

FIGURE 28: LAND CAPABILITY MAP OF THE NORTHERN SECTION

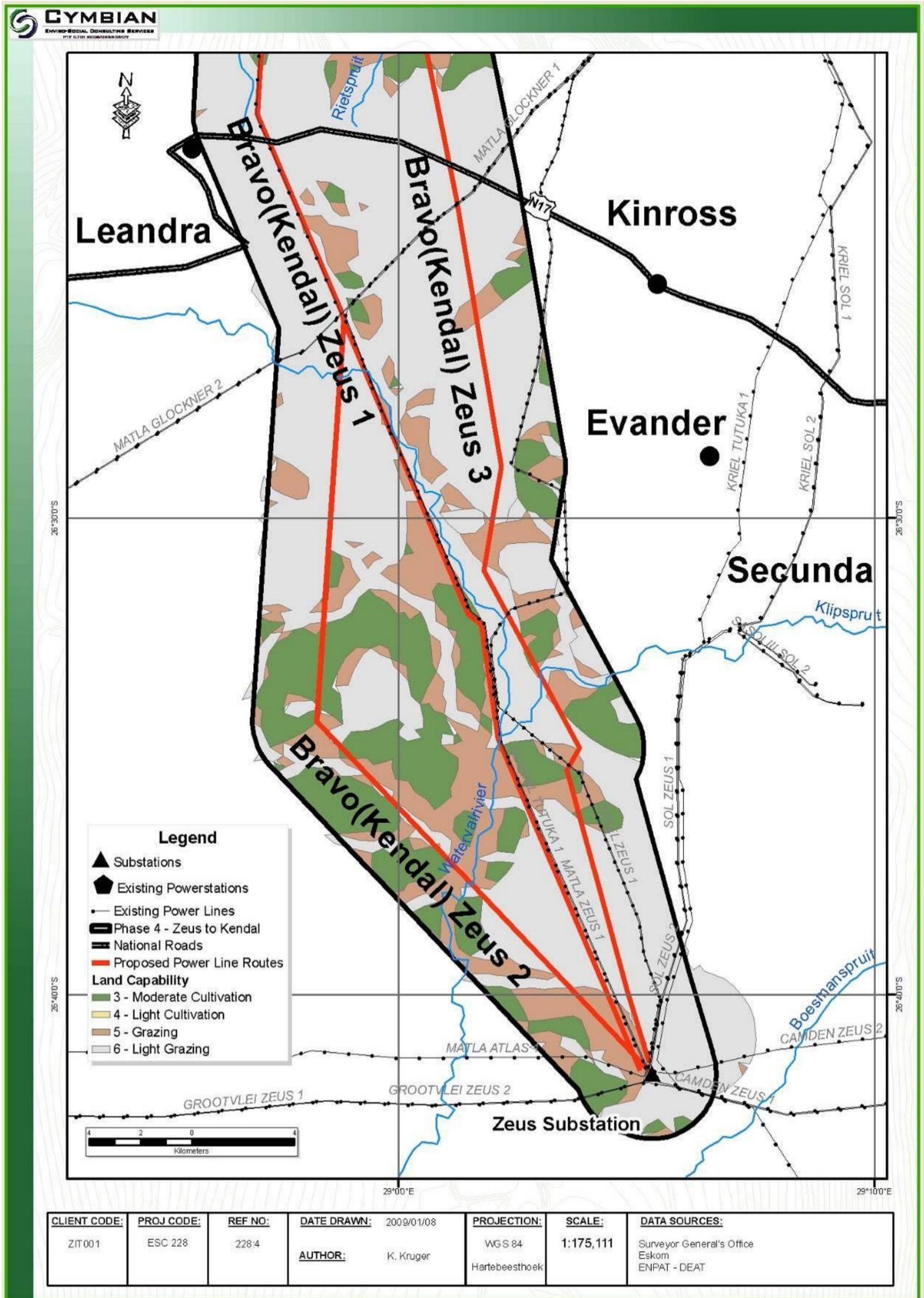


FIGURE 29: LAND CAPABILITY MAP OF THE SOUTHERN SECTION

7.1.7 Land Use

Data Collection

The Land Use data was obtained from the CSIR Land Cover database and supplemented with visual observations on site.

Site Description

The Land-Use is dominated by cultivated fields (maize), grazed grasslands, urban centres, coal mines and power stations. From the pictures (Figure 30) and map below (Figure 31 and Figure 32) it can be seen that the proposed routes traverses the entire spectrum of land uses found. Water bodies are the only land use regarded as sensitive and as such certain mitigatory measures will be outlined in Section 11.

