

WALKERVILLE LANDFILL SITE: FAUNAL ASSESSMENT

SEF Reference No. 503719

Prepared for:

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STRATEGIC ENVIRONMENTAL FOCUS



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I, **Byron Grant**, in my capacity as a specialist consultant, hereby declare that I -

- Act as an independent consultant;
- Do not have any financial interest in the undertaking of the activity, other than remuneration for the work performed in terms of the National Environmental Management Act, 1998 (Act 107 of 1998);
- Have and will not have vested interest in the proposed activity proceeding;
- Have no, and will not engage in, conflicting interests in the undertaking of the activity;
- Undertake to disclose, to the competent authority, any material information that has or may have the potential to influence the decision of the competent authority or the objectivity of any report, plan or document required in terms of the National Environmental Management Act, 1998 (Act 107 of 1998);
- Will provide the competent authority with access to all information at my disposal regarding the application, whether such information is favourable to the applicant or not;
- As a registered member of the South African Council for Natural Scientific Professions, will undertake my profession in accordance with the Code of Conduct of the Council, as well as any other societies to which I am a member;
- Based on information provided to me by the project proponent, and in addition to information obtained during the course of this study, have presented the results and conclusion within the associated document to the best of my professional judgement; and
- Undertake to have my work peer reviewed on a regular basis by a competent specialist in the field of study for which I am registered.

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Date

EXECUTIVE SUMMARY

Strategic Environmental Focus as independent environmental consultants and impact assessors, were appointed by SCIP Engineering to undertake ecological studies of the Walkerville Landfill Site. The Walkerville Landfill Site is currently operating without a permit and in order to apply for a permit, biodiversity studies regarding the study site were needed. This report represents the faunal report and should be read in conjunction with the other specialist reports pertaining to the site (e.g. vegetation report).

The Walkerville Landfill study area was observed to support a significant lack of diverse habitat types and as a result an associated depopulated faunal assemblage, with species encountered being commonly observed species and species tolerant of human-induced impacts. Furthermore, it was highly unlikely that any faunal species of conservation concern were to be associated with the study area.

However, it was noted that the surrounding landscape supported natural habitat, particularly in the form of a *Themeda triandra-Berkheya radula* grassland which is suspected to have wetland elements present. Additionally, the wetland elements were likely to have their origin in close proximity to the study site based on terrain unit indicators.

While it was uncertain if this adjacent grassland was able to provide a suitable breeding site for avifaunal species of conservation concern, it was regarded as suitable foraging habitat for *Tyto capensis* (Grass Owl) and other such birds of prey. Nevertheless, the possible presence of *Eupodotis senegalensis* (White-bellied Korhaan) within the *Themeda triandra-Berkheya radula* grassland adjacent to the study area was unlikely given the proximity to surrounding impacts.

It is therefore recommended that all activities associated with the Walkerville Landfill site be contained within the present footprint, and should expansion of the site be required in the future, that alternatives to expansion into the adjacent *Themeda triandra-Berkheya radula* be sort

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1. INTRODUCTION

1.1 Project Description

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1.2 Terms of Reference

The terms of reference for the present assessment were as follows:

- To provide a general assessment of the fauna present within the study area, with particular reference to the possible occurrence of *Tyto capensis* (African Grass Owl) and *Eupodotis senegalensis* (White-bellied Korhaan); and
- To provide an indication of the relative faunal sensitivity (conservation importance and ecological function) of the study site and incorporate the findings into a sensitivity map.

This report presents the findings obtained following an assessment of the study area. The field survey was conducted on the 30 June 2010.

1.3 Assumptions and Limitations

In order to obtain a comprehensive understanding of the dynamics of the biota on the site, including species of conservation concern, on a specific site, studies should include the following:

- Investigations through the different seasons of the year;
- Investigations over a number of years; and
- Extensive sampling of the area.

However, due to project time constraints, seasonal and long-term studies were not undertaken.

1.4 Methodology

Satellite images (Google-Earth, 2010) indicated that most of the study site is already transformed by landfill activities. Transects were walked within the remaining natural vegetation as well as the natural vegetation surrounding the study site, concentrating on moving through environmental gradients encountered within the habitat type in order to identify the presence of faunal species and communities in the form of

sightings, droppings, spoor, calls, etc. Any additional information on any other feature thought to have ecological significance within the site such as soil type, altitude, erosion, rocky cover, alien/exotic/invasive plants as well as species of conservation concern and/or their habitat was also recorded.

