

4 PROJECT DESCRIPTION

4.1 Introduction

Tutuka Power Station, a coal fired power generation facility commissioned between 1985 – 1990, is located 25 km North of Standerton in the province of Mpumalanga. Tutuka Power Station currently disposes of ash in a dry (20% moisture content) form by means of conveyors, spreader and a stacker system from the station terrace to the ash disposal site. According to Eskom’s plans, the complete ash disposal site would eventually cover an area of 2 500 ha (Existing & Remaining ash disposal site & pollution control canals) and is located approximately 4.5 km east of the station terrace. **Figure 4.1** provides an overview of the activities on site and where this project fits within the power generation process.

Ideally, Tutuka Power Station envisages the continuation of dry ash disposal over Eskom owned land, which was purchased before the commencement of environmental laws, the Environment Conservation Act, in particular. As part of its planning processes, Eskom developed designs which were approved internally, during this time. With the promulgation of the environmental laws, and the National Environmental Management Waste Act, NEMWA, Act 59 of 2008, in particular, Eskom would like to align its continued ashing activities, preferably at the planned site, with the requirements of the NEMWA waste licensing processes.

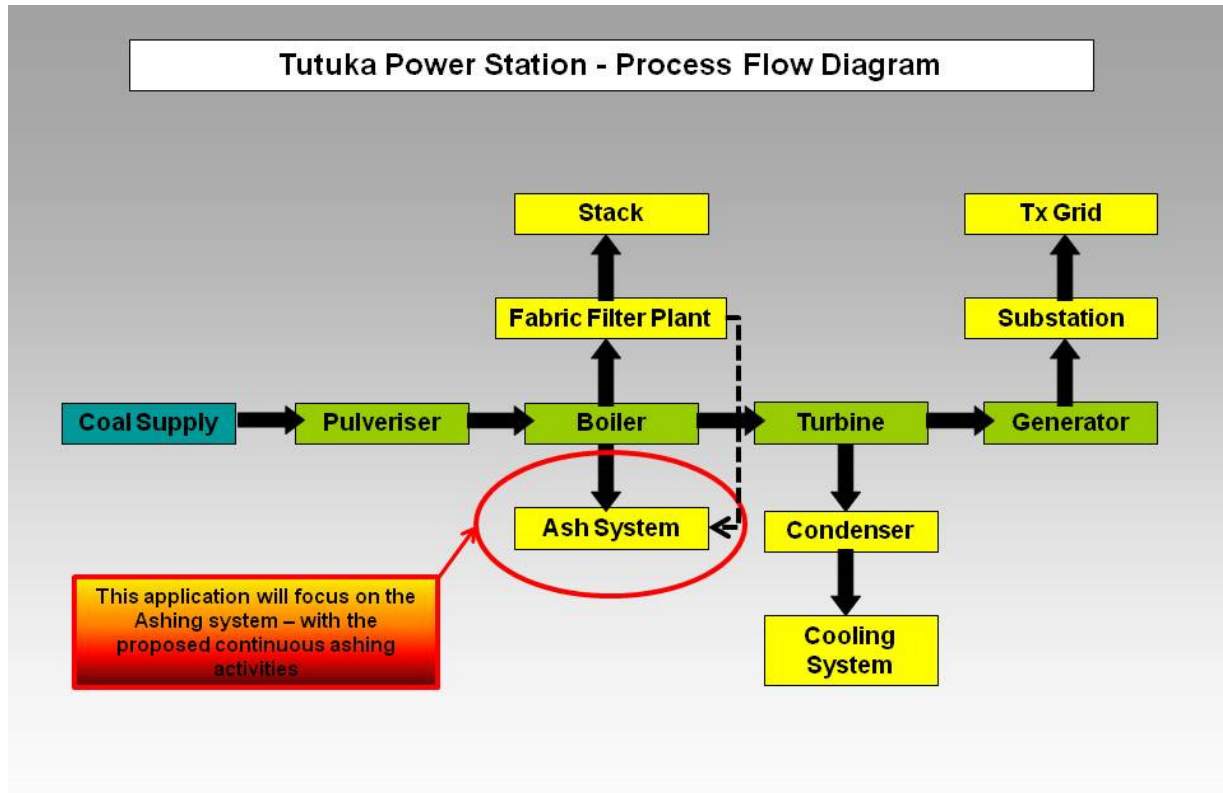


Figure 4.1: An overview of the activities on site and where this project fits within the power generation process

4.2 Location of the Proposed Site for Continuous Ashing

Tutuka Power Station is located approximately 25 km north-north-east (NNE) of Standerton in the Mpumalanga Province. The power station falls within the Lekwa Local Municipality which falls within the Gert Sibande District Municipality.

