

larger threat to the natural biodiversity of a region is represented by the influx of invasive exotic species that can effectively sterilise large tracts of remaining natural habitat.

The study area is situated within the Lekwa Municipality, which comprises a total of 458,519ha. The BGIS (2007) assessment indicates that approximately 63.8% of the municipality are currently considered untransformed. This figure is however regarded an overestimation of the true extent of remaining natural (pristine) grassland habitat in the region. This statement is based on the following:

- The current land cover, as presented in ENPAT does not accurately reflect the current land cover status in all instances; in particular, recent agricultural activities and localised stands of exotics are not captured within the existing data (pers. obs.); and
- It is well established that the status of much of the remaining portions of 'natural grassland' is not accurately summarized in the assessment. These 'natural grasslands' frequently comprehend poor quality grassland or even pastures that exhibit severely altered species compositions and depleted diversity that does not reflect the natural grassland of the region (pers. obs.).

By inclusion of portions of land cover categories that do not reflect the natural status of the ecological environment, with particular reference to sub-climax grassland types, in the category of 'Natural Grassland' a fallacious view is created of the extent of remaining natural habitat in the region. It is therefore extremely likely that remaining untransformed habitat within the municipality is much lower than initially anticipated. Ultimately, the greater region is characterised by high levels of habitat transformation, isolation and habitat fragmentation, resulting from persistent increases in mining and agricultural activities, urban developments, linear infrastructure and poor management practices.

Severity of impacts that commercial agriculture (maize production) has had on the natural environment are evident from the mosaical appearance of land cover in the immediate region. Limited natural habitat remains within the greater area, reflecting similar trends on a municipality and provincial level. These pockets of natural grassland are in a relative advanced state of fragmentation and habitat isolation and connectivity in some parts are low. Other limited land transformation effects result from industrial and urban development. Road and railway infrastructure in the region caused a high degree of habitat fragmentation and isolation.

