

Scoping phase faunal assessment with regards to mammal (excluding bats), reptile, amphibian and invertebrate sensitivity

- **For the proposed Walker Bay Wind Energy Facility in the Western Cape**

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Terms of Reference

The scoping phase assessment aims to assess the sensitivity of the mammalian (excluding bats), reptile, amphibian and invertebrate faunal communities in the study area, and undertake a desktop review of the site and surrounding area to identify animal species potentially present. A desktop based Sensitivity Map indicating potential areas of faunal sensitivity will be included (to be reviewed in the Environmental impact assessment (EIA) phase). Provide descriptions of the impacts and issues foreseen so far in relation to the proposed wind energy facility and its associating impacts. Draw up suggested terms of Reference for further work to assess/address the identified issues in the EIA phase.

Appointment of Specialist

Animalia Zoological & Ecological Consultation CC was appointed by Savannah Environmental (Pty) Ltd to undertake a specialist scoping phase faunal sensitivity study for the proposed Walker Bay Wind Energy Facility in Eastern Cape, considering the following animal groups: mammals (excluding bats), reptiles, amphibians and invertebrates. The study was conducted by Werner Marais (CV available on request).

Independence:

Animalia Zoological & Ecological Consultation CC has no connection with the developer. Animalia Zoological & Ecological Consultation CC is not a subsidiary, legally or financially of the developer; remuneration for services by the developer in relation to this proposal is not linked to approval by decision-making authorities responsible for permitting this proposal and the consultancy has no interest in secondary or downstream developments as a result of the authorisation of this project.

Applicable Legislation:

Legislation dealing with biodiversity applies to the assessed faunal groups and includes the following:

NATIONAL ENVIRONMENTAL MANAGEMENT: BIODIVERSITY ACT, 2004 (ACT 10 OF 2004; Especially sections 2, 56 & 97)

The act calls for the management and conservation of all biological diversity within South Africa. Therefore all species receive attention additional to those listed as Threatened or Protected.

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1. INTRODUCTION

1.1 Study Area

Renewable Energy Systems (RES) Southern Africa is proposing to establish a commercial wind energy facility and associated infrastructure on a site located approximately 18 km north east inland from Gansbaai within the Western Cape and Overstrand Municipality (**Figure 1**). The site is crossed once by the Uitkraals stream towards the south eastern part of the site. The turbines are proposed to be on the high lying ground in the far north west of the site (**Figure 2**).

The site area is 912 hectares in extent and comprises the farm Grootvlei 687. The proposed facility is proposed to accommodate a cluster of up to 11 wind turbines with a capacity of up to 3 Mega Watts (MW) each. A maximum capacity of 18MW is proposed for the facility due to local grid constraints. The basic infrastructure associated with the facility should include:

- Wind turbines (between 80 m – 120 m hub height) and concrete foundations or rock adaptors to support them.
- Possibly a small transformer outside each turbine tower. The transformer may be inside the tower depending on what make and model of turbine which is deemed most suitable for the site. An external transformer would have its own foundation and housing around it.
- Crane hard standings next to each turbine.
- Cabling between the turbines, to be laid underground where practical.
- Internal access roads to each turbine.
- Workshop area for control, maintenance, and storage.
- Temporary and permanent wind monitoring masts for calibration and site monitoring.
- Small mast for telecommunications.
- An on-site substation to facilitate the connection between the wind energy facility and the grid.
- A new overhead power line to connect to Eskom's existing Stanford Substation, which is located approximately 10 km from the site



Figure 1: Map with an indication of the site (blue outline), and an overview map with the site locality (red dot).

