habitats within the study area are regarded sensitive due to the Endangered regional conservation status.

- Linear Infrastructure - A number of roads, power line servitudes, railways and conveyor facilities are present. The presence of linear infrastructure should therefore not be considered a restriction to the proposed activity.
- Transformed and Degraded Grassland Habitat - Commercial cultivation represents the major land transformation activity in the region resulting in a mosaical pattern of agricultural fields within a natural grassland environment, of which extremely little remains. Vegetation altered for agricultural practices is unlikely to recover to a state that approximates the natural regional vegetation, even with the application of rehabilitation and management programmes and a low floristic status is frequently ascribed to these parts. The use of these parts of the study area for the proposed activity is strongly recommended as it unlikely that floristic attributes of conservation importance will be affected within these parts.
- Wetland Vegetation - Vegetation associated with aquatic habitat types is regarded highly sensitive and all impacts should ideally be avoided within, and near to, these features. A wide variety of these habitat types feature in the study area, including perennial and non-perennial streams, rivers, small drainage lines, wetland marshes, hillslope seepages, artificial impoundments and unchannelled valley bottoms.

1.3 Faunal Assessment

It is important to view the study area on an ecologically relevant scale; consequently, all sensitive animal species (specific faunal groups) known from Mpumalanga are included in this assessment (except for the avifauna which focuses on the Q-grids of the study area). Data on all faunal groups are lacking (notably for most of the invertebrate groups), as a result, only data sets on specific faunal groups allow for habitat sensitivity analyses based on the presence/absence of sensitive faunal species (red data species) and their specific habitat requirements. In order to assess the probability of occurrence (PoC) of Red Data species not recorded in the study area during the field assessment, the following criteria were employed:

- the size of the study area;
- the location and connectivity of the study area with regards to other natural faunal habitats; and,
- the presence/absence, status and diversity of natural faunal habitats within the study area.

These criteria were used in conjunction with the known distribution of Red Data species as well as their known habitat requirements to estimate their likelihood of occurring in the study area. 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);
- 41 species are listed as Near Threatened (NT);
- 30 species are listed as Vulnerable (VU);
- 11 species are listed as Endangered (EN); and
- 4 species are listed as Critically Endangered (CR)

Estimations for the PoC for Red Data fauna taxa for the study area yielded the following results:

- 40 species have a low PoC;
- 21 species have a moderate-low PoC;

- 25 species have a moderate PoC;
- 8 species have a moderate-high PoC; and
- 15 species have a high PoC.

It is estimated that three of the eight provincially protected fauna taxa (Mpumalanga) are unlikely to occur in the study area (low) and 16 species moderately unlikely (moderate-low). Three species are considered at least moderately likely (moderate) and four species highly likely to occur in the study area (high).

The presence of Red Data fauna species cannot be discounted at this stage and any disturbance therefore represents a direct and significant impact on these species. While some species are highly mobile and will ultimately be able to avoid impacts that result from the proposed development, some are unable to avoid effects of microhabitat destruction. A direct approach, which is likely to be hugely costly, can be implemented in order to capture and relocate some animals to adjacent suitable habitat. Similar to Red Data plants, the presence of Red Data animal species is seen as a significant attribute to the biodiversity of an area. Any impact is therefore viewed as significant. Additional aspects that will be affected include migration patterns and suitable habitat for breeding and foraging purposes.

1.4 Ecological Sensitivity & Recommendations

For this particular screening assessment, the degree of transformation was used as a primary decision tool in determining the level of sensitivity of a particular site. A secondary decision was made based on the level of conservation importance ascribed to the regional vegetation type. The ecological sensitivity of areas characterised by natural habitat was assessed using the application of the following criteria:

- The presence of Threatened and/or Protected:
  - plant species **(NO)**;
  - animal species **(NO)**;
  - ecosystems **(YES)**;
- The presence of Critical conservation areas, including:
  - areas of high biodiversity **(YES)**;
  - centres of endemism **(NO)**;
- The presence of Important Ecological Processes, including:
  - Corridors **(NO)**;
  - Mega-conservancy networks **(NO)**;
  - Rivers and wetlands **(YES)**; and
  - Important topographical features **(NO)**.

