

## **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 ash dams, 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). Ash dam 4 will be re-commissioned in 2011.

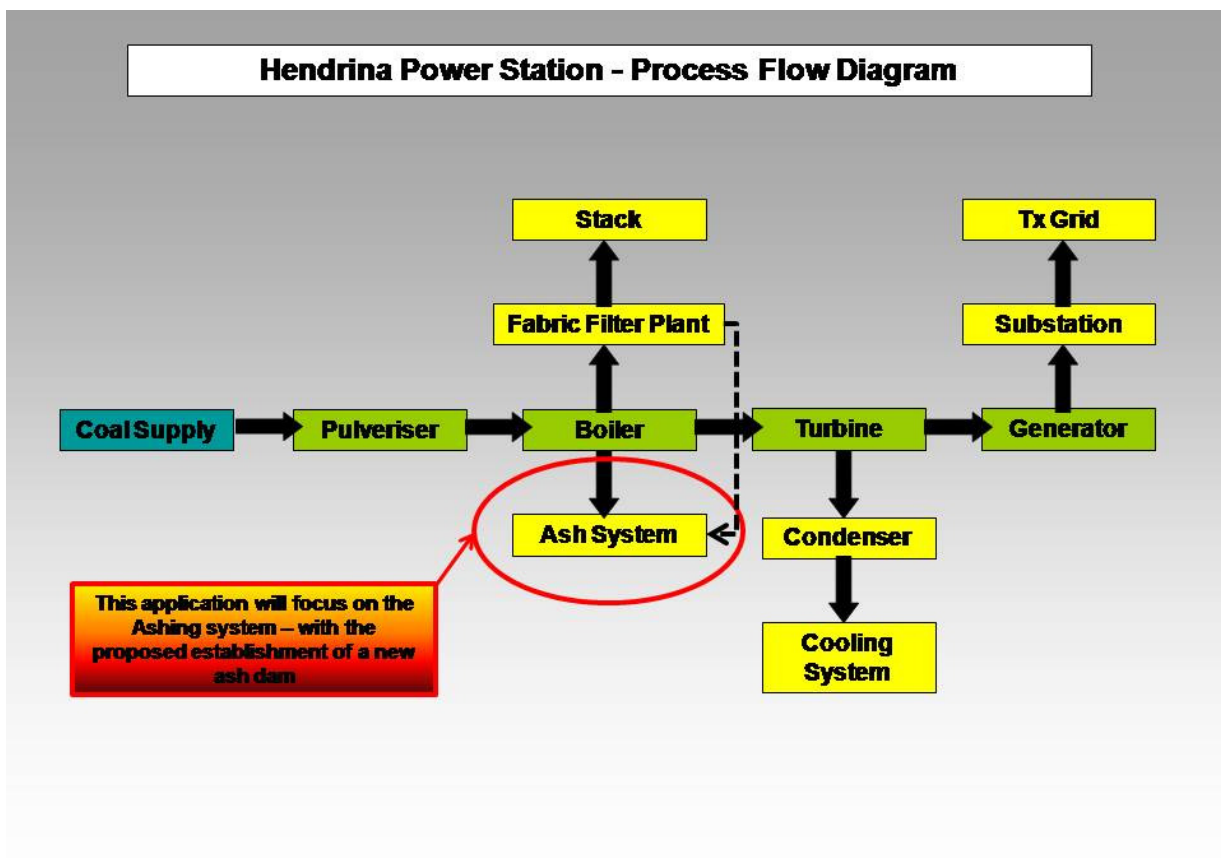
At the current rate of disposal on Dams 3, 4 and 5, the rate-of-rise will exceed 4m/year in 2018, which is not acceptable in terms of structural stability. The Hendrina Power Station is anticipated to ash approximately 64.2 million m<sup>3</sup> until the end of its life span which is currently estimated 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, 4 and 5) allow for the disposal of 20.9 million m<sup>3</sup>. 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<sup>3</sup>
- Ash dam ground footprint of 139 ha
- Ground footprint of associated infrastructure such as Ash Water Return Dams 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.

