

- Ensure compliance with the relevant legislation.

3 SUMMARY OF THE LEGISLATION CONTEXT

The legislative framework applicable to this project is diverse and consists of a number of Acts, Regulations and Treaties which must be complied with. A summary of the key legislation is provided hereunder.

- National Environmental Management: Waste Act No 59 of 2008
- The National Environmental Management: Air Quality Act No 39 of 2004;
- National Water Act No 36 of 1998;
- GN R1179 (GG 16536 of 25 August 1995) – Hazardous Chemical Substances Regulations promulgated in terms of the Occupational Health and Safety Act No 85 of 1993;
- Hazardous Substances Act No 15 of 1973
- Constitution of South Africa, Act 108 of 1996 (with reference to noise)
- Explosives Act No 26 of 1956 and Regulation 1604 of 8 September 1972;
- National Environmental Management Act No 107 of 1998 (with reference to noise and prevention of pollution)
- National Environmental Management: Biodiversity Act No 10 of 2004 (in respect of Fauna, Flora and National Heritage Resources)
- Conservation of Agricultural Resources Act No 43 of 1989 (in respect of Fauna, Flora and National Heritage Resources)
- National Forest Act No 84 of 1998 (in respect of protected trees)
- National Veld and Forest Fire Act No 101 of 1998
- National Heritage Resources Act No 25 of 1999
- Promotion of Access to Information Act No 2 of 2000 (in respect of record-keeping and interested and affected parties and monitoring of environmental impacts)

A full legal review will be undertaken during the EIA phase of the project.

4 DESCRIPTION OF THE BASELINE ENVIRONMENT

The particular area required for the continuous ashing facility is approximately 800 ha. The area, originally identified by Eskom for continuous ashing, is located on the southern portion of the existing Majuba Power Station ash disposal facility. However, in order to allow for a robust environmental process, all land within a radius of 12 km was assessed in order to identify potential alternative sites should sensitive environmental aspects limit the suitability of this particular portion of land. The Majuba Continuous Ashing EIA study area is therefore located within a 12 km radius around a centre point within the Majuba Power Station. The study area is approximately 450 square kilometres in size and includes a total of 40 different farms divided into 195 farm portions.

report is prepared according to NEMA Regulation 543 Section 28: *Contents of scoping reports*.

1.1 Need and Justification for the Project

Eskom's core business is the generation, transmission and distribution of electricity throughout South Africa. 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.

If Eskom is to meet its mandate and commitment to supply the ever-increasing needs of end-users in South Africa, one of Eskom's options is to extend the life of its infrastructure of generation capacity and transmission and distribution powerlines.

Ideally, Majuba Power Station, envisages the continuation of dry ash disposal. Prior to the promulgation of Environmental laws such as the Environment Conservation Act, Eskom purchase a portion of land which they envisaged for the disposal of ash for the life of the Station (at that stage 45 years). As part of its planning processes, Eskom developed designs which were approved internally. With the promulgation of the environmental laws such the National Environmental Management Waste Act, Act 59 of 2008, in particular, Eskom would like to pro-actively align its continued ashing activities with the requirements of the waste licensing processes.

1.2 Project Background

The proposed continuous development is an ash disposal facility with the following specifications:

- Capacity of airspace of 184 million m³; and
- Ground footprint of 1 162 ha (existing footprint - 362 ha: 0 – 15 year + envisaged footprint - 800 ha: 15 – 60 year) (Fenced Area including pollution control dams)

This ash disposal facility shall be able to accommodate the ashing requirements of the power station for the next 48 years, to 2060 (these timelines are based on an annual ash production rate of 3.579 million tonnes). The current proposed portion of 550 Ha is located on the Southern portion of the current Majuba Power Station ash disposal facility site boundary. The proposed progressive portion of ash disposal facility will continue from the existing facility, all on Eskom's land within the originally planned ashing area. In order to ensure that the EIA allows for a robust environmental process, all land within a radius of 12km was assessed in order to identify potential alternative sites for ash disposal.