	
<p>Ploughed fields in the foreground with the Kendal Power Station in the background.</p>	<p>Commercial centre at Roodebank.</p>
	
<p>Grazing land found on grasslands.</p>	<p>Old gold mine dump.</p>

FIGURE 30: LAND USES ENCOUNTERED IN THE STUDY SITE

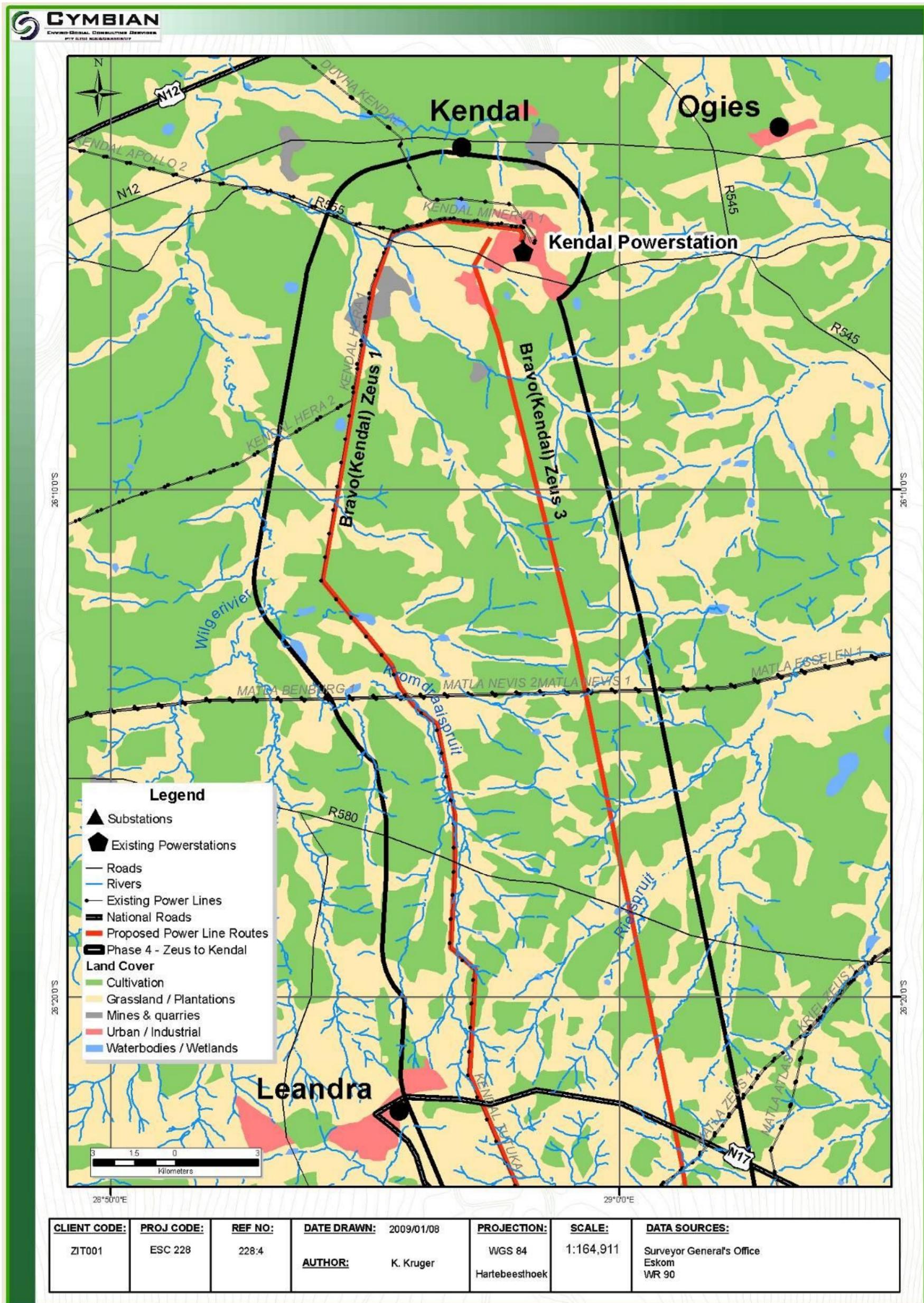


FIGURE 31: LAND USE MAP OF THE NORTHERN SECTION OF THE SITE

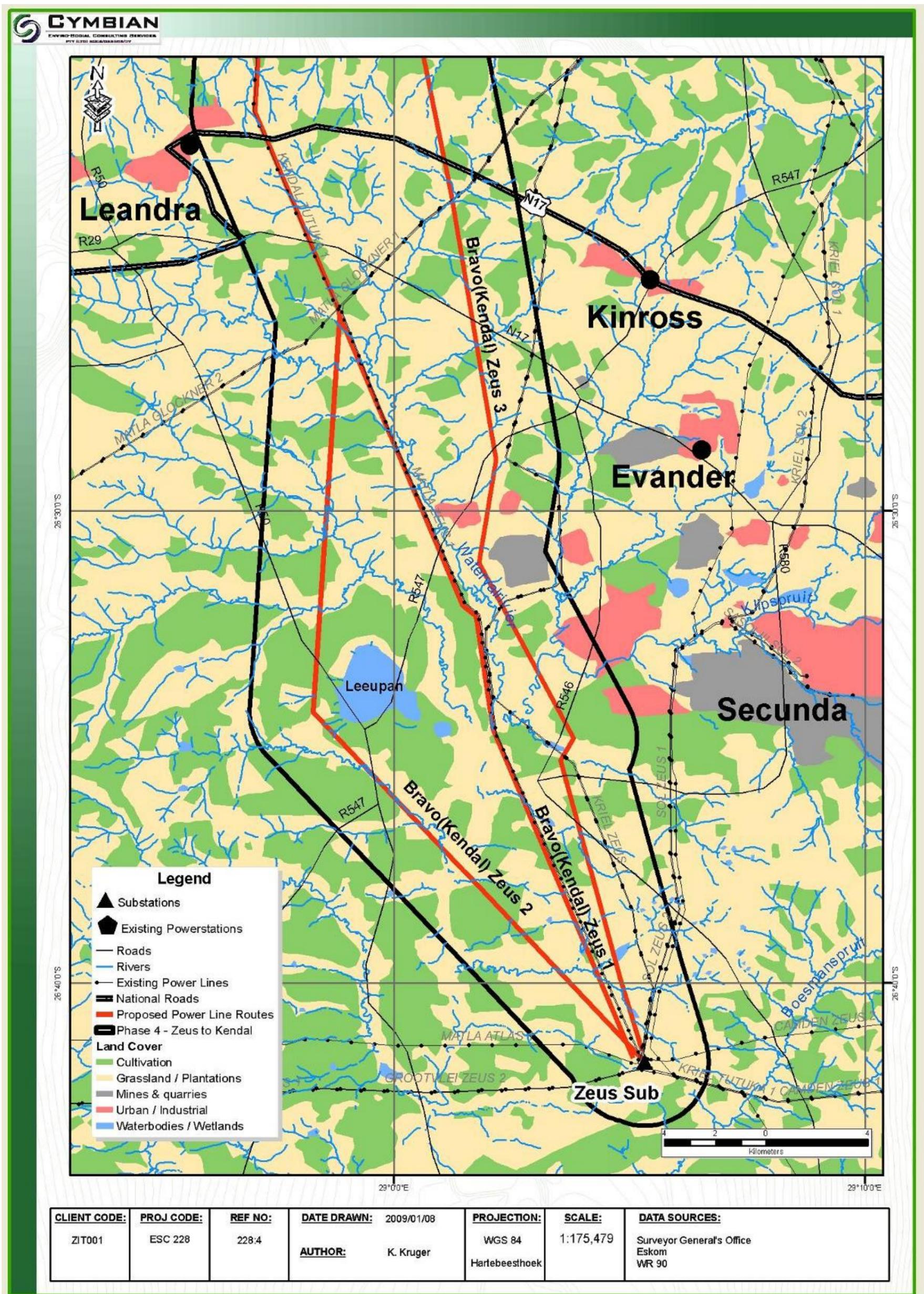


FIGURE 32: LAND USE MAP OF THE SOUTHERN SECTION OF THE SITE

From Figure 31 and Figure 32 above it can be seen that Alternatives 1 and 2 avoid agricultural land by following the drainage lines found in the area. Alternative 3 crosses over agricultural land but in so doing, avoids extensive periods of traversing in drainage lines. As wetlands, rivers and streams are seen as sensitive, it is suggested that the Alternative 3 alignment be utilised from a land use perspective.

