Tutuka Continuous Ashing Project

VISUAL IMPACT ASSESSMENT – DRAFT SCOPING REPORT

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1. INTRODUCTION

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, Act 59 of 2008, in particular, Eskom would like to align its continued ashing activities with the requirements of the waste licensing processes.

An Environmental Impact Assessment (EIA) project is currently under way to obtain the required environmental authorisation for the continued ashing activities. MetroGIS has been appointed by Lidwala Consulting to undertake a visual impact assessment (VIA) as part of the EIA. This document serves as a scoping report, describing the receiving environment and visual exposure of the ash disposal site and identifying issues with regard to visual impact. This is based on information that was supplied to MetroGIS which includes an electronic version of the planned layout.

The regional setting puts Tutuka Power Station, and all the associated infrastructure (including ash disposal facilities), at a distance of approximately 22km north-east of Standerton, as indicated on the locality map in **Figure 1**. This places the facility in a rural context, with a specific visual character, which is further described in **Section 2**.

The study area for the VIA includes a buffer of 12km around Tutuka Power Station, which is the area within which visual impacts, if any, are expected to manifest themselves.

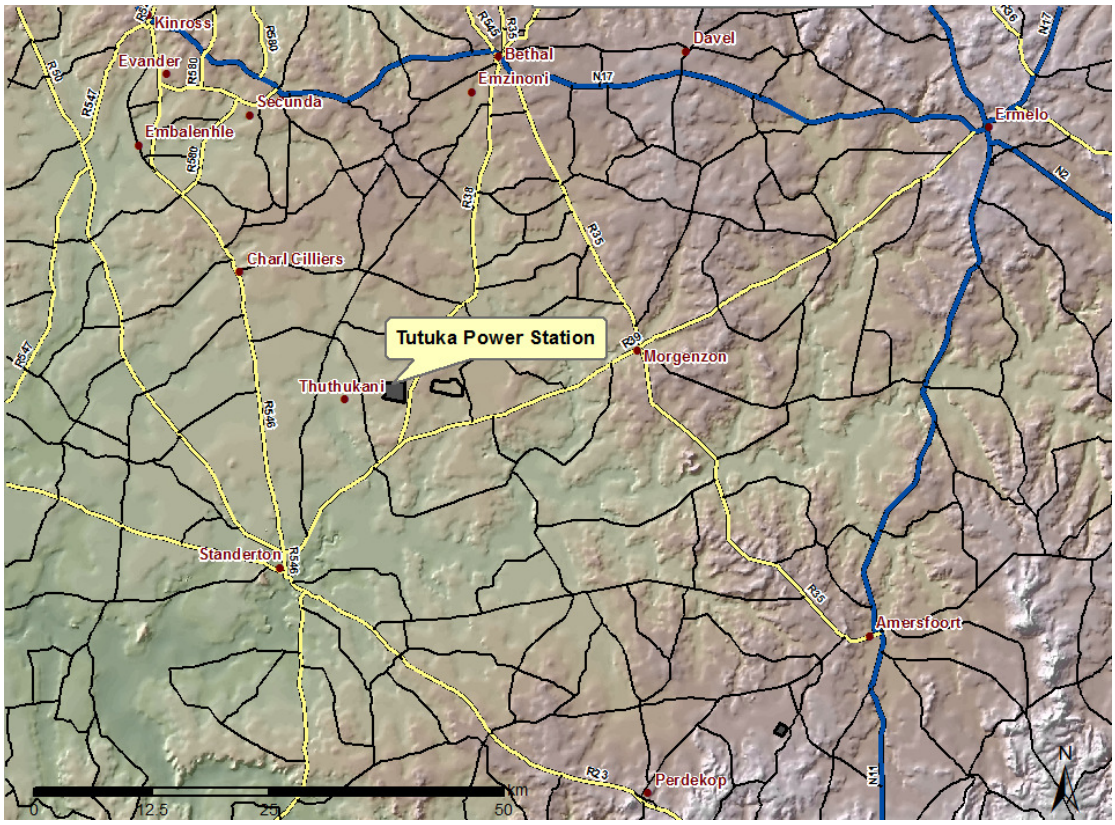

Figure 1: Locality map of Tutuka Power Station.