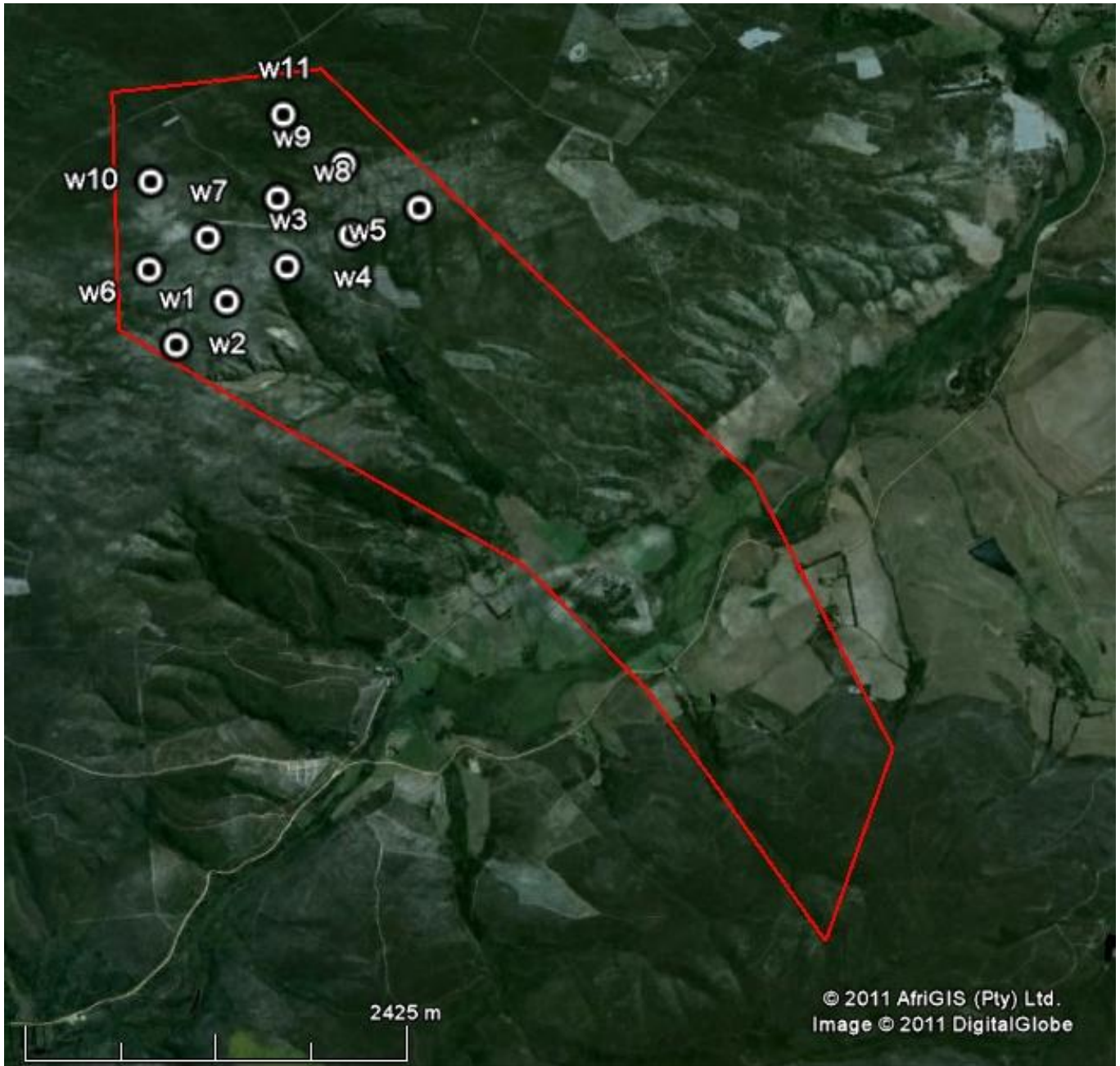


Figure 2: Satellite image of the site and proposed turbine localities, the boundary is indicated in red. The light green wetland area of the Uitkraals stream can be seen crossing the site. The All satellite images retrieved from Google Earth™.

1.2 Limitations and assumptions

The sensitivity assessment and resulting sensitivity map are based primarily on literature descriptions and distributions of the fauna that may utilise the site, and may therefore change during the EIA phase. Some elusive species of animals may be very difficult to observe or to obtain proof of their presence in an area, and therefore even their literature based distribution maps should be used with caution.

1.3 Land use and existing impacts on the study area

The existing impacts on the study site are limited to some agricultural practices, primarily cattle and some crops. Little major developmental modifications are present.

1.4 Vegetation units, geology and climate

Five different vegetation units are present in the study area, only the first two will be discussed in detail since the proposed turbines are located within them or very close (**figure 3**).

The Overberg Sandstone Fynbos dominates the area where the turbines are proposed. This vegetation unit is found only in the Western Cape Province on altitudes from 20-1167 meters. The landscape contains low mountains and undulating plains supporting moderately tall shrublands, with acidic soils derived from sandstones of the Table Mountain Group. The climate is a winter rainfall area peaking from May to August with a Mean Annual Precipitation (MAP) of 450-830 mm, mist precipitation is brought in by clouds on higher altitudes during summer. The mean daily maximum and minimum temperatures is 25°C and 6°C for January and July respectively, with only 2 or 3 days of frost incidence per year (Mucina & Rutherford, 2006).