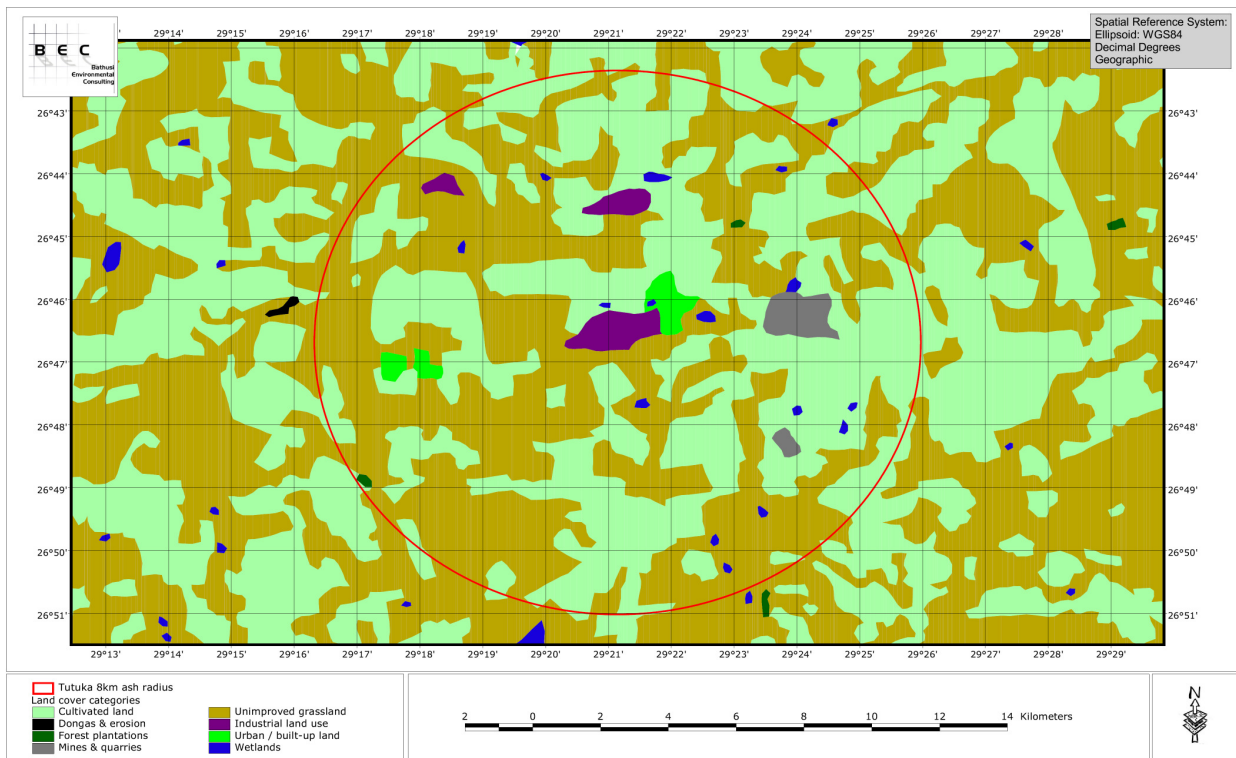


Figure 6.9: Land cover categories for the study area

6.3.5 Land Type

The existing ash disposal facility is situated within the Ea17 land type unit (**Figure 6.10**). E land type units indicate land with a high base status, dark coloured and/ or red soils, usually clayey, associated with basic parent materials. A land type more than half of which is covered by soil forms with vertic, melanic and red structured diagnostic horizons qualifies for inclusion in unit Ea, provided that it does not qualify for inclusion in units A, B or C. Land types in which these soils cover less than half of the area may also qualify for inclusion (i) where duplex soils occur in the non-rock land but where unit Ea soils cover a larger area than the duplex soils, or (ii) where exposed rock cores more than half the land type.



Figure 6.10: Land type units with the study area

6.3.6 Natural Vegetation

- **Regional Vegetation - VEGMAP**

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 vegetation of the study area corresponds to an ecological type known as Soweto Highveld Grassland.

- *Soweto Highveld Grassland*

The Soweto Highveld Grassland comprises a gently to moderately undulating landscape on the Highveld plateau supporting short to medium-high, dense, tufted grassland dominated almost entirely by *Themeda triandra* and accompanied by a variety of other grasses such as *Elionurus muticus*, *Eragrostis racemosa*, *Heteropogon contortus* and *Tristachya leucothrix*. Only scattered small wetlands, narrow stream alluvia, pans and occasional ridges or rocky outcrops interrupt the continuous grassland cover in undisturbed areas. This vegetation type is regarded '**Endangered**' with a target of 24%. Only a handful of patches are statutorily conserved, including Wadrift, Krugersdorp, Leeuwkuil, Suikerboschrand and Rolfe's Pan Nature Reserve. Almost half of the area is already transformed by cultivation, urban sprawl, mining and building of road infrastructure. Some areas have been flooded by dams (Grootdraai, Leeuwkuil, Trichardtsfontein, Vaal, Willem Brummer). Erosion is generally very low.

- **MBCP Categories**

The local and regional designation of Mpumalanga Terrestrial Biodiversity Conservation Categories (MBCP) is illustrated in **Figure 6.11**.

The mandate for conserving biodiversity lies with state agencies at national, provincial and local levels of government, forming part of a wider responsibility for the environment and the sustainable use of natural resources. Constitutional and national laws require these environmental issues to be dealt with in cooperative, participatory, transparent and integrated ways. The MBCP is the first spatial biodiversity plan for Mpumalanga that is based on scientifically determined and quantified biodiversity objectives. The purpose of the MBCP is to contribute to sustainable development in Mpumalanga.

The MBCP maps the distribution of Mpumalanga Province's known biodiversity into seven categories (Lötter & Ferrar, 2006). These are ranked according to ecological and biodiversity importance and their contribution to meeting the quantitative targets set for each biodiversity feature. The categories are:

- **Protected areas** - already protected and managed for conservation;
- **Irreplaceable areas** - no other options available to meet targets--protection crucial;

- **Highly Significant areas** - protection needed, very limited choice for meeting targets;
- **Important and Necessary areas** - protection needed, greater choice in meeting targets;
- **Ecological Corridors** – mixed natural and transformed areas, identified for long term connectivity and biological movement;
- **Areas of Least Concern** – natural areas with most choices, including for development;
- **Areas with No Natural Habitat Remaining** – transformed areas that do not contribute to meeting targets.

The study area comprises four of these categories (**Figure 6.11**), namely:

- Highly Significant (red);
- Important & Necessary (green);
- No Natural Habitat Remaining (grey); and
- Least Concern (yellow).