2. DESCRIPTION OF THE ENVIRONMENT

2.1 Locality

The Walkerville Landfill Site falls within the jurisdiction of the Sedibeng District Municipality, within the Midvaal Municipality, Gauteng. The site is situated east of the R82 road between Vereneging and Johannesburg with coordinates 27°56'42.12"E and 26°28'45.35"S (Figure 1).

2.2 Biophysical description

2.2.1 Climate

The site is situated within the Highveld which experiences frost in winter and rainfall during the summer months. The average temperature in summer ranges between 26°C and 16°C, and in winters. The average temperature is 4°C.

2.2.2 Regional Vegetation

The study site is located within the Grassland Biome (Rutherford & Westfall, 1994). High summer rainfall characteristic of the Grassland Biome combined with dry winters with night frost and marked diurnal temperature variations are unfavourable to tree growth. The Grassland Biome therefore comprises mainly of grasses and plants with perennial underground storage organs, for example bulbs and tubers and less trees.

The Grassland Biome consists of various different grassland types. The site is situated within the Soweto Highveld Grassland (Mucina & Rutherford, 2006) (Figure 2). Soweto Highveld Grassland is classified as an endangered vegetation as only a few remaining patches are statutorily conserved. The Soweto Highveld Grassland is under pressure from urban development and remaining primary portions should thus be conserved. In its natural state, Soweto Highveld Grassland is dominated by *Themeda triandra* (Red Grass) accompanied by grasses such as *Elionorus muticus* (Wire Grass), *Eragrostis racemosa* (Narrow Heart Love Grass), *Heteropogon contortus* (Spear Grass) and *Tristachya leucothrix* (Hairy Trident Grass) (Mucina & Rutherford, 2006). Undisturbed Soweto Highveld Grassland could contain wetlands, narrow stream alluvial and ridges or rocky outcrops (Mucina & Rutherford, 2006).

The grassland biome is under severe threat from urbanisation, industrialisation, mining and agriculture, especially in Gauteng. Very few reserves have been proclaimed or set aside to protect this vegetation type within the Gauteng province and only a mere 1.38 % is conserved, while approximately 65 % is already

transformed. The grassland biome contains the greatest concentration of urban areas in southern Africa and has therefore suffered severely from the destruction of areas for the cultivation of crops and from the development of extensive urban areas (van Wyk and Malan, 1997).

2.2.3 Associated Water Courses and Land Cover

A non-perennial river flows east of the site (Chief Directorate: Surveys & Mapping, 1996) According to the Land Cover data, the site contains unimproved (natural) grassland (Satellite Application Centre, 2000).