A small strip of Western Coastal Shale Band Vegetation is adjacent a row of turbines and essentially an island within the Overberg Sandstone Fynbos on the site. This unit is restricted to the Western Cape only and occurs up to an altitude of 1800m. It is a linear feature of 80-200m wide that is smooth and flat in profile compared to surrounding terrain. The band supports diverse renosterveld and fynbos shrublands. Its climate would be very similar to that of the surrounding vegetation unit (Mucina & Rutherford, 2006).

The south eastern facing slope descending from the turbine area towards the Uitkraals stream consists predominantly of Agulhas Limestone Fynbos. Grey, regic sands on limestone. This unit has low hills and plains and is only found up to an altitude of 400m. Vegetation structures are fynbos shrubland of medium tallness, it's MAP is 410-660mm (Mucina & Rutherford, 2006).

The Uitkraals stream and wetland is classified as the Cape Lowland Freshwater Wetlands and is found on the edges of water bodies and in vleis. Flats and landscape depressions with tall reeds, restios and sedges with temporary and permanent water is common. Substrates are fine, sandy and clayey; in places due to salt leeching from the Malmesbury Group Shales the water can acquire a brackish character (Mucina & Rutherford, 2006).

The Elim Ferricrete Fynbos is located on the north western facing slope ascending up from the Uitkraals. This unit is only found up to 300m and consists of undulating plains and hills covered with dwarf shrublands. Also a winter rainfall regime with a MAP of 350-770mm.

It should be noted that climate descriptions are given for the larger extent of the specific vegetation unit, but are still indicative of the environmental factors that dictates that dictates the vegetation on the site.



- | | | | | | |
|---|----------------------------|---|--------------------------|---|---------------------------|
| — | Site boundary | ● | Turbine localities | ■ | Overberg Sandstone Fynbos |
| ■ | Western Coastal Shale Band | □ | Agulhas Limestone Fynbos | ■ | Cape Lowland Freshwater |
| ■ | Elim Ferricrete Fynbos | | | | |

Figure 3: Vegetation units present in the study area (Mucina & Rutherford, 2006).

2. METHODOLOGY APPROACH OF THE STUDY

The primary focus was on Red Listed faunal species that may be present on the study site, and their probability of occurrence based on distribution maps were also estimated for the site and the surrounding larger area.

These comparisons were done mainly by studying the geographic literature of the site and satellite imagery.

3. RESULTS

3.1 Faunal species of concern and their probability of occurrence

Table 1: Table of species of concern and important species that may be found in and utilising the study area, as well as the possible area specific habitats to be utilized. LC = Least Concern; NT = Near Threatened; V = Vulnerable (Stuart & Stuart, 2001; Skinner & Chimimba, 2005; www.iucnredlist.org; www.speciesstatus.sanbi.org).

Species	Common name	Faunal group	Probability of occurrence	Conservation status	Possible habitat to be utilised on study area
<i>Amblysomus corriae</i>	Fynbos golden mole (mammal)	Mammal	Moderate	NT	Restricted to fynbos, renosterveld and forests in the Cape. Fynbos predominant on site.
<i>Mystromys albicaudatus</i>	White-tailed mouse	Mammal	Moderate	EN	Associated with various habitats, including fynbos.

3.2 Mammals: The Fynbos golden mole and White-tailed mouse that may occur on the study site.

The Cape Fynbos is not considered a mammal rich biome according to Stuart and Stuart (2001), this is relative to the other mammal rich biomes in South Africa such as the Savanna.

Amblysomus corriae (Fynbos golden mole) is a Near Threatened species associated with sandy soils in lowland and montane Fynbos, renosterveld (Skinner & Chimimba, 2005) and forests. It thrives in gardens, cultivated lands, golf courses and livestock paddocks. Present also in exotic plantations, but apparently at lower densities. They feed on invertebrates particularly earthworms and insects, very little is known about their habits (Skinner & Chimimba, 2005). The major threat is habitat alteration/degradation/loss in areas along the eastern coast of Western Cape owing to tourism developments and increasingly intensive agricultural practices, which could lead to fragmentation and isolation of some populations (Bronner, 2008).