7.1.8 Flora

Data Collection

The floral study involved extensive fieldwork, a literature review and a desktop study utilizing GIS. The site was investigated during two site visits conducted on the 8th – 12th September 2008 and the 3rd – 7th November 2008. The area within the servitude was sampled using transects placed at 300m intervals. At random points along the transect, an area of 20m x 20m was surveyed. All species within the 20m x 20m quadrant were identified, photographed and their occurrence noted. Sensitive features such as ridges or wetlands were sampled by walking randomly through the area concerned and identifying all species within the area.

The floral data below is taken from *The Vegetation of South Africa, Lesotho and Swaziland* (Mucina and Rutherford 2006). Also, while on site, the following field guides were used:

- Guide to Grasses of Southern Africa (Frits van Oudtshoorn, 1999);
- Field Guide to Trees of Southern Africa (Braam van Wyk and Piet van Wyk, 1997);
- Field Guide to the Wild Flowers of the Highveld (Braam van Wyk and Sasa Malan, 1998);
- Problem Plants of South Africa (Clive Bromilow, 2001); and
- Medicinal Plants of South Africa (Ben-Erik van Wyk, Bosch van Oudtshoorn and Nigel Gericke, 2002).

The occurrence of the species was described as either:

- Very common (>50 % coverage);
- Common (10 – 50 % coverage);
- Sparse (5 – 10 % coverage); and
- Individuals (< 5 % coverage).

Regional Description

According to the South African National Biodiversity Institute, the study area falls within the Grassland Biome, where most of the country's maize production occurs. The main vegetation types found in the region are the Soweto Highveld Grassland, Rand Highveld Grassland, Eastern Highveld Grassland and Eastern

Temperate Freshwater Wetlands vegetation units as classified by Mucina and Rutherford³. Each of these vegetation units are described in more detail below.

Soweto Highveld Grassland

The Soweto Highveld Grassland is found in the Mpumalanga and Gauteng Provinces in a broad band roughly delineated by the N17 Highway in the north, Perdekop in the southeast and the Vaal River in the south. The landscape is typical of the gently undulating Highveld plateau which supports dense tufted grassland dominated by *Themeda triandra*, *Elionurus muticus*, *Eragrostis racemosa*, *Heteropogon contortus* and *Tristachya leucothrix*. This grassland is only interrupted by wetlands, occasional ridges and agricultural activities.

This vegetation type is endangered as almost no conservation of the vegetation type occurs. An estimated 45% of the vegetation type has already been transformed by cultivation, urban sprawl and mining.

Rand Highveld Grassland

Rand Highveld Grassland is found in the highly variable landscape with extensive sloping plains and ridges in the Gauteng, North-West, Free State and Mpumalanga Provinces. The vegetation type is found in areas between rocky ridges from Pretoria to Witbank, extending onto ridges in the Stoffberg and Roosenekal regions as well as in the vicinity of Derby and Potchefstroom, extending southwards and north-eastwards from there. The vegetation is species rich, sour grassland alternating with low shrubland on rocky outcrops. The most common grasses on the plains belong to the genera *Themeda*, *Eragrostis*, *Heteropogon* and *Elionurus*. High numbers of herbs, especially *Asteraceae* are also found. In rocky areas shrubs and trees also prevail and are mostly *Protea caffra*, *Acacia caffra*, *Celtis africana* and *Rhus spp.*

This vegetation type is poorly conserved (approx 1 %) and has a target of 24 % of the vegetation type to be conserved. Due to the low conservation status this vegetation type is classified as endangered. Almost half of the vegetation type has been transformed by cultivation, plantations, urbanisation or dam-building. Scattered aliens (most prominently *Acacia mearnsii*) are present in the unit.

Eastern Highveld Grassland

The Eastern Highveld Grassland is found in the Mpumalanga and Gauteng Provinces on the plains between Belfast in the east and the eastern side of Johannesburg in the west and extending southwards to Bethal, Ermelo and west of Piet Retief. The landscape is dominated by undulating plains and low hills with short dense grassland dominating belong to the genera *Themeda*, *Aristida*, *Digitaria*, *Eragrostis*, *Tristachya etc.* Once again woody species are prevalent on the rocky outcrops.

In terms of conservation and disturbance, 44 % of the vegetation type is already transformed by cultivation, plantations, mines, and urbanisation. No serious alien invasion, but *Acacia mearnsii* can dominate in certain areas

³ *The Vegetation of South Africa, Lesotho and Swaziland*, Mucina and Rutherford 2006.