A greater part of the study area is, is within an 8 km radius of the centre point of the Tutuka Power Station Site, and is made up of agricultural, mining and power generation activities. (**Figure 4.2** and **4.3**).



Figure 4.2: Tutuka Power Station forms the centre point of the study area

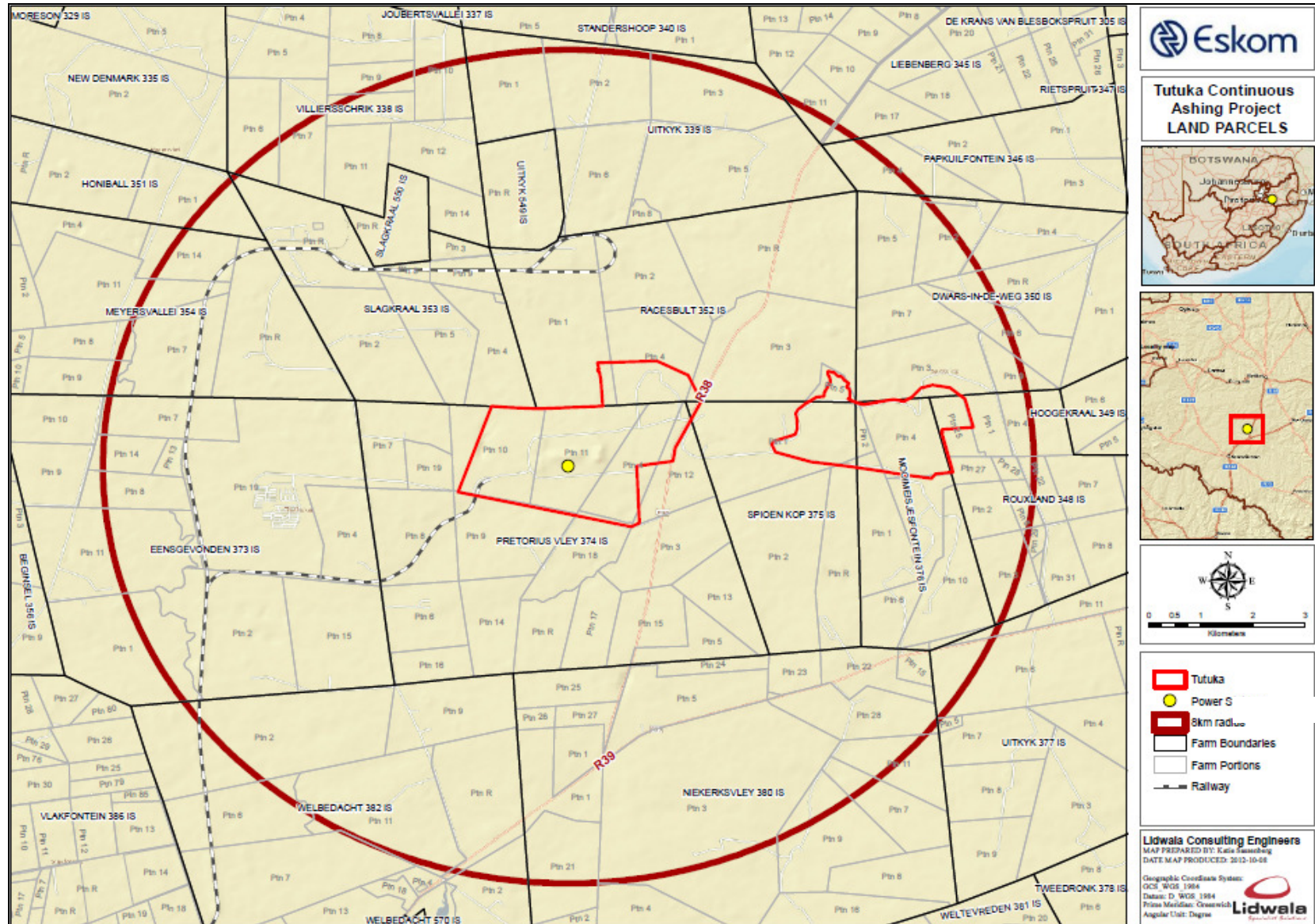


Figure 4.3: The greater study area

4.3 Detailed Description of the Project

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

The coal-fired power generation process results in large quantities of ash, which is disposed of in an ash disposal facility. Generally, Eskom has access to, and 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. The Tutuka Power Station utilises a dry ashing disposal method.

The waste product is deposited onto the disposal site by means of a stacker, which handles some 85% of the total ash whilst the remaining 15% is placed by a standby spreader system.

Currently, the ash disposal progresses from west to east. In the event that the existing ash disposal facility continues, the two extendible conveyors will be extended to its final lengths of 4 000 m each. The ash disposal facility is built out in two layers. The front stack is deposited by the stacker and spreader to a height of approximately 45 m. The ash is bulldozed out to a slope of 1:3 for dust suppression and rehabilitation purposes. The stacker then moves around the head – end of the shiftable conveyor to dump another 20 m high back stack. The total ash dump height is then approximately 65 m.

As the ash disposal advances, the topsoil is stripped ahead of the activities and is taken by truck and placed on top of the final dump height, as a rehabilitation means. Grass is then planted in this top soil.

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

- Capacity of airspace of 353,1 million m³ (Existing and remaining); and
- Ground footprint of 2 500 Ha (Existing & Remaining ash dump & pollution control canals)

Figure 4.4 below illustrates the ash disposal site layout as currently constructed (Blue) and outlines the footprint of the proposed future extent of the facility (orange), which is also the Eskom land identified and purchased for ashing.

