Appendix E

BIODIVERSITY ASSESSMENT

TERRESTRIAL BIODIVERSITY, PLANT SPECIESD AND ANIMAL SPECIES SITE SENSITIVITY VERIFICATION REPORT - MERAFONG LOOP-IN LOOP-OUT POWERLINE AND SUBSTATION PROJECT

1. INTRODUCTION

Hawkhead Consulting was appointed by WSP Group Africa (Pty) Ltd. to conduct a Terrestrial Biodiversity (incl. Plant Species and Animal Species) Assessment for the proposed Merafong Loop-In Loop-Out (LILO) Powerline and Substation Project. The proposed Project site is situated east of Carletonville and west of Westonaria within the Merafong City Local Municipality in the West Rand District Municipality of Gauteng, South Africa.

The proposed Project supports the proposed Merafong PV Solar Project, which is part of a separate registration process. The proposed Loop-In Loop-Out (LILO) Powerline and Substation Project footprint is located within the south-west corner of the larger planned development footprint for the proposed Merafong PV Solar Project. As such, reference is made to two spatial scales in this Site Sensitivity Verification Report (SSVR):

- The 'site' refers to the broader area of land associated with the proposed Merafong PV Solar Project. This entire area was the focus of the sensitivity verification site visits; and
- The 'proposed LILO and Substation footprint' refers to the small area in the south-west corner of the site where the proposed LILO and Substation will be located.

This document serves as the Terrestrial Biodiversity SSVR for the proposed Project, and includes information relating to the Terrestrial Biodiversity, Plant Species and Animal Species themes (Note: a separate bird specialist study is being conducted for the proposed Project. Bird species were therefore not assessed as part of the sensitivity verification process detailed in this SSVR).

During the site sensitivity verification, the Terrestrial Biodiversity, Animal Species and Plant Species themes were assessed to be low sensitivity, and as such this updated SSVR has been compiled in line with the following standard:

- *Standard for the Development and Expansion of Electricity Transmission and Distribution Power Line Infrastructure*.

Refer to Appendix A for the relevant Standard Checklist associated with this SSVR.

2. PROJECT DESCRIPTION

The Merafong LILO Power Lines & Switching Station are comprised of the following project components:

- 132kV LILO power lines (approximately 700m in length);
- An Eskom Switching Station (approximately 1.57ha).

3. SITE SENSITIVITY VERIFICATION FIELD VISITS & LITERATURE REVIEW

To account for possible seasonal variations in flora and fauna diversity, two sensitivity verification field visits of the proposed Merafong PV Solar Project development site were conducted by Hawkhead Consulting; a dry season field visit was conducted on the on 9th July 2024, and a wet season field visit was conducted on the 19th November 2024.

These were undertaken to collect seasonally representative flora and fauna field data, understand the ecological character of the site and surrounding landscape, and verify the site's ecological sensitivity with respects to the proposed Project and the Terrestrial Biodiversity, Animal Species and Plant Species themes.

Both field visits were conducted by Andrew Zinn. Andrew has over 15 years of experience conducting flora and fauna surveys and ecological assessments. He holds an M.Sc. in Resource Conservation Biology and is registered as a Professional Natural Scientist (*Pr.Sci.Nat.*) – Ecological Science, with the South African Council of Natural Scientific Professions (SACNASP). Refer to Appendix A for additional details of the specialist.

To support field observations, additional biodiversity literature and datasets were reviewed at a desktop level. These data further developed the understanding of the site's ecological character, history of disturbance, and landscape context. Key literature and datasets that were reviewed are listed below:

- To assess the site's regional biodiversity and conservation context, several literature and online sources were reviewed, including, with particular reference to the proposed Project site:
  - The South African National Biodiversity Institutes (SANBI) Final Vegetation Map of South Africa, Lesotho and Swaziland (SANBI, 2018) was consulted to identify the regional vegetation types relevant to the site, and Mucina and Rutherford (2011) was reviewed to obtain full descriptions of the relevant vegetation types;
  - The National List of Threatened Ecosystems (NEMBA Threatened Ecosystems, 2021) was consulted to determine the conservation status of relevant vegetation types;
  - Gauteng Conservation Plan (C-Plan) (3.3) (2011) was assessed to identify Critical Biodiversity Areas (CBA) and Ecological Support Areas (ESA) on-site and across the adjacent landscape;
  - The South African Protected Areas Database website (SAPAD, 2021) was reviewed to identify any protected areas (legally gazetted) and conservation areas in the landscape in which the study area is located;
  - The National Protected Area Expansion Strategy (NPAES) (2018) was assessed to identify on-site Priority Focus Areas for protected area expansion;
  - The Key Biodiversity Areas (KBA) database was also reviewed to determine the presence of any KBAs in, or in close proximity to, the proposed Project site;
- Lists of potential fauna species occurring on-site were compiled based on the historic distribution ranges presented in Stuart and Stuart (2007) for mammals, Bates *et al*., (2014) for reptiles, and Du Preez and Carruthers (2009) for amphibians;
- Additional fauna data, including lists of invertebrate species potentially occurring on-site, were sourced from the Virtual Museum database for the 2627AD and 2627BC QDS;
- Floristic data for the region encompassing the study area was obtained from the South African National Biodiversity Institute's (SANBI) online Botanical Database of Southern Africa (BODATSA). This was supplemented by an inventory of flora species of conservation concern (SCC) obtained from the GDARDE[1] (Coursey of S. Veldsman); and
- The lists of flora and fauna were cross-referenced against relevant Red Lists and conservation legislation to identify threatened (Vulnerable, Endangered and Critically Endangered), Near Threatened, and Protected species that may be present on-site.

4. SUMMARY OF DFFE SCREENING TOOL AND OUTCOME OF SITE SENSITIVITY VERIFICATION

The table below provides information regarding the outcome of the Department of Forestry, Fisheries and the Environment (DFFE) Screening Tool sensitivity rating for the Terrestrial Biodiversity, Animal Species and Plant Species themes, and the outcome of the sensitivity verification process.

[1] Gauteng Department of Agriculture, Rural Development and Environment

Table 1 Terrestrial Biodiversity, Animal Species and Plant Species theme sensitivities for the proposed Merafong LILO & Substation Project

ENVIRONMENTAL THEME	DFFE SCREENING TOOL SENSITVITY	APPLICABLE PROTOCOL	SPECIALIST SENSITVITY VERIFICATION
Terrestrial Biodiversity	Very High for the broader site. However, the proposed LILO and Substation is mapped as Low Sensitivity	Protocol for the specialist assessment and minimum report content requirements for environmental impacts on Terrestrial Biodiversity	The site, including the proposed LILO and Substation footprint, have been modified by historic and/or current farming activities (cultivation). Accordingly, on-site CBA and ESA land have been incorrectly designated. Based on the verification field visit, the Terrestrial Biodiversity sensitivity mapping for the proposed LILO and Substation footprint is confirmed as Low.
Plant Species	Medium for the broader site. However, the proposed LILO and Substation footprint is mapped as Low Sensitivity	Protocol for the specialist assessment and minimum report content requirements for environmental impacts on Plant Species	Outside of currently cultivated fields, on-site habitat, including that characterising the proposed LILO and Substation footprint, is characterised by old land secondary grassland, while *Eucalyptus* dominated tree stands are located to the west and east of the proposed LILO and Substation footprint. No flora SCC were recorded on-site and none are expected to be present in the proposed LILO and Substation footprint. Accordingly, the Plant Species sensitivity rating of Low is confirmed.

ENVIRONMENTAL THEME	DFFE SCREENING TOOL SENSITVITY	APPLICABLE PROTOCOL	SPECIALIST SENSITVITY VERIFICATION
Animal Species	Medium for the broader site and the proposed LILO and Substation footprint.	Protocol for the specialist assessment and minimum report content requirements for environmental impacts on Animal Species	Considering the modified nature of the site, including the proposed LILO and Substation footprint, the site does not constitute functionally important fauna habitat. No fauna SCC were observed, and it is considered unlikely that SCC are present in the proposed LILO and Substation footprint. Accordingly, the Animal Species sensitivity is rated Low.