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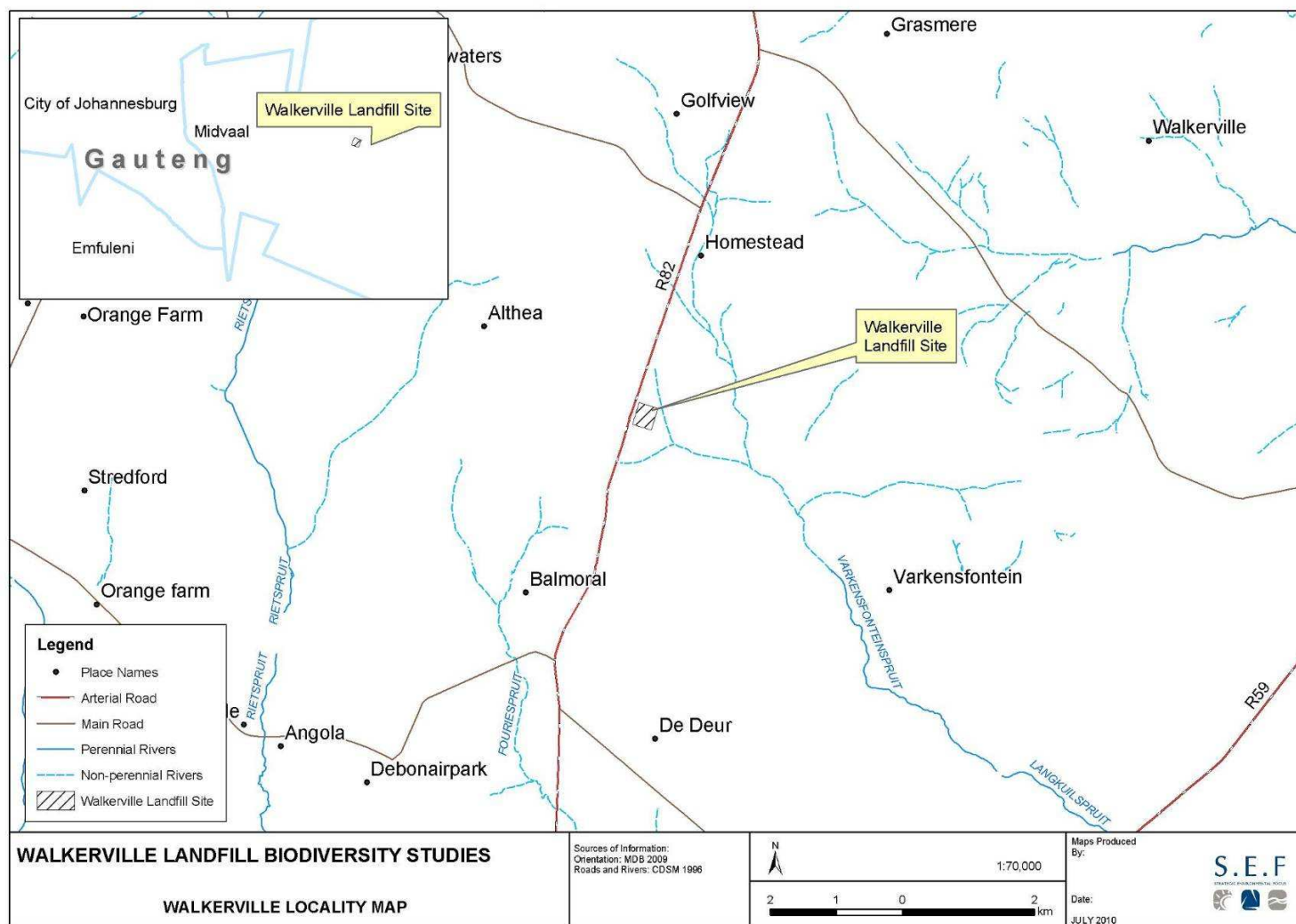


Figure 1: General locality of the study area

3. RESULTS

3.1 Land Use

The study site was determined to consist primarily of an active landfill site with associated infrastructure (i.e. weigh-bridge, vehicle access roads, administration and security building, etc.) and a mowed grass strip of approximately 30m surrounding the active landfill site, likely used for security and monitoring. A small area of natural vegetation was observed to be located in the south-western portion of the site. Monitoring boreholes were observed to be located on the up-slope western border of the study site, as well as on the down-slope eastern border of the study site.

Additionally, a stand of *Eucalyptus* trees were observed to be located between the present landfill site and the adjacent R82 road, with rocky Bushveld vegetation present to the south-west of the landfill site. To the east of the study site, a *Themeda triandra*- *Berkheya radula* grassland was determined to be present with a potential for wetland conditions due to the associated terrain unit and presence of *Berkheya radula*, a potential indicator of wetland conditions.