The most characteristic feature of *Mystromys albicaudatus* (White-tailed mouse) is a short white tail, whereas the Woosmam's Desert rat has a longer tail and the Pouched mouse's tail is not white. The White-tailed rat has a Grey-brown body and in total length measures 22cm including a 6cm tail (Stuart & Stuart, 2001). It is a thickset mouse with a large head and a soft woolly pelage of short hair, the sides of the face, around the nose and the fore and hind limbs are paler than the upper parts (Skinner & Chimimba, 2005). They occur in the southern and eastern parts of South Africa, Lesotho and possibly parts of Swaziland. They inhabit grasslands, heath and karoo vegetation (Stuart & Stuart, 2001), but within the Savannah they were recorded in areas with dense grass cover, sandy or loam soils and gentle rocky slopes (Skinner & Chimimba; Rautenbach, 1982). They are terrestrial and nocturnal, living in burrows or cracks in the soil (De Graaff, 1981) and seems to be cold adapted and inactive during the hotter daylight hours (Downs & Perrin, 1995). Their diet includes insects, seeds and greens, and they have 2-5 young per litter with a 37 days gestation period (Stuart & Stuart, 2001). This species currently has an Endangered conservation status (Coetzee & Monadjem, 2008).

3.3 Reptiles

No Red Listed species of reptiles are predicted to occur on the site and within its associated habitat (Alexander & Marais, 2007; Marais, 2004; www.iucnredlist.org; www.speciesstatus.sanbi.org). But nevertheless, the group of reptiles that are most likely to be impacted on by the proposed facility are tortoises, since snakes and lizards can move away quickly out of harm's way.