4.1. DFFE Screening Tool output

The Terrestrial Biodiversity Theme for the site is rated 'Very High' sensitivity (Figure 1) due to the following features:

- Critical Biodiversity Area 1;
- Critical Biodiversity Area 2;
- Ecological Support Areas 1;
- Ecological Support Areas 2; and
- National Protected Area Expansion Strategy.

It is noted from the below image however, that the proposed LILO and Substation footprint, which is located in the south-west corner of the site (blue polygon), is mapped as Low sensitivity.

Figure 1: Map of Terrestrial Biodiversity Sensitivity

The Plant Species Theme is rated 'Medium' sensitivity (Figure 2) due to the potential presence of the following features:

- *Khadia beswickii*;
- Sensitive species 1147; and
- Sensitive species 1248.

It is noted from the below image however, that the proposed LILO and Substation footprint, which is located in the south-west corner of the site (blue polygon), is mapped as Low sensitivity.

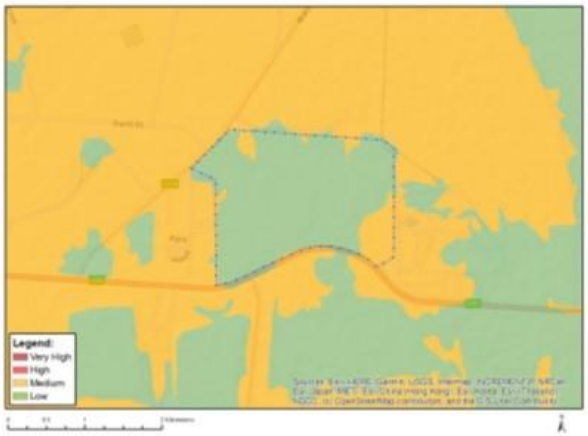

Figure 2: Map of Plant Species Sensitivity

The Animal Species Theme is rated 'Medium Sensitivity' (Figure 3) due to the following listed features:

- Two mammal species:
  - Spotted-necked Otter (*Hydrictis maculicollis*)
  - Maquassie Musk Shrew (*Crocidura maquassiensis*);
- Two bird species[2]:
  - White-bellied Bustard (*Eupodotis senegalensis*);
  - African Marsh Harrier (*Circus ranivorus*);
  - African Grass Owl (*Tyto capensis*);
- Three invertebrate species:
  - Highveld Nimble Blue (Lepidochrysops praeterita); and
  - Uvarov's Clonia (*Clonia uvarovi*).

It is noted from the below image that the proposed LILO and Substation footprint, which is located in the south-west corner of the site (blue polygon), is mapped as Medium sensitivity.

Figure 3: Map of Animal Species Sensitivity

[2] Bird species were assessed as part of a separate sensitivity verification process.

5. FINDINGS OF THE SITE SENSITIVITY VERIFICATION FIELD VISIT

5.1. On-Site Habitat Characteristics

The entire site, including the proposed LILO and Substation footprint, is modified, and has been subject to anthropogenic disturbance, mostly in the form of historic and/or current dryland cultivation.

The northern portion of the site remains under active cultivation (maize production), with no indigenous vegetation present. The remainder of the site was cultivated in the past, including the proposed LILO and Substation footprint, and is now characterised by a secondary grassland community that is typical of old abandoned agricultural fields (i.e. old lands). These grasslands have hard, crusted and capped soils, low flora species richness, and are dominated by the tall thatching grass *Hyparrhenia hirta*. This species typically proliferates in abandoned cultivated fields that are depleted of nutrients. *Hyparrhenia hirta* grasslands tend to be very stable, with little shifts in structure and composition over the long-term.