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

4 PROJECT DESCRIPTION

4.1 Introduction

Majuba Power Station, a coal-fired power generation facility, is located 16 km south of Amersfoort in the province of Mpumalanga. Majuba Power Station currently disposes of ash (produce from the combustion of coal) in a dry format by means of conveyors, a spreader and a stacker system from the station terrace to the ash disposal site. Eskom require an ash disposal facility with an area of 800 ha in order to ash for the next 45 years. The existing ashing facility is located approximately 1.5 km west of the station terrace. **Figure 4.1** provides an overview of the where the ash disposal activities fit within the power generation process.

Ideally, Majuba Power Station envisages the continuation of dry ash disposal over the remaining portion of Eskom owned land. Such land was purchased before the commencement of environmental laws, the Environment Conservation Act, in particular (i.e. prior to 1989). As part of its planning processes, Eskom developed designs which were approved internally. With the promulgation of the environmental laws, and the National Environmental Management Waste Act, Act 59 of 2008, in particular, Eskom would like to pro-actively align its continued ashing activities with the requirements of the waste licensing processes.

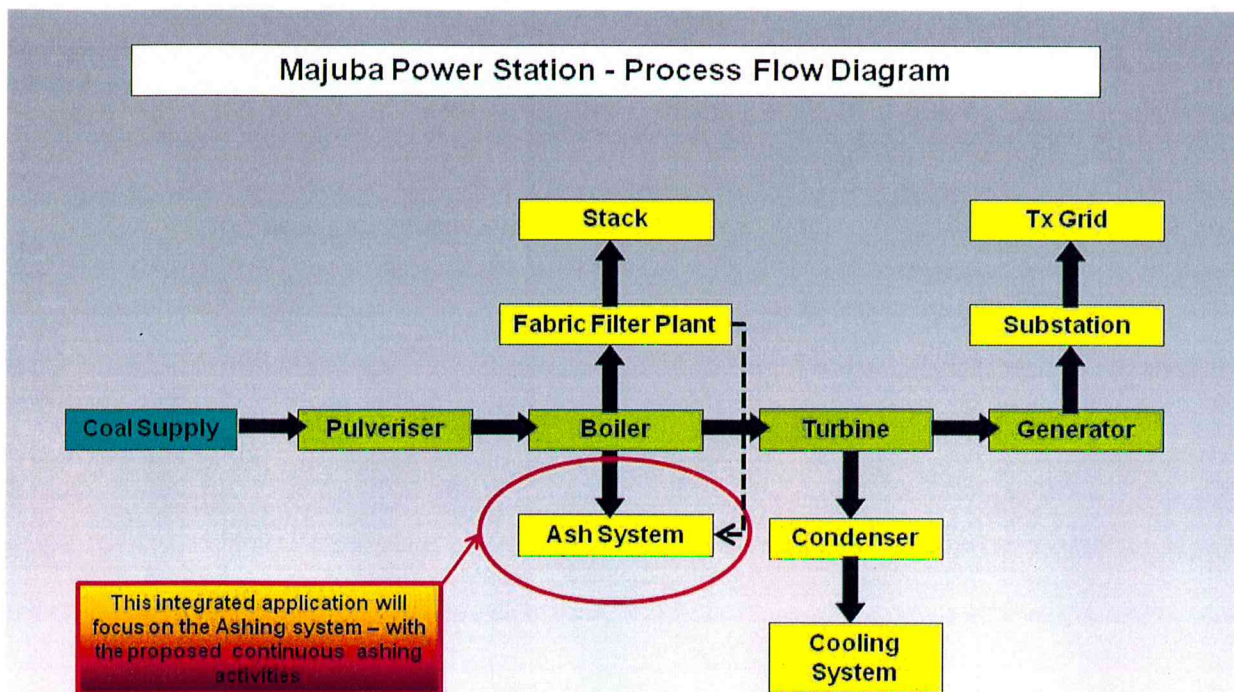


Figure 4.1: An overview of the activities on site and where this project fits within the power generation process

4.3 Detailed Description of the Project

The project involves the proposed continuous ashing of the ash disposal facilities at the Majuba Power Station in the Mpumalanga Province.