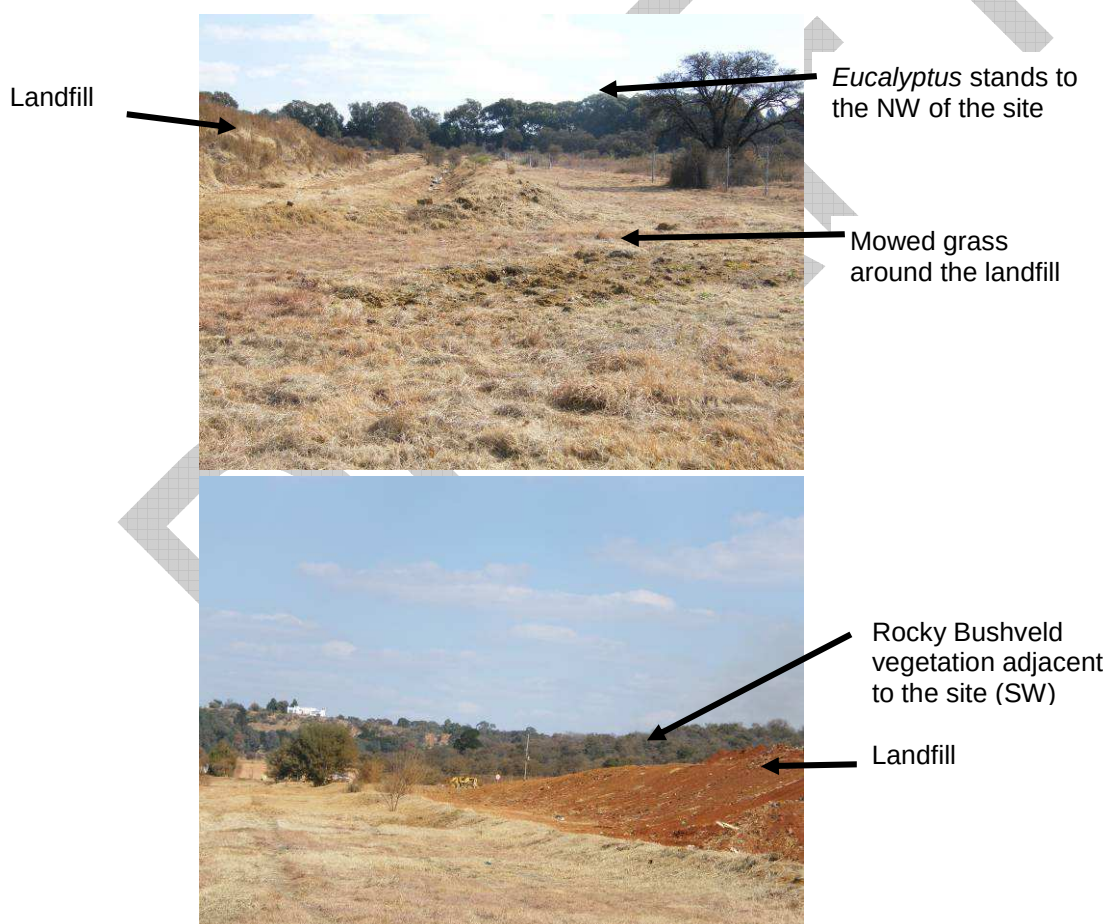


Figure 2: Landfill site

3.2 Faunal Assessment

The majority of the vegetation on the site comprised the mowed grasses around the landfill and pioneer weedy plants where soil disturbances occurred. These were classified as transformed vegetation. The mowed grasses were identified as mostly *Hyparrhenia hirta* (Thatch Grass), *Themeda triandra* (Red Grass) and a *Cynodon* species (Couch Grass) and included limited herbaceous plants. The regular mowing of these grasses as well as the area being used for vehicle access restricts the possibility of any conservation important plants persisting in these grass areas. The herbaceous layer included *Helichrysum rugulosa*, *Asparagus larcinus* and weedy plants such as *Conyza albida* (Tall Fleabane), *Opuntia* species (Prickly pear) and *Tagetes minuta* (Khaki Weed). *Acacia karroo* (Sweet Thorn) occurred along the perimeter of the site as well as the invasive *Melia azedarach* (Seringa) (SEF, 2010).

The only natural vegetation that remained on the site was some rocky bushveld vegetation in the south-western corner of the Walkerville Landfill Site. Numerous trees and shrubs grew within this portion of the study site including *Acacia karroo* (Sweet Thorn), *Searsia lancea* (Karee), *Asparagus suaveolens* and *A. larcinus*. The grasses included *Themeda triandra* (Red Grass), *Cymbopogon pospischillii* (Narrow-leaved Turpentine Grass) and *Setaria sphacelata* (Common Bristle Grass). The herbaceous plants identified included *Felicea muricata*, *Hermannia depressa*, *Aloe greatheadii* and *Acalypha punctata* (Copper Leaf). This small patch of remaining natural vegetation is subjected to edge effects from the landfill site activities and numerous weedy plants were also present (SEF, 2010).

Due to the poor state of the vegetation present within the study area, the diversity of fauna associated with the study site was considerably impoverished. Avifauna identified within the study area was determined to consist of commonly-occurring species, including *Vanellus coronatus* (Crowned Lapwing), *Vanellus armatus* (Blacksmith Lapwing), *Passer melanurus* (Cape Sparrow), *Streptopelia senegalensis* (Laughing Dove), *Larus cirrocephalus* (Grey-headed Gulls), *Lanius collaris* (Fiscal Shrike), *Acridotheres tristis* (Common Myna) and a pair of *Burhinus capensis* (Spotted Thick-knee). Additionally, rodent species identified on site included *Rhabdomys pumilio* (Four-striped Grass Mouse) and *Cryptomys hottentotus* (African Mole Rat), the latter being specifically associated with the rocky bushveld vegetation present within the south-western corner of the study site. In general, the study site presented a depauperate faunal assemblage based on the present level of impacts, and was not likely to support any species considered to be of conservation concern.