Other common or abundant grasses recorded include a range of species, such as *Andropogon schirensis*, *Aristida congesta* subsp*. congesta, Cynodon dactylon, Eragrostis chloromelas, Eragrostis curvula, Eragrostis gummiflua, Eragrostis trichophora, Heteropogon contortus*, *Pogonarthria squarrosa* and *Themeda triandra.* Common forbs and small woody shrubs recorded on-site include *inter alia, Anthospermum hispidulum, Elephantorrhiza elephantina, Eriosema cordatum, Falopia convolvulus, Felicia muricata, Helichrysum nudifolium* var. *nudifolium, Helichrysum rugulosum, Hermannia lancifolia, Hermannia transvaalensis, Indigofera comosa, Pseudopegolettia tenella* and *Seriphium plumosum.* In terms of larger woody vegetation in areas of secondary grassland, aggregations of alien *Prunus persica* trees were noted, as well as scattered indigenous *Vachellia karroo* trees/shrubs.

Linear, north-south aligned stands of alien *Eucalyptus* trees are prominent features to the east and west of the proposed LILO and Substation footprint. The stand to the east is associated with a storm/process water drainage channel (sections of which, are concrete) that originates from the Driefontein Shaft and residential village, located approximately 2.7 km to the south of the proposed Project site. Several other woody species were also noted within the *Eucalyptus* stand including the indigenous *Vachellia karoo,* as well as other alien invasive taxa, such as *Acacia mearnsii, Acacia melanoxylon, Melia azedarach* and *Sesbania puniceus.*

Figure 4 to Figure 9 show representative photographs of on-site habitat taken during both the wet- and dry season site visits, with Figure 10 providing a habitat map with an overlay of proposed infrastructure. Refer to Appendix C for photographs and habitat descriptors documented at several reference points across the site during the dry season verification site visit. Also included, is a map showing the location of the reference points.

Figure 4: Cultivated field in the north of site. This transformed land is incorrectly designated a Critical Biodiversity Area (CBA) under the Gauteng Conservation Plan.

Figure 5: Hyparrhenia hirta dominated secondary grassland along the eastern boundary of the site.

Figure 6: Secondary grassland covers most of the site.

Figure 7: Small stand of alien Prunus persica trees in the centre of the site.

Figure 8: Eucalyptus stand, with alien Acacia mearnsii and Acacia melanoxylon trees also present.

Figure 9: Drainage channel running through the centre of the Eucalyptus stand.