2. LANDSCAPE CHARACTER AND SENSE OF PLACE

The character of a landscape is shaped by a combination of visual resources, including environmental elements, such as vegetation, topography and water features, as well as man made features signifying the way in which human activity has transformed the natural environment. The visual character of the Tutuka Power Station and its surroundings is shaped by a unique combination of the following features:

- An undulating topography with low lying ridges to the east;
- Non-Perennial streams and isolated dams;
- Cultivated land;
- The Tutuka Power Station (being a visually dominant feature in the area);
- An ash disposal site situated secluded from and east of the power station;
- Coal mines (situated 5 km and 10 km north of the power station);
- A substation;
- Dispersed farmsteads, and

- Roads - arterial routes (R30, R38, R546) and a number of access roads to farms in the region.

The closest towns are Thuthukani (about 10 km west of the power station), Standerton (22 km south west) and Charl Cilliers (20 km north west). Of these, only Thuthukani is situated within the zone of visual influence of the ash disposal site.

Cultivated land, coal mines and the Tutuka Power Station are the main form giving elements in the landscape, together with farmsteads dispersed through the region. The visual quality of the landscape is described as **medium to low**. The Tutuka Power Station and associated infrastructure has generally been accepted as a feature within the landscape, with its own inherent visual qualities.

Based on land cover data, the landscape character can be quantified and visualised on a map. The map in **Figure 2** shows the large degree of agricultural activity in the area.

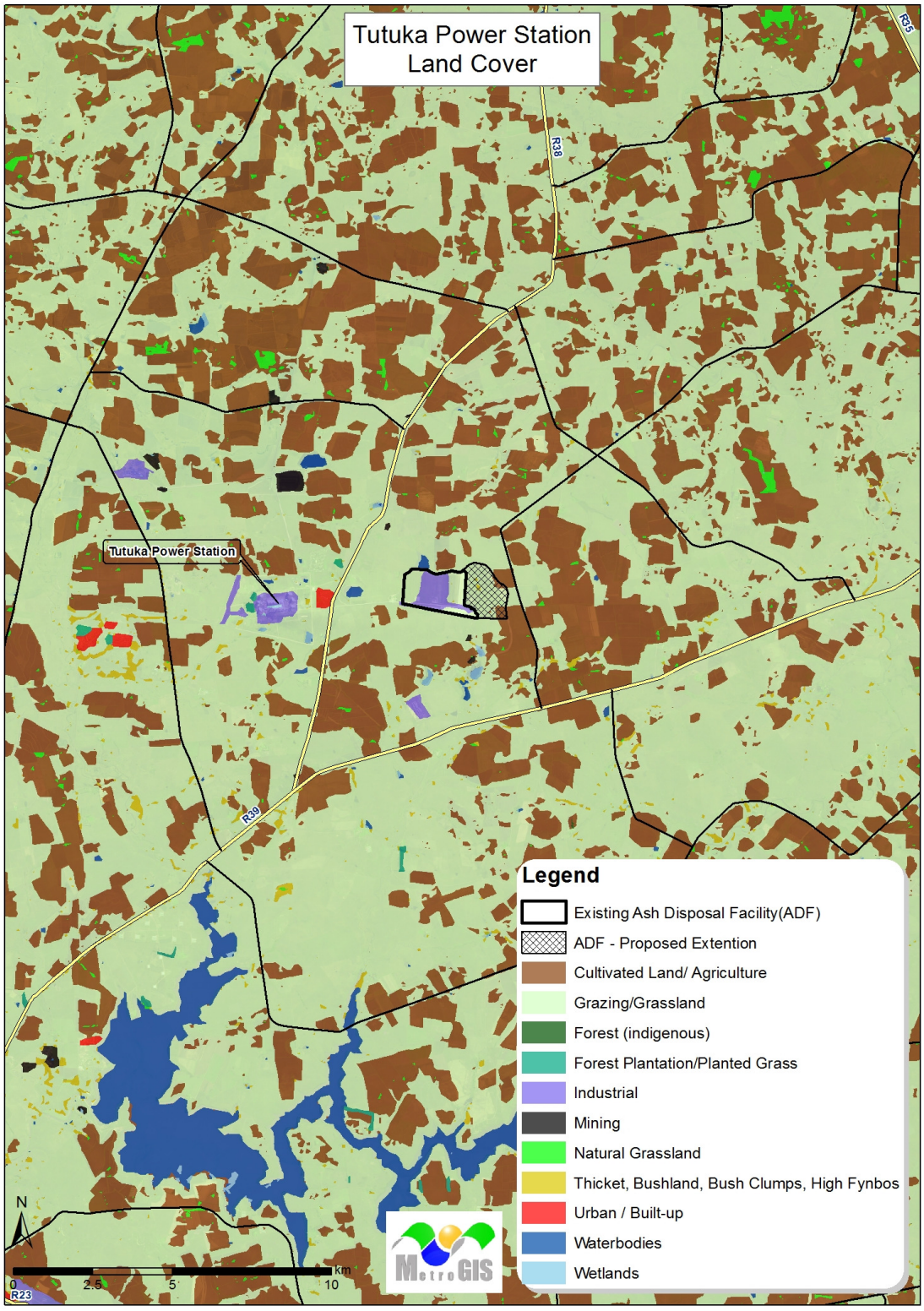

Figure 2: Land cover depicting the landscape character.