The coal-fired power generation process results in large quantities of ash, which are disposed of in an ash disposal facility. With regards to ash management, the station uses dry methods of ash disposal. This process involves ash being transported from the power station by conveyors and disposed of on an ash disposal facility by means of a stacker (Figure 4.4).

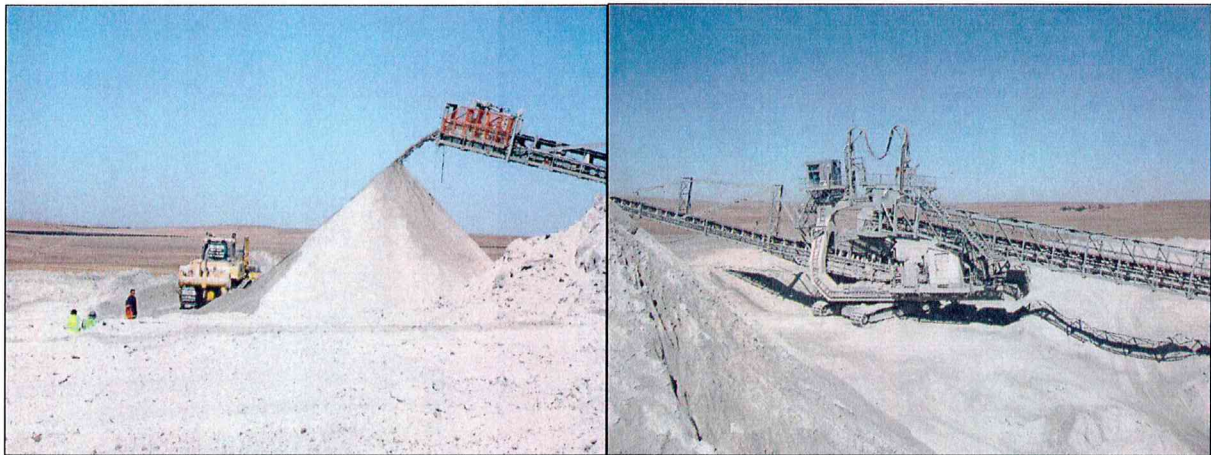


Figure 4.4: Stacker being used to dispose of ash at the Majuba Power Station

The proposed development has the following specifications:

- Capacity of airspace of 184 million m³; and
- Ground footprint of 1 162 ha (362 ha: 0 – 15 year (existing) + 800 ha: 15 – 60 year (proposed) (Fenced area including pollution control dams)

This ash disposal facility will be able to accommodate the ashing requirements of the power station for the next 48 years, to 2060 (these timelines are based on an annual ash production rate of 3.579 million tonnes). In line with its historical plans, mentioned above, Eskom proposes to utilise a portion of 550 ha located on the southern portion of the current Majuba Power Station ash disposal facility footprint. Ideally, the proposed progressive portion of the ash disposal facility will continue from the existing ash disposal facility. This will all take place on Eskom's land within the originally planned ashing area. In order to ensure that the EIA allows for a robust environmental process, all land within a radius of 12km was assessed in order to identify potential alternative sites for ash disposal.

Figure 4.5 below illustrates the ash disposal facility layout as currently constructed and outlines the footprint of the current Eskom proposed future extent of the facility. It should be noted that alternatives to this proposed footprint have been identified and will be