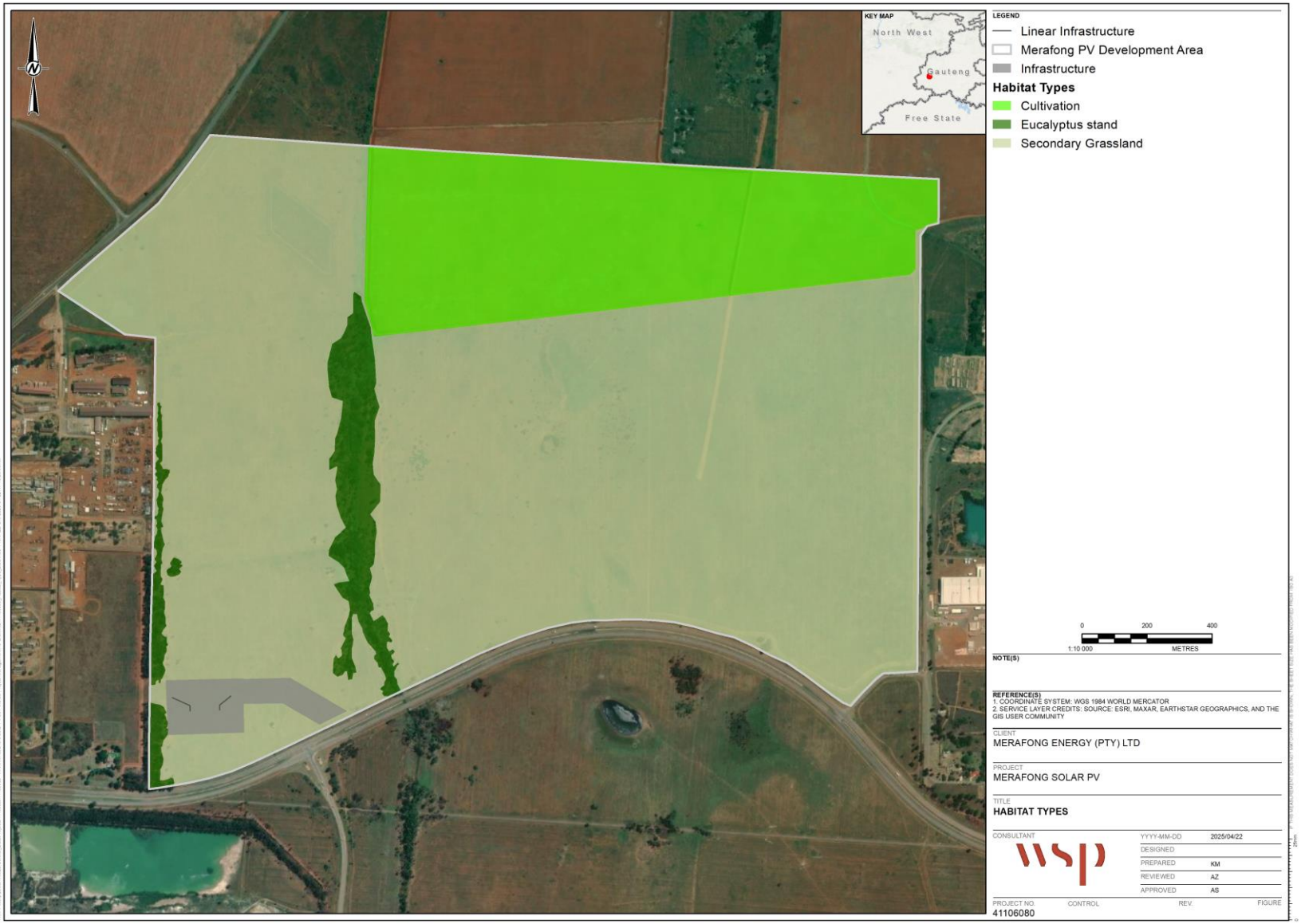

Figure 10: Habitats and the proposed infrastructure layout in the south-west corner of the site.

6. DISCUSSION ON THE TERRESTRIAL BIODIVERSITY, PLANT SPECIES AND ANIMAL SPECIES THEMES

6.1. Terrestrial Biodiversity Theme

The DFFE Screening Tool's maps the proposed LILO and Substation footprint as Low sensitivity. The findings of the verification site visit indicate that this area has been disturbed by past cultivation and comprises modified habitat. The 'Low' sensitivity mapping is therefore confirmed.

6.2. Plant Species Theme

No Red List flora species were recorded on-site during the verification field visits, and considering the modified and secondary character of on-site vegetation, none are likely to be present within the proposed LILO and Substation footprint, including those taxa highlighted by DFFE Screening Tool:

- *Khadia beswickii* favours open shallow soils, over rocks in grassland (Victor and Pfab, 2005). No suitable habitat is present on-site, and therefore it is unlikely' that *Khadia beswickii* is present;
- Sensitive species 1147 occurs in open undisturbed grasslands on dolomite or in black, sandy soils. No suitable habitat is present on-site, and therefore it is unlikely' that Sensitive species 1147 is present; and
- Sensitive species 1248 is found in open woodland and steep rocky hills in shady situations. No suitable habitat is present on-site, and therefore it is unlikely' that Sensitive species 1248 is present.

Habitat suitability assessments, based on field data collected on-site and a review of documented habitat preferences, also indicated that none of the seven flora SCC that are known from the region are likely to be present on-site – refer to Table 2. This is primarily predicated on the disturbed and secondary nature of on-site vegetation. The 'Medium' DFFE sensitivity rating for the Plant Species theme is therefore considered incorrect. The sensitivity rating for the Plant Species theme is considered to be of 'Low' sensitivity.

Table 2 Flora species of conservation concern potentially occurring on-site.

