

Figure 3: Study area overlaid onto a google earth background

2 PROCESS TO DATE

The Environmental Impact Assessment (EIA) process for the proposed new ash dam is comprised of two main phases, namely the Scoping phase and Impact Assessment phase. This report documents the tasks which have been undertaken as part of the Scoping phase of the EIA. These tasks include the public participation process and the documentation of the issues which have been identified as a result of these activities. To date, tasks that have commenced include the:

- Identification of stakeholders or I&APs;
- Notification and advertisements;
- Background Information Documents; and
- Ongoing consultation and engagement

More detail on the above is available in Chapter 6.

The Draft Scoping Report will be released for public review and comment from **2 June to 12 July 2011**. During the review period a public participation process (PPP) will be undertaken, allowing Interested and Affected Parties (I&APs) to engage with the project proponents and independent environmental consultants. The PPP will consist of a public open day and one-on-one interactions where required. Issues raised by I&APs during the public participation process will be documented and included in the Final Scoping Report.

The relevant authorities required to review the proposed project and provide an Environmental Authorisation were consulted from the outset of this study, and have been engaged throughout the project process. The National Department of Environmental Affairs (DEA), is the competent authority for this Project. The Department of Water Affairs (DWA), and the Mpumalanga Department of Economic Development, Environment and Tourism (MDEDET) are noted as key commenting authorities. For a comprehensive list see Chapter 2 and 6.

The Scoping Phase of an EIA serves to define the scope of the detailed assessment of the potential impacts of a proposed project. The Environmental Scoping Phase has been undertaken in accordance with the requirements of sections 24 and 24D of the National Environmental Management Act (NEMA) (Act 108 of 1998), as read with Government Notices R 543 of the 2010 EIA Regulations. The objectives of the Scoping Phase are to:

- Ensure that the process is open and transparent and involves the Authorities, proponent and stakeholders;
- Identify the important characteristics of the affected environment;
- Ensure that feasible alternatives are identified and selected for further assessment;
- Assess and determine possible impacts of the proposed project on the biophysical and socio-economic environment and associated mitigation measures; and
- 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;
- 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, 1996 (with reference to noise)
- 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 area within the study area is characterised by typical undulating terrain of the Mpumalanga Province. The natural topography of the area has been highly disturbed as a result of mining and agricultural 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. The mean annual precipitation is approximately 735 mm/year, with rain experienced predominantly in the summer months (October to April). Minimum temperatures have been recorded from -1.8°C to 13.7°C with maximum temperatures ranging between 18°C and 27°C. The prevailing wind direction is recorded as being from the north-east and north.

The Hendrina power station and surrounds are located on coal-bearing rocks of the Vryheid Formation, part of the lower Karoo Supergroup. These rocks are principally deltaic and fluvial siltstones and mudstones, with subordinate sandstones (Johnson et al, 2006).

The coal seams originated as peat swamps, or similar environments. Where the Dwyka Group is absent (suspected in the study area), the Vryheid Formation has been deposited directly onto rugged pre-Karoo topography, and the thickness of the Formation can be quite variable as a result. The Vryheid Formation rocks are well lithified (hard) and have little primary porosity

Terrestrial grassland patches that are captured within the respective site alternatives represent the Eastern Highveld Grassland. This vegetation type is Endangered and only small fractions are conserved in statutory reserves. Some 44% is transformed by cultivation, plantations, mines, urbanisation and by building of dams. Cultivation may have had a more extensive impact than which is currently indicated by land cover data. The vegetation is short dense grassland dominated by *Aristida*, *Digitaria*, *Eragrostis*, *Themeda* and *Tristachya* species. Small rocky outcrops are scattered across the landscape. Wiry grasses and woody species are associated with these outcrops. These include species such as *Acacia caffra*, *Celtis africana*, *Diospyros lycioides*, *Parinari capensis*, *Protea caffra* and *Searsia magalismsontanum* (Mucina & Rutherford, 2006). The Endangered status of this vegetation type warrants a medium-high environmental sensitivity. Small portions of the Eastern Temperate Freshwater Wetlands vegetation type are located within the study area

The property falls within the Upper Olifants Sub-Area of the Olifants Water Management Area (WMA4). The Upper Olifants Sub-Area is the most urbanised of the 4 sub-areas in WMA4. The Upper Olifants covers an area of 11 464 km² with a mean annual runoff of 10 780 million m³ (Midgley et al., 1994). Surface runoff in this area is regulated by a number of large dams, namely Witbank, Bronkhorstspuit and the Middleburg dams (Basson et al., 1997). Majority of the urban population is located in Witbank and Middelburg areas, and it is projected that the population in these urban areas is expected to grow in the near future therefore increasing the water requirement in the Sub-Area. Extensive coal mining activities are taking place in the sub-area, both for export to other provinces and for use in the six active coal fired power stations in the sub-area. Water quality in this sub-area is therefore under threat. Mining activities in the area impact on the natural hydrological system by increasing infiltration and recharge rates of the groundwater. Approximately 62 million m³ is predicted to decant from mining activities (post closure) every year, creating a need for water quality management plans in this Sub-Area (DWAf, 2004).