3.2.1 *Tyto capensis* (African Grass Owl)

Tyto capensis is a secretive species that is seldom seen unless flushed from its daytime roosting site or nest, and is strictly nocturnal during its hunting bouts. Foraging activity is mainly confined to taller grasslands, rather than short or grazed grasslands (Kemp & Calburn, 1987), where it also nests within a system of constructed tunnels.

They will however utilise other habitat types when hunting (such as adjacent grasslands), or may even become nomadic during sub-optimal conditions (which may be the case when typical habitat was burned). It is therefore subject to local movements in response to prey fluctuations and habitat availability (especially after veld fires).

Occurrence on the study site

No *Tyto capensis* individuals were identified within the present study area, nor were they expected to occur due to current level of disturbance and the lack of suitable roosting habitat. However, the *Themeda triandra-Berkheya radula* grassland located adjacent to the study site is likely to provide suitable foraging habitat, although the potential for breeding habitat was difficult to ascertain based on available vegetation cover and the season in which the assessment was conducted.

3.2.2 Eupodotis senegalensis (White-bellied Korhaan)

Eupodotis senegalensis prefers transitional habitat between grassland and lightly-wooded savanna (e.g. Bankenveld), and requires taller grass than most other Korhaan species. This species is usually found in pairs of small family groups of three individuals, occasionally as individuals or groups of four. They are thought to be largely resident within particular areas, but some authors suggest that some populations move to lower altitudes in the winter, with higher reporting rates in the early summer in the southern parts of Gauteng.

The distribution of *Eupodotis senegalensis* often overlaps with that of *Eupodotis caerulescens* (Blue Korhaan) which have been observed to occur within the surrounding areas.

Occurrence on the study site

No individuals of *Eupodotis senegalensis* were observed to be present within the study area, nor were any expected due to the current level of degradation and the lack of suitable habitat. Furthermore, the determination of the suitability of the adjacent grassland for utilisation by this species could not be conclusively determined due to the time at which this study was conducted. However, while the adjacent grassland may present suitable habitat for this species, the surrounding impacts and proximity to residential areas and areas of high traffic are likely to limit the possible utilisation of the grassland by this species.

3.3 Fauna of Conservation Concern

Based on the present state of the study area, no faunal species of conservation concern were observed to be present at the time of the field survey, nor were any expected to occur.

3.4 Gauteng Conservation Plan and surrounding sensitivities

The study site directly borders land that are classified by GDARD as Important to reach the conservation targets of the province (GDACE, 2005). The Importance classification was based on the occurrence of primary vegetation as well as groundwater processes (Figure 3). Although the vegetation on the Walkerville Landfill Site was significantly degraded, the vegetation to the north and east of the site contains primary vegetation (Soweto Highveld Grassland) as well as a non-perennial river and should thus not be impacted upon by the landfill activities.