Topography

The topography is an important form giving element of the landscape. On the one hand, it opens up vast panoramic views of the landscape, and on the other hand it creates visual barriers. The topography in the study area has an undulating character with low ridges east of the site. This is significant in terms of the location of the ash disposal site, since the topography will be the primary factor determining the visibility and level of exposure thereof.

Landuse

Agriculture, mining and power generation represent the primary economic activities in the region. Cultivation (primarily maize), cattle and sheep farming constitute most of the farming activity. The Tutuka Power Station is and important and strategic activity, the continued operation of which necessitates the continuation of the ash disposal facilities. The power station is synonymous with different kinds of infrastructure that can be observed, *inter alia* power lines, substation, conveyors, pipelines, and an ash disposal site.

The position of the observer, and his situational awareness in terms of the landscape as it is observed and experienced, is an important factor in determining any visual impact. This is of particular importance, given the diverse nature of the landscape, as described above. Further analysis of this aspect will be undertaken during the EIA phase.

3. SENSITIVE RECEPTORS

Sensitive receptors in the study area are associated with the occurrence of farmsteads and road users, which are widely spread across the study area. The locations of these are presented on the map in **Figure 3**. The level of sensitivity is determined by proximity to the ash disposal site and can be classified as follows:

- 0 – 1.5km. Short distance view where the facility would dominate the frame of vision and constitute a very high visual prominence.
- 1.5 - 3km. Medium distance view where the facility would be easily and comfortable visible and constitute a high to moderate visual prominence.