The sensitivity assessment indicates clearly the high sensitivity that is associated with remaining natural grassland within the region. This is mainly the result of high land transformation rates and habitat fragmentation levels. It should however be noted that the high sensitivity of natural grassland is ascribed without taking cognisance of the current status of remaining portions. Visual evidence suggests that the status might not be as pristine as initially anticipated and that the suitability of certain portions is therefore more acceptable. This is particularly the case in point of the preferred site as visual observations revealed a moderately disturbed status of the portion of land under consideration. A preliminary recommendation is therefore that this portion of land is likely to be acceptable for the use of the proposed project, but EIA investigations still need to confirm the absence of conservation important flora and fauna taxa.

2 TERMS OF REFERENCE

Objectives of this Biodiversity Scoping Assessment are to appraise available information in order to provide a synopsis of the ecology of the proposed site and surrounds. More specifically, the presence/ absence, variability and inherent ecological sensitivity of the proposed project area will be ascertained, based on the proposed activity. Likely and expected impacts on the biological environment will be identified and pertinent recommendations for the EIA phase of the project will be provided. Results of this assessment will ultimately be incorporated into the EIA Assessment that will provide detailed and site-specific information, evaluating expected and likely impacts on the biological environment.

The Terms of Reference for the floristic assessment are as follows:

- Obtain distribution records of common and Red Data flora taxa (Plants of Southern Africa, 2009);
- Conduct a photo analysis of the proposed area;
- Identify preliminary floristic variations;
- Conduct a brief site investigation in order to obtain a understanding of the floristic environment;
- Assess the potential presence of Red List flora species according to information obtained from SANBI;
- Incorporate existing biophysical information of the region into the assessment;
- Describe broad habitat variations present in the study area in terms of biophysical attributes and phytosociological characteristics;
- Compile a floristic sensitivity analysis;
- Incorporate results into the Biodiversity Scoping Evaluation;
- Map all relevant aspects;
- Provide pertinent recommendations; and
- Present all results in a suitable format.

The Terms of Reference for the faunal assessment are as follows:

- Obtain available faunal distribution records and Red Data faunal information
- Conduct a brief site investigation in order to obtain an overview of the faunal environment;
- Assess the potential presence of Red Data fauna species;
- Incorporate existing knowledge of the region;
- Describe the status of available habitat in terms of faunal attributes, preferences and conservation potential;
- Compile a faunal sensitivity analysis;
- Incorporate results into the Biodiversity Scoping Evaluation;
- Map all relevant aspects; and
- Present all results in a suitable format.

3 INTRODUCTION

Why is Biodiversity Conservation Important? Biodiversity sustains life on earth. An estimated 40 percent of the global economy is based on biological products and processes (www.unep.org). Biodiversity has allowed massive increases in the production of food and other natural materials, which in turn have fed the (uncontrolled) growth and development of human societies. Biodiversity is also the basis of innumerable environmental services that keep humans and the natural environment alive, from the provision of clean water and watershed services to the recycling of nutrients and pollination (ICMM, 2004). Conservation of biodiversity has taken many different forms throughout history, including setting aside land for such reasons as their rare ecology (endemic or Red Listed species) or exceptionally high species diversity; their critical environmental services, such as watershed protection or evolutionary functions; or their continued use by indigenous peoples who are still pursuing 'traditional' lifestyles based on 'wild' resources.

South Africa is recognized as one of the world's few 'megadiverse' countries. In addition to having an entire floral kingdom, it also includes two globally significant biodiversity 'hot spots' (the Cape and succulent Karoo regions), six Centres of Plant Diversity, two Endemic Bird Areas and the richest temperate flora in the world (Cowling, 2000). Recent increases in human demand for space and life-supporting resources are however resulting in rapid losses of natural open space in South Africa. When natural open space systems are rezoned for development, indigenous fauna and flora are replaced by exotic species and converted to sterile landscapes with no dynamic propensity or ecological value (Wood *et al.,* 1994). The conservation of critical biodiversity resources and the use of natural resources therefore appear to be two conflicting ideologies.