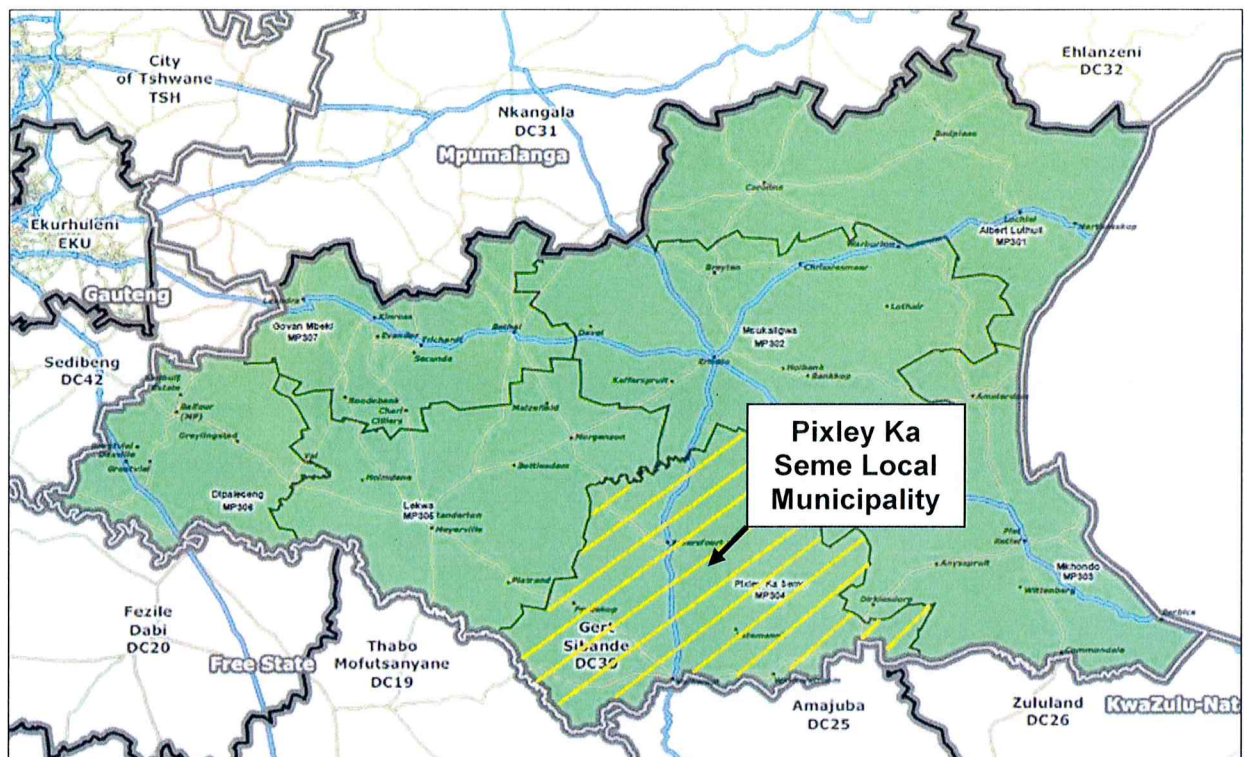


Figure 6.2: Location of Pixley Ka Seme Local Municipality within the Gert Sibande District Municipality

6.2.2 Study Area

The particular area required for the continuous ashing facility is approximately 800 ha, which is located on the southern portion of the existing Majuba Power Station ash disposal facility. However, in order to allow for a robust environmental process, all land within a radius of 12 km was assessed in order to identify potential alternatives sites, should sensitive environmental aspects limit the suitability of this particular portion of land. The Majuba Continuous Ashing EIA study area is therefore located within a 12 km radius around source of ash, at Majuba Power Station (**Figure 6.3**). The study area is approximately 450 square kilometres in size and includes a total of 40 different farms divided into 195 farm portions. A list of the farm portions are included in **Table 6.1**. **Figure 6.4** shows the location of the Eskom's proposed site for the project. **Table 6.2** outlines the farms associated with the proposed Majuba Continuous Ashing Area.

		ash disposal facilities act as effluent sinks
Ease of rehabilitation after closure	The costs and risks associated are unknown and there may also be uncertainties in terms of who is responsible	Rehabilitation practises for conventional ashing are well known and entrenched in Eskom and extensive research has been done on it
Clarity on liability	Low confidence in terms of clarity on liability and therefore uncertainties from a cost and legal perspective	One single party involved – hence there is absolute clarity on what the liabilities are and how to make provision therefore
Future ash utilisation	Low potential for future ash utilisation once disposed of into the mine	Potential for future ash utilisation – research is ongoing and the ash would be “readily” available for this purpose

Taking the above comparative analysis into account, the use of old mine pits / underground working is still considered unfeasible at this stage due to the numerous uncertainties and low confidence in terms of the clarity with regards to ultimate liability. This alternative is therefore not considered suitable for further investigation.