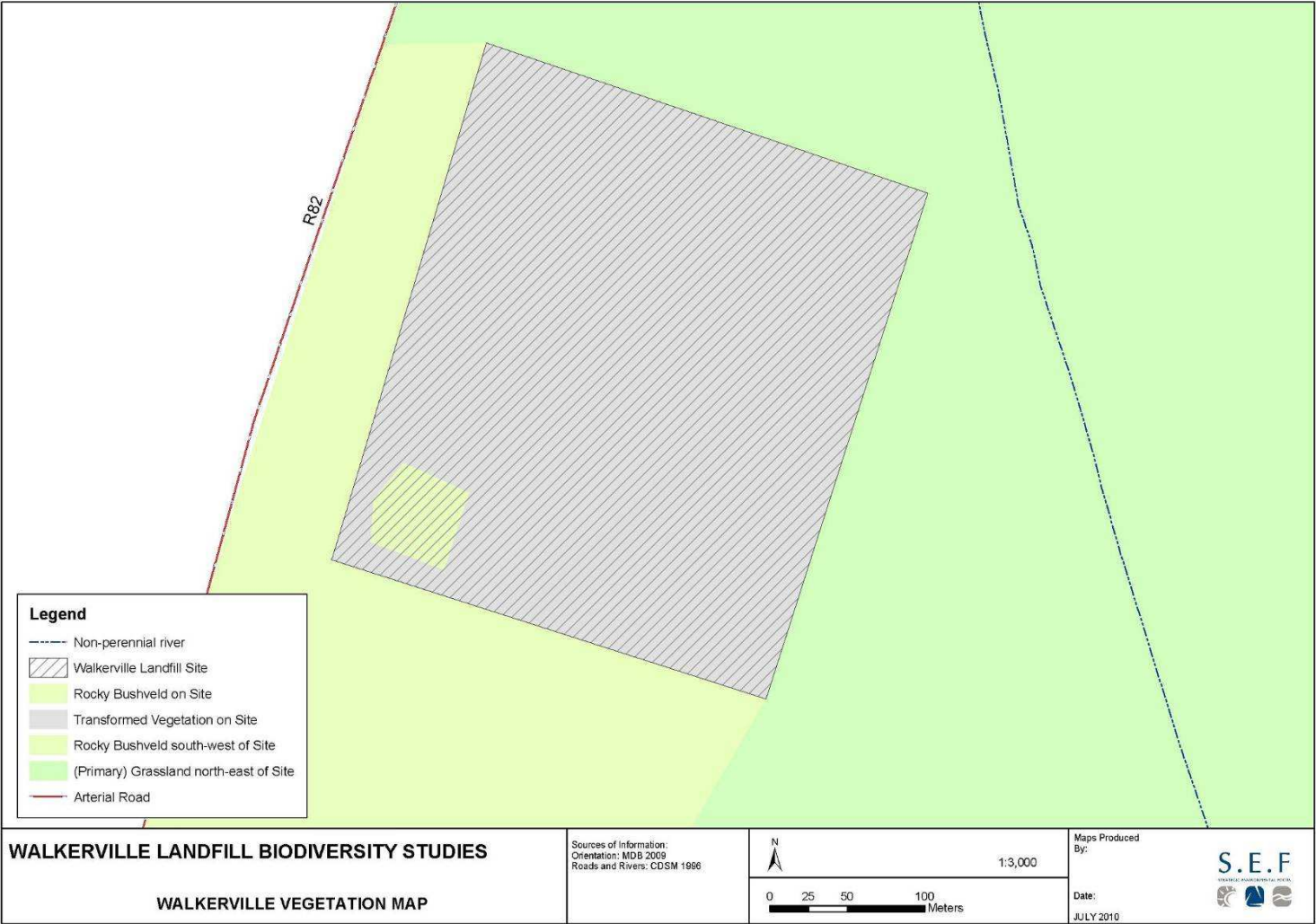


Figure 3: Vegetation communities on the site (SEF, 2010)