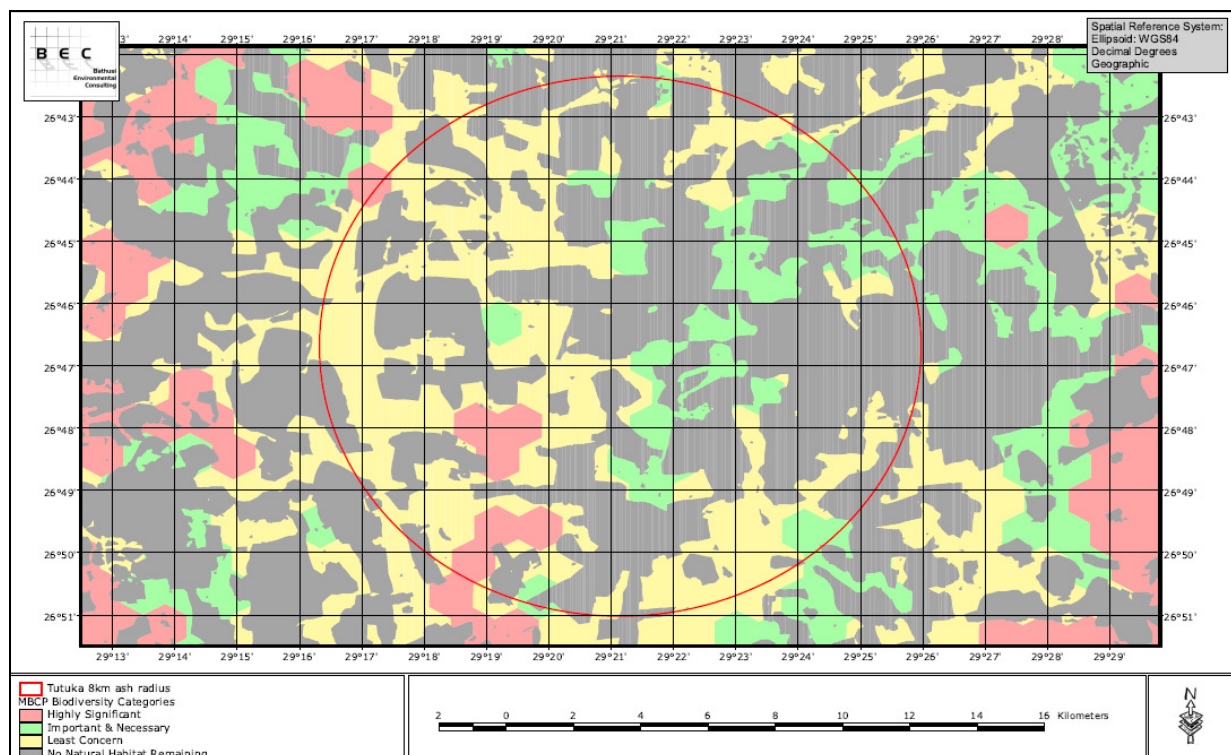


Figure 6.11: The MBCP categories as they relate to the study area.

- **Species of Conservation Importance**

South Africa's Red List system is based on the IUCN Red List Categories and Criteria Version 3.1 (finalized in 2001), amended to include additional categories to indicate species that are of local conservation concern. The IUCN Red List system is designed to detect risk of extinction. Species that are at risk of extinction, also known as threatened or endangered species are those that are classified in the categories Critically Endangered

(CR), Endangered (EN) and Vulnerable (VU). Taking the habitat that is available as well as the status thereof into consideration, it is regarded likely that plant species included in the Threatened category might be present within the study areas.

Mpumalanga Province comprises 4,256 plant species of which 276 are included in the following conservation categories:

- 1 Extinct;
- 2 Critically Rare;
- 30 Endangered;
- 80 Vulnerable;
- 36 Near Threatened;
- 47 Rare;
- 25 Declining;
- 19 Data Deficient – insufficient information (DDD); and
- 36 Data Deficient – taxonomical problem (DDT).

Data records indicate the presence of only two plant species of conservation importance within the ¼-degree grids that are sympatric to the study area, including.

- *Drimia elata* (Data Deficient); and
- *Cineraria austrotransvaalensis* (Near Threatened).

In addition to the species currently captured in the SANBI infobase (POSA, 2011), the following provincially protected plants are known to occur within the region of the study area (Mpumalanga Nature Conservation Act No.10 of 1998) (**Table 6.3**).

Table 6.3: Protected plant species within the region of the study area

Species Name	Family	Status
<i>Eucomis autumnalis</i> subsp. <i>clavata</i>	Hyacinthaceae	Provincially protected
<i>Eulophia ovalis</i> var. <i>ovalis</i>	Orchidaceae	Provincially protected
<i>Gladiolus dalenii</i> subsp. <i>dalenii</i>	Iridaceae	Provincially protected
<i>Gladiolus elliotii</i>	Iridaceae	Provincially protected
<i>Gladiolus longicollis</i> subsp. <i>platypetalus</i>	Iridaceae	Provincially protected
<i>Haemanthus humilis</i> subsp. <i>hirsutus</i>	Amaryllidaceae	Provincially protected
<i>Haemanthus montanus</i>	Amaryllidaceae	Provincially protected

Further detail can be obtained from the Biodiversity Specialist Report in **Appendix I**.

6.3.7 Animal Life

A total of 109 Red Data species from five categories (IUCN) are known to occur in Mpumalanga (Invertebrates, Reptiles, Frogs and Mammals) and the Q-grids 2629CB and 2629CD (birds), included in the following conservation categories:

- 22 species are listed as Data Deficient (DD);