A further technical alternative to limit the need for ash disposal facilities includes the use of higher grade coal which may reduce the amount of ash produced in the power generation process. The power station was originally designed for 45 years and now its life time is extended to 60 years. The boilers are designed to use a specific grade of coal and the boiler plant would require a redesign for higher grade coal. In order for this alternative to be implemented would require the complete redesign and reconstruction of the power station. The combination of the costs involved in the reconstruction of the power station as well as the higher price of the higher grade coal would have a knock on effect in terms of the country’s electricity prices. Therefore, this alternative is therefore not considered feasible.

7.4 Location Alternatives

Majuba Power Station is located approximately 24 km southwest (SW) of Amersfoort and approximately 40km northnorthwest (NNW) of Volksrust in the Mpumalanga Province. The power station falls within the Pixley Ka Seme Local Municipality which falls within the Gert Sibande District Municipality.

Majuba Power Station’s existing Ash Disposal Facility is almost at the 15 year boundary and urgently requires ashing infrastructure for the continuous ashing activities for the next **48 years (Figure 7.2)**. The particular area required for the continuous ashing facility is approximately **800** ha. The area, originally identified by Eskom for continuous ashing, is located on the southern portion of the existing Majuba Power Station ash disposal facility. However, Eskom is aware that a wetland exists within the footprint of the originally identified ashing area. An investigation of the wetland and other environmental concerns