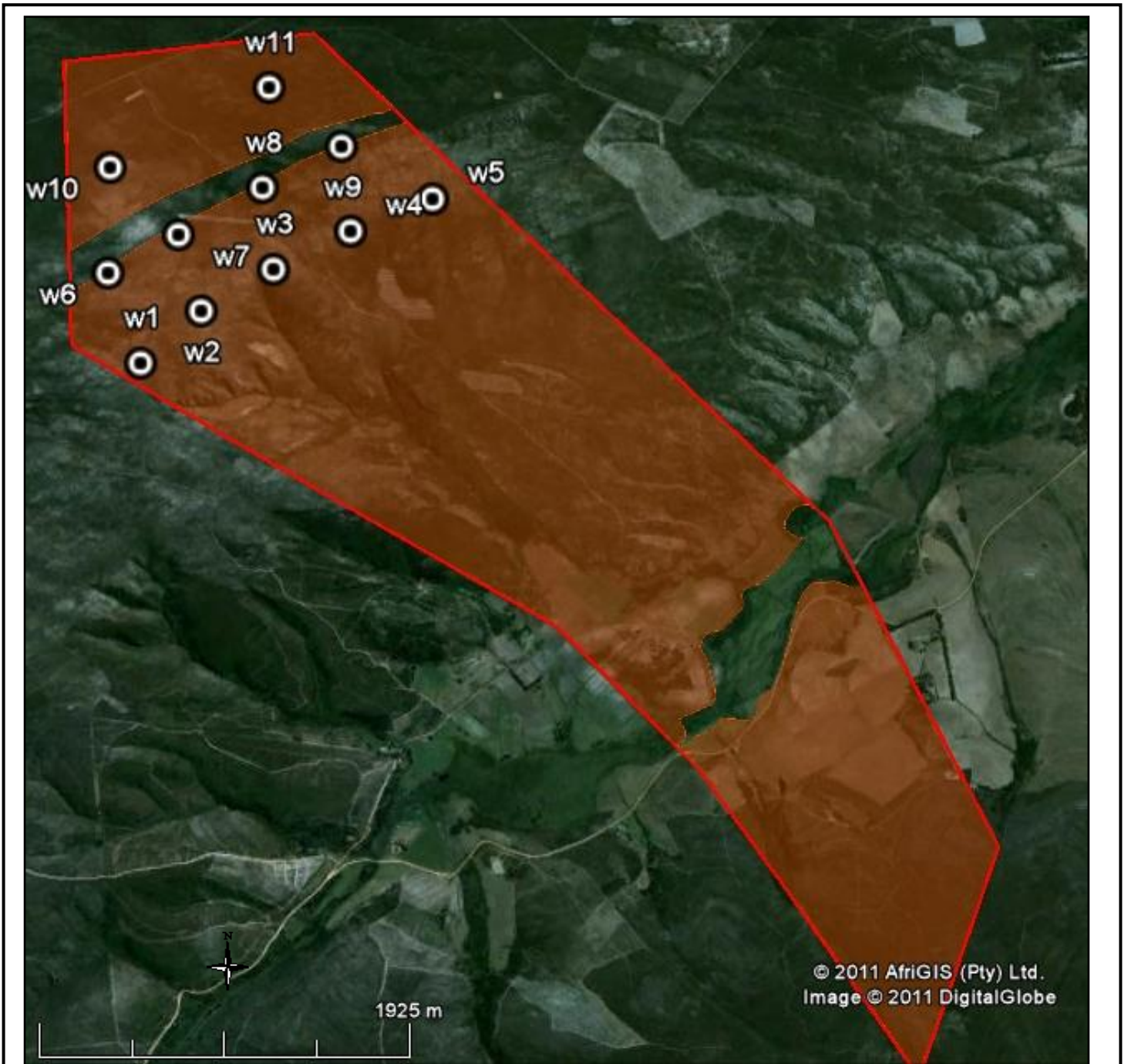
3.4 Amphibians

Since no turbines are proposed to be located in moist or wet areas, the probable impact to frogs are low. Additionally no Red Listed amphibians are predicted to be present on the site and especially not within the proposed turbine area (Carruthers, 2001).

3.5 Invertebrates

No Red Listed species of invertebrates are predicted to occur on the site and within its associated habitat (Picker, *et al.*, 2004; Woodhall, 2005).

3.6 Desktop based sensitivity map for the predicted occurrences of Fynbos golden mole and White-tailed mouse on the site



■ Fynbos golden mole and White-tailed mouse Moderate Sensitivity



Figure 4: Desktop based sensitivity map of the study site with regards to two abovementioned species.

In figure 4 the areas where *Amblysomus corriae* and *Mystromys albicaudatus* are most likely to be found were assigned a moderate sensitivity and includes the valleys. The areas have been selected based on their sandy soil and correct vegetation structure.

The two species have been combined in their sensitivity since they both are associated with Fynbos and sandy soils, their preferences in micro habitats should be investigated in the EIA phase.

It is important to note that this desktop based sensitivity map is not intended to govern the ideal locations of wind turbines yet, but rather to highlight areas that will require special attention during the EIA phase assessment and to assist in decision making.

4. FORESEEN IMPACTS OF THE PROPOSED OPERATION DEVELOPMENT AND PROPOSED TERMS OF REFERENCE FOR ASSESSING/ADDRESSING THE ISSUES

4.1 Fynbos golden mole and White-tailed mouse mortalities due to earthworks

The Fynbos golden mole spend much of its life underground but do come above ground to forage at night, nevertheless both species make burrows/tunnels and will be underground during the day. Since the earthworks and diggings for the proposed facility will be carried out during the day, this poses a threat to these species. This impact is a negative and local impact that will be applicable only during the construction phase, and have a moderate possibility of occurrence if these species do occur on the site.

Suggested Terms of Reference for assessing/addressing the issue

The exact extend of these species on the site should be predicted during the EIA phase, and if their occurrences are in conflict with any areas where earthworks will take place the mitigations that will accompany the EIA phase study should be followed.

4.2 Tortoise mortalities due to heavy vehicles/machinery

It is possible that tortoises on site may be killed by heavy vehicles and moving machinery during the construction phase, especially when such vehicles are driving through untracked terrain. This impact is a negative and local impact that will be applicable only during the construction phase, and have a moderate possibility of occurrence.

Suggested Terms of Reference for assessing/addressing the issue

Driving should be kept to the already existing roads as much as possible, and drivers be made alert of the possibility of tortoise mortalities.

5. CONCLUSION

The site displays a low level of Red List species probability of occurrence with regards to the fauna assessed in this report. Only two species of Red List mammals are probable to occur on the site, namely the Fynbos golden mole (*Amblysomus corriae*) and White-tailed mouse (*Mystromys albicaudatus*). Both of these species are associated with Fynbos and sandy soils and therefore share a probability of occurrence range on the site. Both species are residing underground during the day and are therefore at risk during earthworks and diggings for the proposed facility. Their exact extent and probability of occurrence within the different micro habitats on the site should be established during the EIA phase.

The sensitivity map indicated in **Figures 4** should be treated as guidance for directing focus and special attention during future EIA assessments and preliminary decision making, it is not intended to govern final decision making. The proposed Terms of Reference for further detailed studies described in Section 4 should be carried out in the EIA assessment phase.

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A handwritten signature in black ink, appearing to read 'W. Marais', with a large number '7' written below it.

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