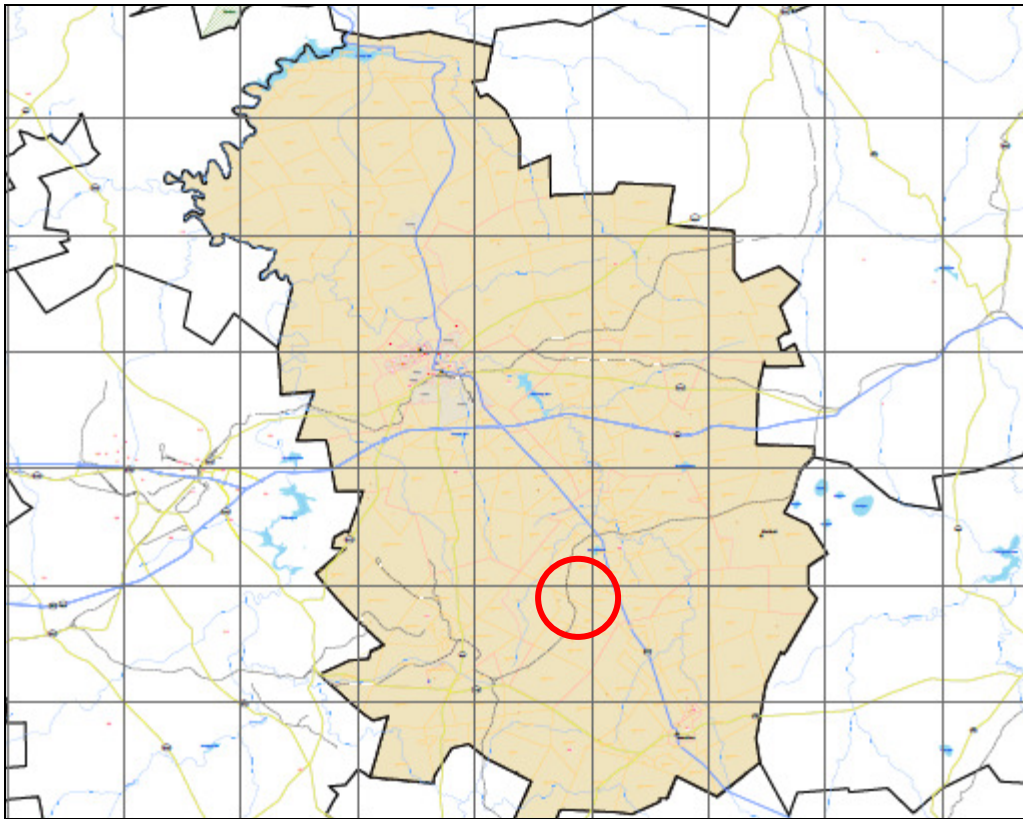


**Figure 3.1:** An overview of the activities on site and where this project fits within the process

### 3.2 Location of the Proposed Site for Expansion

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 Ash Dam 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**). The proposed study area, for alternative sites for the proposed new ash dam, is located within an 8 km radius of the centre point of the Hendrina Power Station Site (**Figure 3.4**).