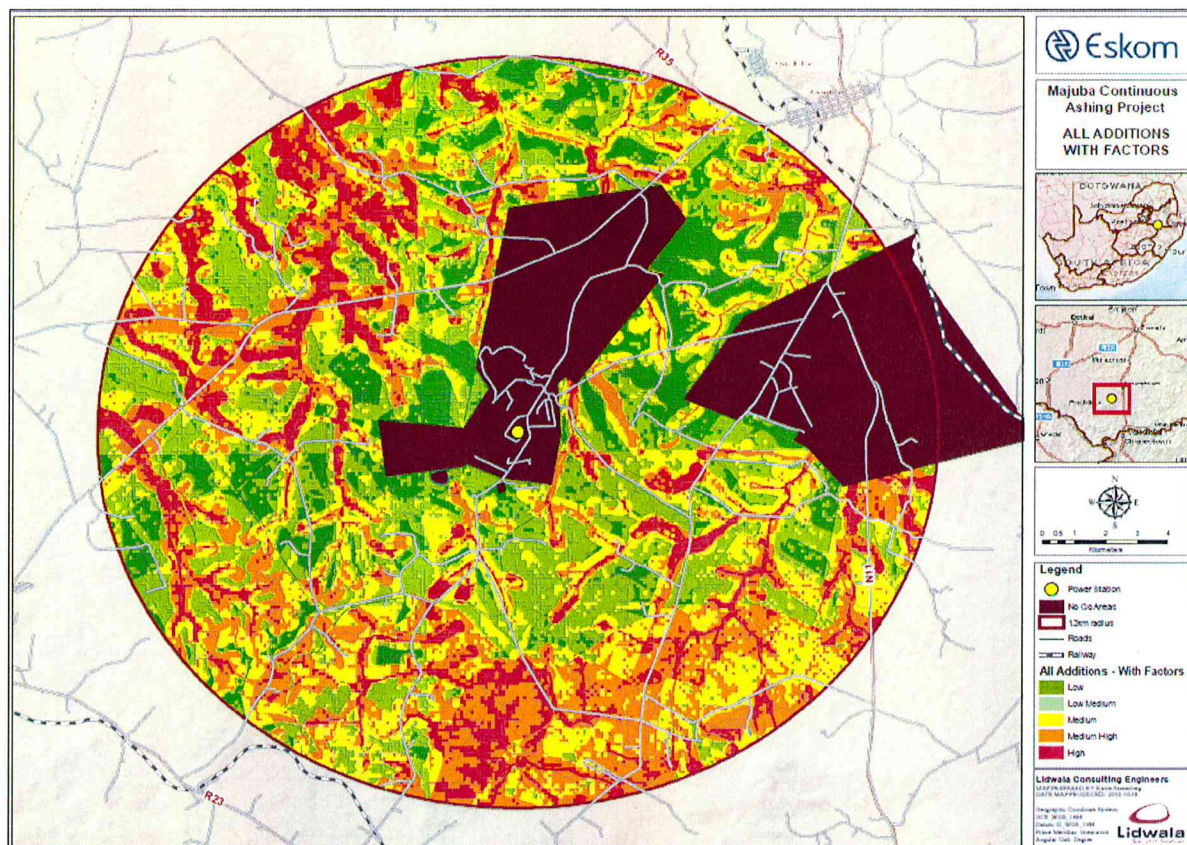


Figure 7.18: Overall Environmental Sensitivity (with adjustment factor)

Utilising the straight forward addition analysis (**Figure 4.17**) it can be concluded that the overall sensitivity of the study area falls within the Medium to medium-high sensitivity range with only small areas being considered of low sensitivity. However, if one utilises the “max wins” (**Figure 7.16**) mapping technique, where any area marked as sensitive is kept sensitive, it is clear that the majority of the study area can be deemed to be sensitive in one way or form with only a few medium sensitivity areas scattered across the study area.

The above maps were then utilized in order to determine the least sensitive areas of sufficient size that could be considered as alternative sites for the proposed ash disposal facility at Majuba Power Station. Alternative sites are required to be at least 800 ha in size and are required to fit within the low to low - medium sensitivity areas only and preferably without disturbing any existing infrastructure. It is clear from the overall sensitivity map that there are no areas that fall only within low or low-medium sensitivity areas that are big enough to accommodate the required size for the ash disposal site. However, if one also allows the ashing area to fall over medium sensitivity areas five areas become available (**Figure 7.19**).

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This ash disposal facility will be able to accommodate the ashing requirements of the power station for the next 48 years, to 2060 (these timelines are based on an annual ash production rate of 3.579 million tonnes). In line with its historical plans, mentioned above, Eskom proposes to utilise a portion of 550 ha located on the southern portion of the current Majuba Power Station ash disposal facility footprint. Ideally, the proposed progressive portion of the ash disposal facility will continue from the existing ash disposal facility. This will all take place on Eskom's land within the originally planned ashing area. In order to ensure that the EIA allows for a robust environmental process, all land within a radius of 12 km was assessed in order to identify potential alternative sites for ash disposal.

Figure 10.2 below illustrates the ash disposal facility layout as currently constructed and outlines the footprint of the current Eskom proposed future extent of the facility. It should be noted that alternatives to this proposed footprint have been identified and will be assessed during the EIA phase.