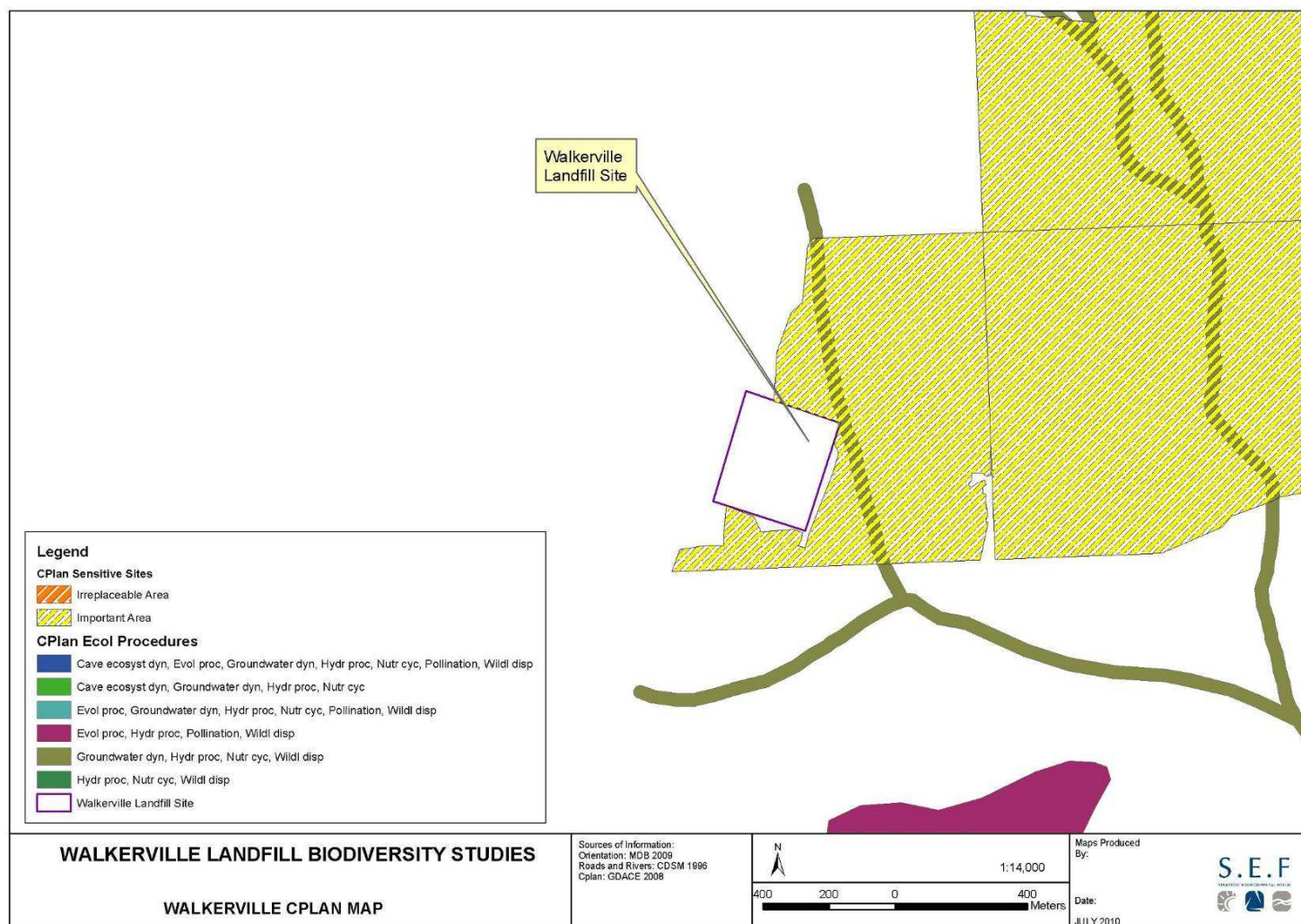


Figure 4: Gauteng Conservation Plan in relation to the study site

3.5 Ecological Importance and Sensitivity

The sensitivity classification of the study site and surrounds are represented in Figure 4 and discussed below. Based on the findings of the study and the following criteria, sensitive habitat or areas of conservation importance were classified based on:

Ecological Function: The ecological function describes the intactness of the structure and function of an ecosystem in terms of the relationship between plant and animal assemblages and the surrounding abiotic environment. It also refers to the degree of ecological connectivity between systems within a landscape. Therefore, systems with a high degree of landscape connectivity among each other are perceived to be more sensitive.

High – Sensitive ecosystems with either low inherent resistance or resilience towards disturbance factors or highly dynamic systems that are considered important for the maintenance of ecosystem integrity. Most of these systems represent late succession ecosystems with high connectivity with other important ecological systems.

Medium – These systems occur at disturbances of low-medium intensity and representative of secondary succession stages with some degree of connectivity with other ecological systems.

Low – Degraded and highly disturbed systems with little ecological function.

Conservation Importance: The conservation importance of the site gives an indication of the necessity to conserve areas based on factors such as the importance of the site on a national and/or provincial scale and on the ecological state of the area (degraded or pristine). This is determined by the presence of a high diversity, rare or endemic species and areas that are protected by legislation. The criteria are defined as follows:

High – Ecosystems with high species diversity and usually provide suitable habitat for a number of threatened species. These areas should be protected.

Medium – Ecosystems with intermediate levels of species diversity without any threatened species.

Low – Areas with little or no conservation potential and usually species poor (most species are usually exotic).

3.5.1 Identified areas of High Sensitivity

The study site did not include vegetation of high ecological sensitivity. However, the *Themeda triandra-Berkheya radula* grassland surrounding the site is indicated as Important in the Gauteng Conservation plan (GDACE, 2005) and although the study was undertaken in winter, it was evident that the grassland north and north-east of

the study was in a primary condition. In addition, this area includes a non-perennial river and potentially a wetland system.

3.5.2 Identified areas of Low Sensitivity

The study area had little to no conservation potential and was of a low ecological function from a faunal perspective. These areas are ecologically degraded and of low sensitivity.