In 1992, the Convention of Biological Diversity (CBD), a landmark convention, was signed by more than 90% of all members of the United Nations. The subsequent enactment of the National Environmental Management Biodiversity Act in 2004 (Act No. 10 of 2004), focused on the preservation of biological diversity in its totality, including genetic variability, natural populations, communities, ecosystems up to the scale of landscapes. The CBD not only considers the protection of threatened species and ecosystems, but also recognizes the importance of using resources sustainably, of ensuring equity in the exploitation of such resources, and of the need for sustainable development in developing countries. This concept seeks to ensure that social and economic development follows a path that enhances the quality of life of humans whilst ensuring the long-term viability of the natural systems (resources) on which that development depends (United Nations Conference on Environment and Development, in Rio de Janeiro, Brazil 1992). In southern Africa, acceptance of the concept of sustainable development has been marked by the ratification of international conventions by most countries, particularly the Convention on Biological Diversity, Ramsar Convention and CITES, as well as the development of SADC-based protocols on environmental issues. However, severe capacity constraints in most countries have made it difficult to translate these policies and concepts into practice.

South Africa's biodiversity conservation performance is under increasing scrutiny from NGOs, commentators and financial analysts. In part, this is due to the legacy of environmental neglect, and in part, it is due to increased awareness of the public and authorities. All activities in the natural environment therefore require vigilance to ensure that the heritage of future generations – the biological as well as cultural heritage – is not adversely affected by the activities of today. Achieving a balance requires better understanding and recognition of conservation and development imperatives by all stakeholders, including governments, business and conservation communities.

There are also many opportunities for Eskom to enhance biodiversity conservation within its areas of operations. Being proactive in the assessment and management of biodiversity is important not only for new operations but also for those that have been operating for many years, usually under regulatory requirements that were less focused on the protection and enhancement of biodiversity.

In summary, threats resulting from all developments in the natural environment to biodiversity are compelling. Unless they are addressed in a holistic manner, which considers social and economic as well as scientific considerations, the benefits of ecosystem services will be substantially diminished for future generations. Furthermore, the next 50 years could see a further acceleration in the degradation of ecosystem services unless action is taken to reverse current trends of environmental decline.

4 PROJECT SYNOPSIS

Ash generated by Tutuka Power Station is currently being disposed by means of 'dry ashing' within the premises of the Tutuka Power Station, on Eskom owned land. This existing ash dump was initially designed for the planned life of operation of the Tutuka Power Station. Although the station has not reached the end of its life and the ashing operations have not used all the design land, additional ashing facilities are required to be able to continuously ash to 2055 (based on an ash production rate of 4,624 million tonnes per annum). With the promulgation of the National Environmental Waste Management Act, Act 59 of 2008, Eskom aims to align its continued ashing activities with the requirements of the waste licensing processes. Towards this goal, they have appointed Lidwala Consulting Engineers as the Environmental Assessment Practitioner (EAP) for the project. Bathusi Environmental Consulting cc was appointed as independent ecologists to conduct an ecological EIA of the study area.

A technically suitable area was identified to the south and east of the existing ashing facility; this land was purchased before the commencement of Environmental laws; the Environment Conservation Act, in particular. This particular area comprises of approximately 759ha, which is located on the southern and southeastern portion of the existing Tutuka Power Station ash disposal site. However, in order to allow for a robust environmental process, all land within a radius of 8km will be assessed in order to identify potential alternatives sites should sensitive aspects limit the suitability of this particular portion of land.

In sourcing approval of the ashing plans, Eskom requires the licensing of the ash disposal facilities for its continuous operation in terms of the National Environmental Management Waste Act (NEMWA), Act no 59 of 2008.