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



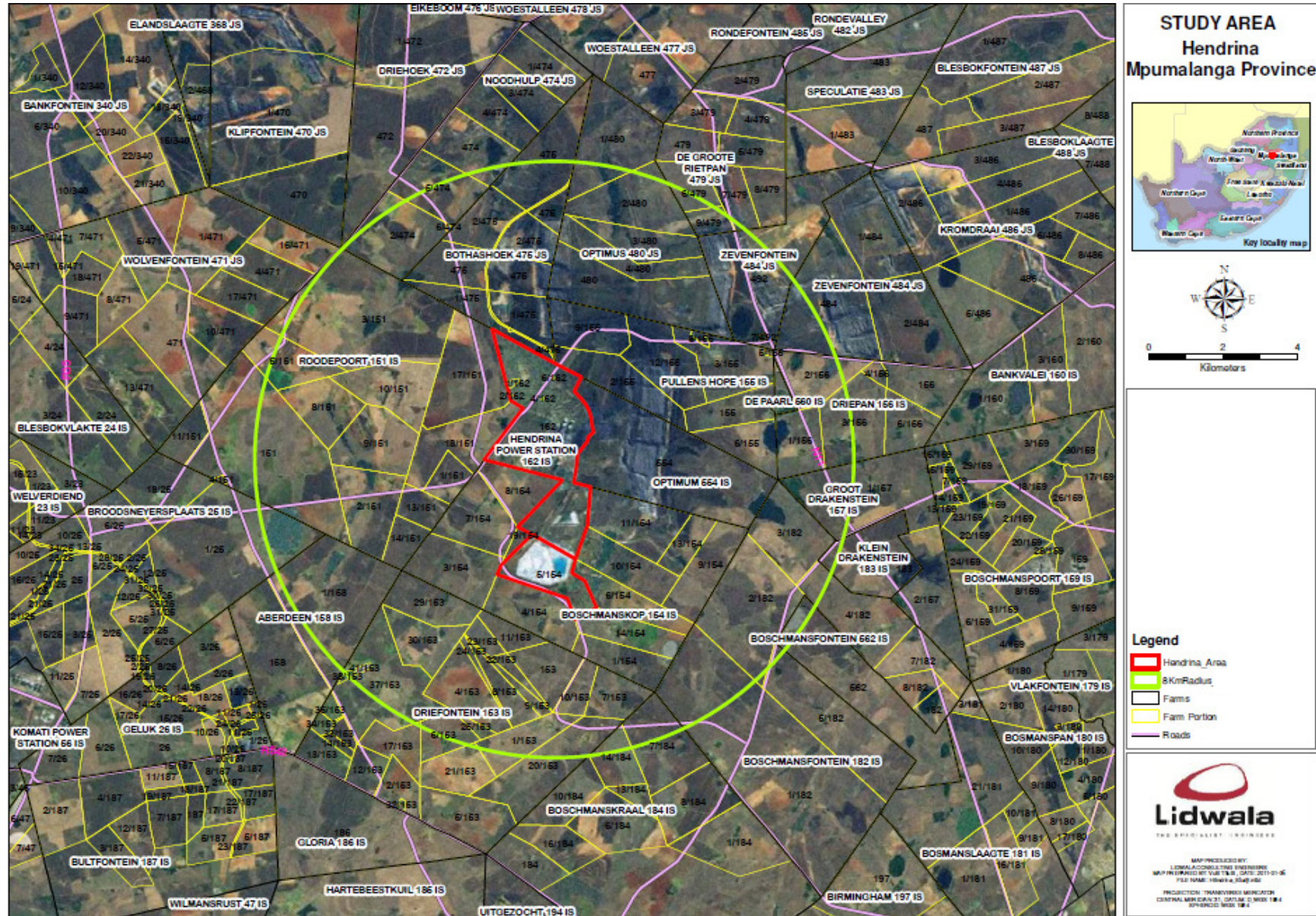


Figure 3.4: The greater study area overlaid onto a google earth background

### **3.3 Detailed Description of the Project**

The project includes the expansion of the Ash Dam 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 ash dams. Generally, Eskom uses coal of a low grade (called middlings coal) which produces a larger mass of ash during combustion. Over time, the quality of the coal provided to Eskom has degraded, due to higher ash quantities in the coal. With regards to ash management, Eskom uses either wet or dry methods of ash disposal. The 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 ash dams, and the water decanted to storage dams for re-use.

The ash dam expansion will need to be big enough to dispose of 43.3 million m<sup>3</sup> ash. The footprint of the proposed expansion (including the ash dam 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 ash dams the project will also include the expansion of the relevant infrastructure associated with the ashing system, including:

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