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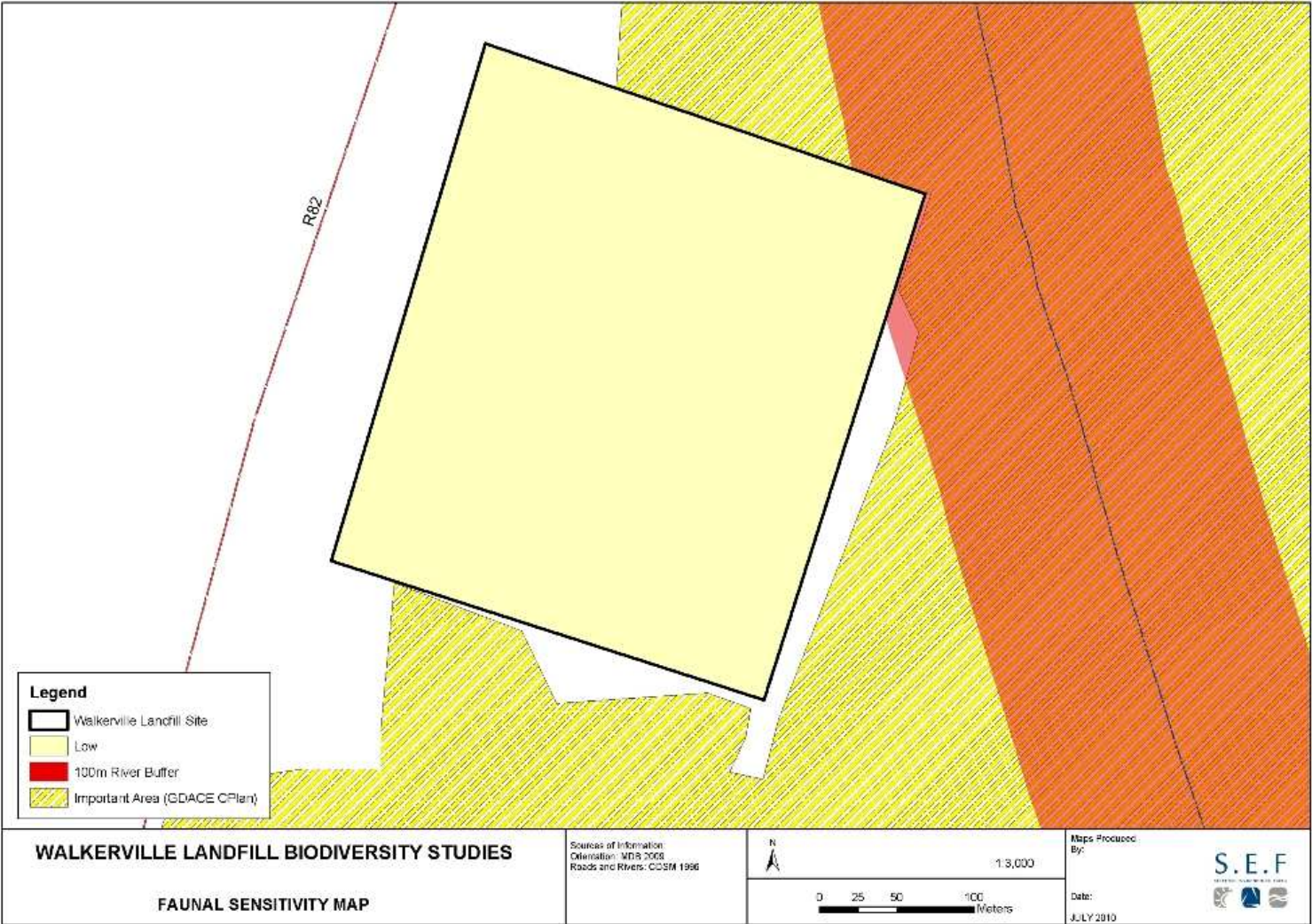


Figure 5: Faunal sensitivity map

4. CONCLUSION AND RECOMMENDATIONS

The Walkerville Landfill study area was observed to support a significant lack of diverse habitat types and as a result an associated depopulated faunal assemblage, with species encountered being commonly observed species and species tolerant of human-induced impacts. Furthermore, it was highly unlikely that any faunal species of conservation concern were to be associated with the study area.

However, it was noted that the surrounding landscape supported natural habitat, particularly in the form of a *Themeda triandra-Berkheya radula* grassland which is suspected to have wetland elements present. Additionally, the wetland elements were likely to have their origin in close proximity to the study site based on terrain unit indicators.

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It is therefore recommended that all activities associated with the Walkerville Landfill site be contained within the present footprint, and should expansion of the site be required in the future, that alternatives to expansion into the adjacent *Themeda triandra-Berkheya radula* be sort.

5. REFERENCES

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