. The landowner thereafter identified an additional alternative (**Alternative 3**). The Eskom project team proposed that (**alternative 4**) also be assessed as it is a shorter distance, although it may still require that the farm worker's house be relocated, this may be a cheaper option.

Alternatives 2, 3, and 4 formed part of the detailed investigation by the relevant specialists as part of the Impact Assessment phase.