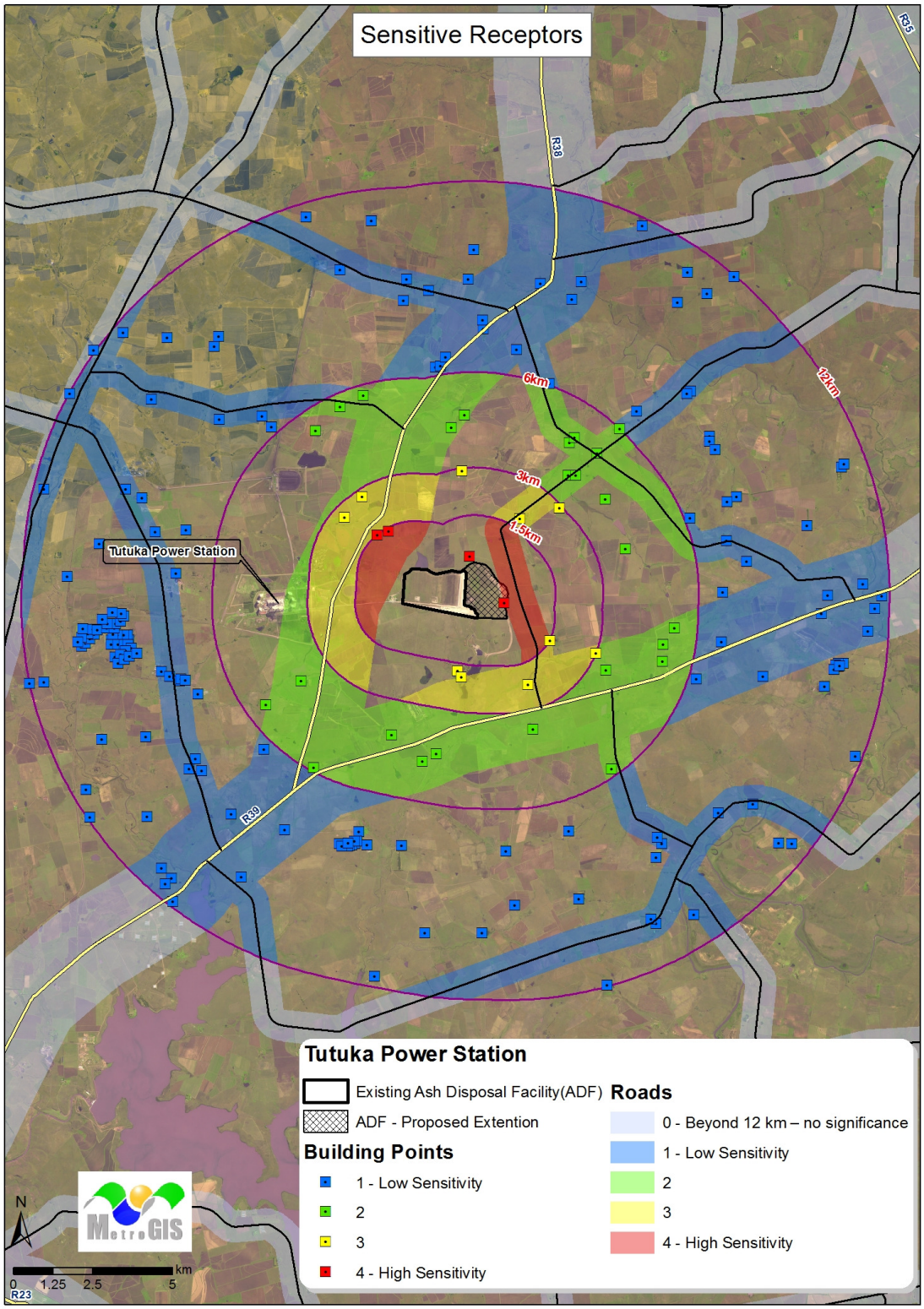

Figure 3: Location of possible sensitive receptor areas, i.e. farmsteads and roads.

o 3 - 6km. Medium to longer distance view where the facility would become part of the visual environment, but would still be visible and recognisable. This zone constitutes a moderate to low visual prominence.

o Greater than 6km. Long distance view of the facility where it could potentially still be visible though not as easily recognisable. This zone constitutes a very low visual prominence for the facility. It is anticipated that beyond 12 km from the facility any visibility thereof would be of no significance in terms of visual impact.

A number of farmsteads and sections of road fall within the 3 km buffer around the ash disposal site, which is the zone containing high to medium visual sensitivity. These areas will be investigated in more detail during the EIA phase.

4. VIEWSHED ANALYSIS: VISIBILITY AND VISUAL EXPOSURE

Visibility of an object is one of the primary attributes by which visual impact can be concluded. This is determined by a line of sight where nothing obscures the view of an object. Exposure is defined by the degree of visibility, in other words "how much" or "which part" of an object is visible to the observer. This is influenced by topography and the incidence of objects such as trees and buildings that obscure the view partially or in total. Visibility can be modelled by making use of a digital terrain model (DTM), created from contour data, and performing a viewshed analysis using GIS software. It must be noted that the viewshed analysis only accounts for topographical influences, and that the screening effect of vegetation is not included. This indicates a worst-case scenario, where the possibility of visual exposure is mapped, from which possible sensitive viewer locations can be identified.

In addition to viewshed analyses as described above, a proximity analysis is required to incorporate the effect of reduced visibility over distance. By integrating the two types of analyses, an index of possible visual impact is generated, as shown on the map in **Figure 4**.

The map indicates a core area of high visibility and a high degree of visual exposure within 6 km from the ash disposal site. The planned extension of the facility in an eastern direction is expected to increase the visibility thereof, and may possibly impact on a number of sensitive receptors within 3 km from the site. Permanent residents within this zone need to be identified and requirements with regard to mitigation measures investigated during the EIA phase.