Groundwater storage and transport in the unweathered Vryheid Formation is likely to be mainly via fractures, bedding planes, joints and other secondary discontinuities. The success of a water supply borehole in these rocks depends on whether one or more of these structures are intersected. In general the Vryheid Formation is considered to be a minor aquifer, with some abstractions of local importance. Relatively minor outcrops of the Rooiberg and Quaggasnek Formations that underlie the Vryheid Formation are also found in the study area.

5 ALTERNATIVES AND SITE SELECTION

A screening study was initiated upfront in the process in order to identify potential sites within the study area that would be suitable for use as alternative sites for the proposed new ash dam. The study area was demarcated using an 8 km radius around the Hendrina Power Station. Within this 8km radius two further demarcations were included, although based on technical impacts such as the costs involved in the project and the risk of security of supply, the distances involved also take into account the potential additional environmental impacts in terms of the distance required for new infrastructure to be constructed and operated.

- A 3 km radius within which no additional technical costs would be incurred in terms of the construction and operational of the proposed new ash dam;
- A 5 km radius within which minimal additional technical costs would be incurred in terms of the construction and operation of the proposed new ash dam

In order to ensure that sites were identified in the most objective manner possible, a sensitivity mapping exercise was undertaken for the study area. The purpose of such an exercise was to identify suitable areas within the study area that could accommodate the proposed new ash dam and associated infrastructure and to pro-actively identify sensitive areas (i.e. fatal flaws) that should ideally be avoided. **Figure 4** shows the final sensitivity map that was utilised to identify the five alternative sites (**Figure 5**) assessed in this scoping report.

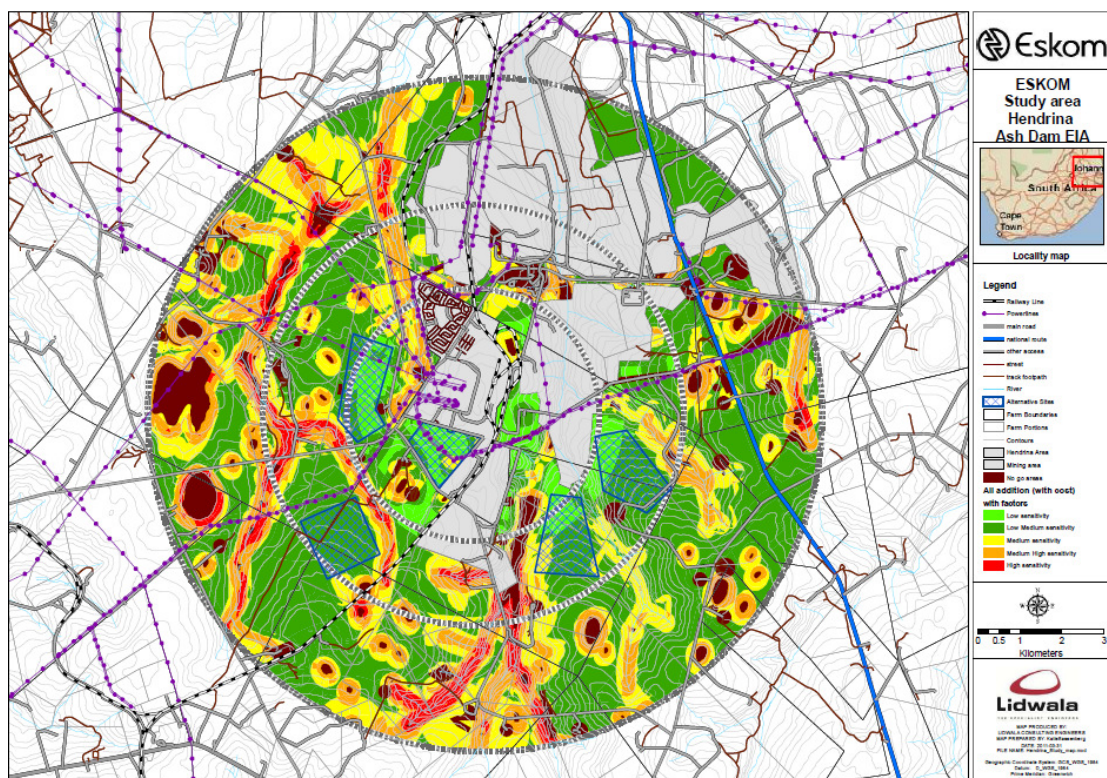


Figure 4: Recommended alternative sites (sensitivity map with the adjustment factors with cost)