Eastern Temperate Freshwater Wetlands

Another vegetation type associated with the region is the Eastern Temperate Freshwater Wetlands, found around water bodies and embedded within the Grassland biome. Eastern Temperate Freshwater Wetlands are typically found in flat landscapes or shallow depressions filled with (temporary) water bodies supporting zoned systems of aquatic and hydrophilous (water loving) vegetation of temporarily flooded grasslands and ephemeral herblands. Important species include *Cyperus congestus*, *Phragmites australis*, *Marsilea farinose*, *Rorippa fluviatilis*, *Disa zuluensis*, *Crassula tuberella* and the carnivorous herb *Utricularia inflexa*. These wetlands are one of the most sensitive vegetation units found in the region and have been extensively modified by mining and industrial activities in the region.

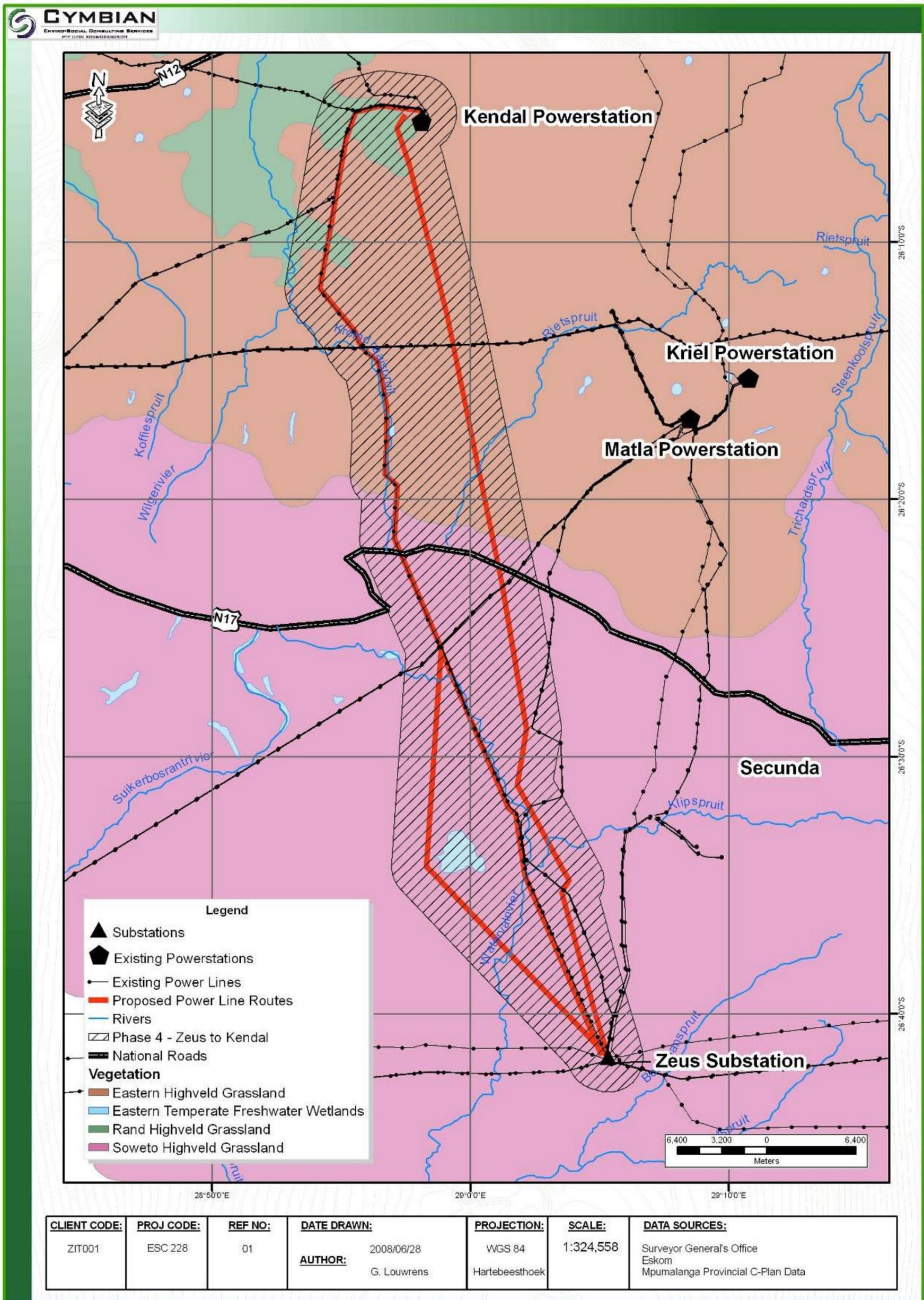


FIGURE 33: MAIN VEGETATION TYPES OF THE REGION