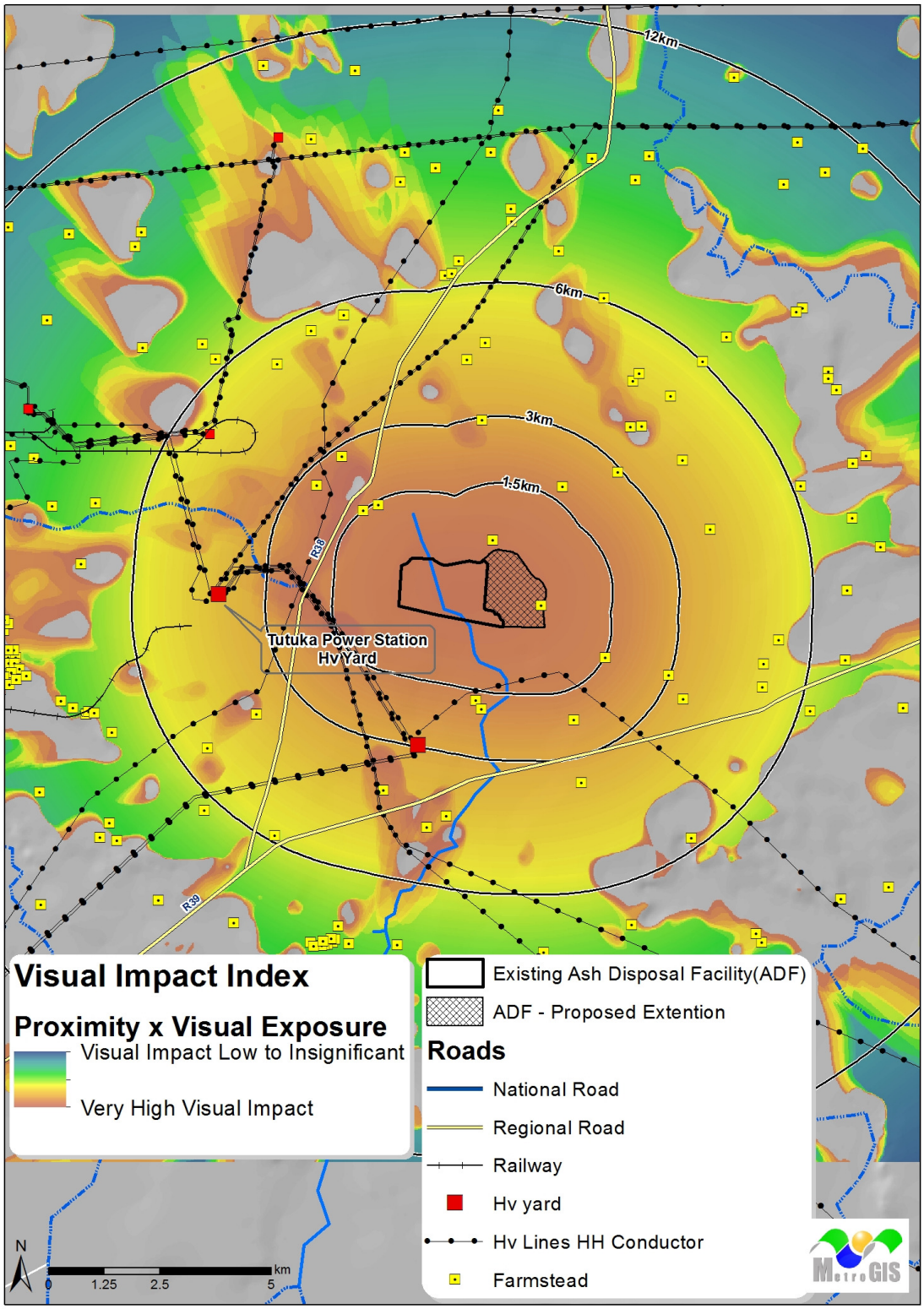

Figure 4: Integrated proximity and visual exposure index.

5. ISSUES RELATING TO VISUAL IMPACT

The ash disposal site, situated 4.5km east of the power station forms part of the current visual landscape, together with the power station being a visually dominant structure. This provides some degree of visual absorption capacity for the extension of the ash disposal site.

A number of sensitive receptors, particularly residents on farmsteads, might be impacted upon with the eastern extension of the ash disposal site. Issues of concern will relate to the design of the facility, particularly the footprint and vertical dimensions thereof. Whereas the above viewshed analysis was based on a conceptual design and an assumed maximum height of 65m, detailed information with regard to the design of the ash disposal site, together with detailed information gathered from a site visit will be used in an assessment of the nature and significance of visual impact.

6. CONCLUSION

The planned extension of the existing ash disposal, is unlikely to have any significant visual impacts. This statement is qualified in terms of the following:

- The existing ash disposal site has been established as a landform in the landscape, and is strongly associated with the Tutuka Power Station. By extending the ash disposal site, it will be enlarged in terms of its height and footprint, but its association with the power station will remain. All things considered, the landscape provide sufficient visual absorption capacity to accommodate the planned extension of the ash disposal site.
- The number of sensitive receptors is small. Perceptions with regard to the extension of the ash disposal site are anticipated to be neutral, based on the assumption that it will not be in contrast with the current landscape and that the sense of place will not be altered significantly.

It is therefore recommended that the significance of the potential visual impacts on sensitive receptors be assessed in further detail in the EIA. Additional spatial analyses must be undertaken in order to create a visual impact index that will further aid in determining potential visual impact. Mitigation measures will be suggested to minimise and / or avoid visual impacts where possible.