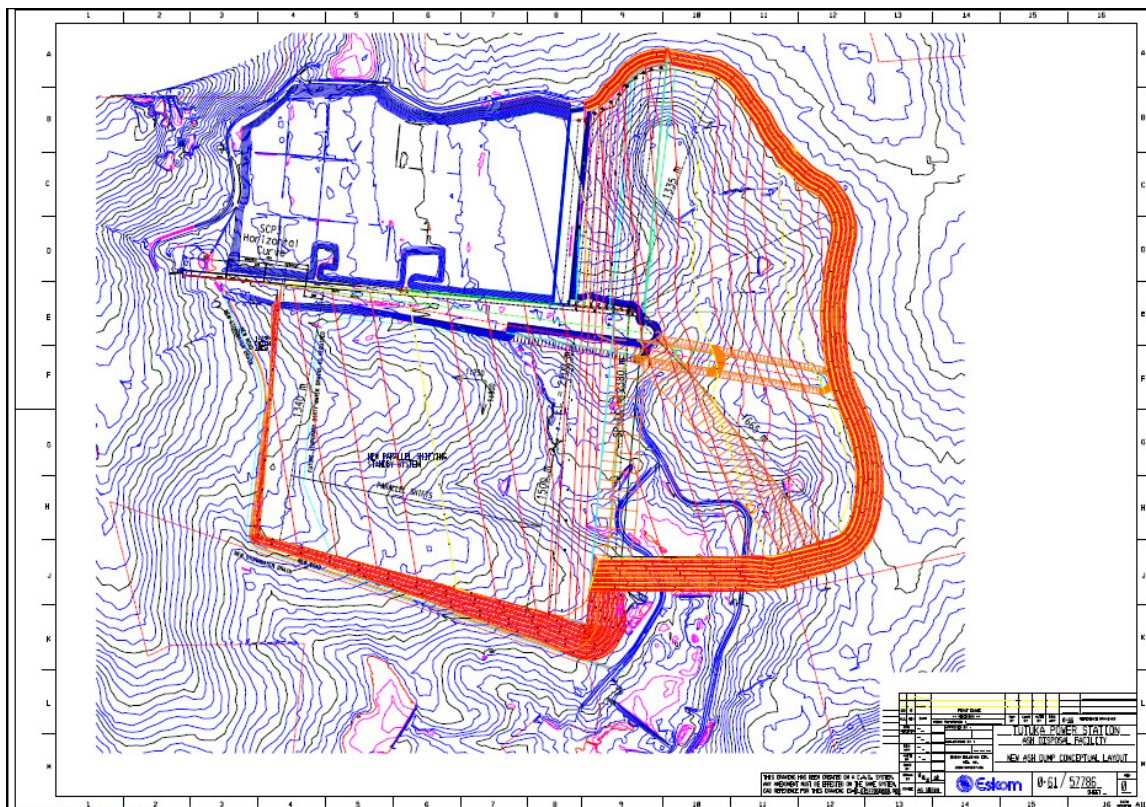


Figure 4.4: The ash disposal facility layout as currently constructed and the footprint of the proposed future extent of the facility.

4.4 Associated Infrastructure

The existing ash disposal facility has the required dirty and clean water channels and the clean storm water flows to the north and south clean water dams. The dirty water flows to the south settling dam and then to the south dirty water dam. At this stage it is seen as unlikely that any additional conveyor systems, dirty / clean water dams or power lines will be required. Facilities for the continuous ashing activities will also require this infrastructure.

However, the power station does require the expansion / upgrade of their existing emergency ashing area called TT02.

4.4.1 Upgrade of Emergency Ashing Area (TT02)

During times where it is not possible to transport ash to the ash disposal facility, Tutuka makes use of an emergency ashing area called TT02 (**Figure 4.5**). Possible reasons for not being able to transport ash to the disposal facility include the loss of the ash conveyor system. Currently, the amount of ash that is off loaded during emergency offloading far exceeds the capacity of the existing footprint. .



Figure 4.5: The location of the emergency ashing area (TT02) within the Tutuka Power Station Terrace area

- ***TT02 Operating Philosophy***

TT02 was designed to only be used as a temporary storage facility for emergency ashing.

Ash is fed to the overland conveyors via the cross conveyor which receives ash from the transverse conveyors. When the ash conveyor system is offline the ash is temporarily stored at TT02 until the problematic conveyor comes back online and can continue sending ash to the ash disposal facility. A front end loader moves the ash that has been collected under the head of the cross conveyor to the back of TT02 and works its way towards the overland conveyors. Whilst the overland conveyors are offline ash is loaded onto 10 ton trucks which transport the ash to the ash disposal facility. This is a practice Eskom has committed to minimising. If the overland conveyors are online then ash is loaded onto an emergency ash feeder which loads the ash onto the overland conveyors.