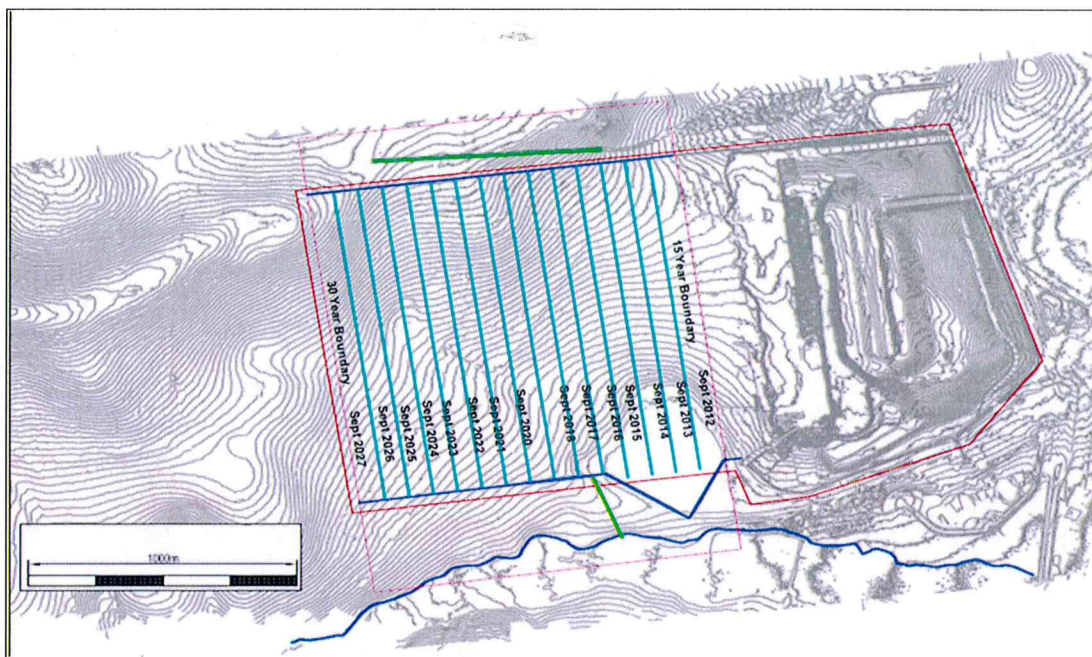


Figure 10.2: The ash disposal facility layout as currently constructed and the footprint of the Eskom's proposed future extent of the facility (blue) (It should be noted that alternatives to this proposed footprint have been identified and will be assessed during the EIA phase)

10.4.2 Description of the Baseline Environment

The particular area required for the continuous ashing facility is approximately 800 ha. The area, originally identified by Eskom for continuous ashing, is located on the southern portion of the existing Majuba Power Station ash disposal facility. However, in order to allow for a robust environmental process, all land within a radius of 12 km was assessed in order to identify potential alternative sites should sensitive environmental aspects limit the suitability of this particular portion of land. The Majuba Continuous Ashing EIA study area is therefore located within a 12 km radius around a centre point within the Majuba Power Station. The study area is approximately 450 square kilometres in size and includes a total of 40 different farms divided into 195 farm portions.

The study area is characterised by the strong undulating character typical of the Mpumalanga province with hills and koppies to the south and east. The natural topography of the area has been disturbed as a result of various mining, agricultural and power generation activities.

The climate in the study area can be described as typical highveld conditions with summers that are moderate and wet, while winters are cold and dry. Severe frost and snow are sometimes experienced. The area also falls within the mist belt. The mean annual precipitation is approximately 760 mm/year, with rain experienced predominantly in the summer months (October to April). Annual average maximum, minimum and mean temperatures are given as 26.3°C, 0.7°C and 15.1°C, respectively. The prevailing wind direction is recorded as being co-dominant with both easterly and west-north-westerly winds.

The Majuba Power Station falls within the Carboniferous to early Jurassic aged Karoo Supergroup. Sediments in this part of Mpumalanga Province fall within the Permian Ecca group which comprises of a total of 16 formations. The study area is underlain by Karoo Supergroup sedimentary rocks of the Vryheid and Volksrust Formations of the Ecca Group. These are largely comprised of sandstone, mudstone, shale, siltstone, and coal seams. The Volksrust Formation is predominantly argillaceous unit with interfingers with the overlying Beaufort Group and underlying Vryheid Formation. Considerable intrusive Karoo dolerite is also mapped in the area.

The study site corresponds to the Grassland Biome as defined by Mucina & Rutherford (VegMap, 2006). This unit is found in the eastern, precipitation-rich regions of the Highveld. Grasslands of these parts are regarded 'sour grasslands'. The following ecological types are represented within the 12km radius:

- Amersfoort Highveld Clay Grassland;
- Bloemfontein Karroid Shrubland;
- Eastern Temperate Freshwater Wetlands;
- Soweto Highveld Grassland; and