TT02 also has two sumps which are used to collect dirty water. The dirty water collects in the sumps with any run off ash. The ash settles and the water flows into a clean compartment via a series of drains. A pump in the clean water compartment pumps the water to stations drains.

- **Current TT02 operations**

The operations of TT02 have not changed, however, the area to be utilised will be increased.

- **Scope of Work**

The following work has been identified as being required as part of the upgrade of the emergency ashing area (TT02)

- Design of the increased area required at TT02 such that there is sufficient space for front end loaders to manoeuvre comfortably around the site;
- All civil works related to increasing the size of TT02 from 1 880m² to 20 785m² (foundation works, installation of steel reinforcement, pouring of concrete slab, channels, silt traps etc.);
- Provision of bund / wall to prevent ash from spilling over from TT02 into the surrounding areas. The geotechnical properties of the ash must be considered so as to avoid a scenario where a 15m high ash heap fails. It is imperative that ash must not come into contact with or contaminate the surrounding areas;
- Provision of drainage to channel any contaminated water to a silt trap;
- Provision of a silt trap in order to collect the contaminated water and remove it to the station's dirty water drains and to remove settled ash
- Locating of any above ground or sub terrain services (such as pipes, electrical cabling etc) so as not to damage them;
- Rerouting any of the identified services, as necessary; and the
- Removal of any unnecessary old fencing as well as the installation of new fencing as required.