Family	Scientific Name	Regional Red List Status	Gauteng Status	Habitat Preferences	Probability of Occurrence
Asphodelaceae	*Kniphofia typhoides*	Near Threatened	Protected	Kniphofia typhoides occurs in the black clay soils of low-lying wetlands and seasonally wet habitats in Themeda triandra grasslands (von Staden and Victor, 2005)	Unlikely – no suitable habitat present.
Aizoaceae	*Khadia beswickii*	Vulnerable	-	Species has an EOO of only 475 km^2 and an AOO of 3-7 km^2. It is known from only ten locations, mostly across Gauteng Province, but also scattered sites in Mpumalanga. Favours open shallow soils, over rocks in grassland (Victor and Pfab, 2005).	Unlikely – no suitable habitat present.
Aizoaceae	*Lithops lesliei*	Vulnerable	Protected	This species has a widespread distribution, but is experiencing local losses due to urbanisation. This species favours rocky locations in arid grassland habitat (Mtshali, *et al*., 2023)	Unlikely – no suitable habitat present.
Crassulaceae	*Adromischus umbraticola* subsp. *umbraticola*	Near Threatened	-	Species has an EOO of 14 600 km^2 and is known from 14 locations. Grows in rock crevices on south-facing slope ridges. (Helme and Raimondo, 2006).	Unlikely – no suitable habitat present.

Family	Scientific Name	Regional Red List Status	Gauteng Status	Habitat Preferences	Probability of Occurrence
Hyacinthaceae	*Drimia sanguinea*	Near Threatened	-	This species favours open veld and scrubby woodland across northern South Africa (Willaims, *et al*., 2008).	Unlikely – no suitable habitat present.
-	Sensitive species 1147	Endangered		Occurs in six scattered subpopulations, with a total population size estimated at 230 mature individuals. Occurs in open grassland on dolomite or in black sandy soil.	Unlikely – no suitable habitat present.
-	Sensitive species 1248	Vulnerable	-	Found in open woodland and steep rocky hills in shady situations at low- and medium altitudes. No EOO for this species is listed, but its AOO is estimated at 30.70 km^2 (SANBI, 2020).	Unlikely – no suitable habitat present.

6.3. Animal Species Theme

No Red List fauna species were recorded on-site during the verification field visit. Considering the modified and secondary character of vegetation across the site and within the proposed LILO and Substation footprint. Habitat suitability assessments for the species highlighted by the DFFE Screening Tool's indicate that these taxa are 'unlikely' to be present:

- Spotted-necked Otter is restricted to areas with permanent, large open-water bodies (Ponsonby, *et al*., 2016). No suitable open-water bodies are present on-site for this species. It is therefore 'unlikely' that Spotted-necked Otter is present;
- Maquassie Musk Shrew favours moist grassland habitats in savanna and grassland ecosystems (Taylor *et al*., 2016). Limited moist grassland habitat is present on-site, and therefore it is 'unlikely' that the Maquassie Musk Shrew is present;
- *Lepidochrysops praeterita* inhabits rocky grassed south-facing slopes, with the host plant *Ocimum obovatum* present (Dobson, 2018). *Ocimum obovatum* was recorded on-site during the field visit, however, considering the overall disturbed and secondary nature of on-site vegetation, it is considered unlikely that the *Lepidochrysops praeterita* is present in the study area; and
- *Clonia uvarovi* favours tall woodland and savanna (Bazelet and Naskrecki, 2014). Habitat of this form is essentially limited to the alien *Eucalyptus* tree stand, and the small open stands of alien *Prunus persica* trees. Suitable tall indigenous woodland is therefore not present, and it is 'unlikely' that *Clonia uvarovi* occurs on-site.

Reviewed literature also indicates that up to 15 Red List mammal species and two herpetofauna taxa listed as Protected on the NEMBA ToPs List (2007) are known to occur in the broader region in which the site is located. These are listed in Table 3, along with their conservation status, and a 'probability of occurrence' based on habitat suitability assessments.

The 'Medium' DFFE sensitivity rating for the Animal Species theme is therefore considered incorrect. The sensitivity rating for the Animal Species theme for the site as well as the proposed LILO and Substation footprint, is considered to be of 'Low' sensitivity.

Table 3 Fauna species of conservation concern potentially occurring on-site.

Family	Scientific Name	Common Name	Regional Red List Status	NEMBA ToPS List (2007)	Gauteng Status	Habitat Preferences	Probability of Occurrence
Mammals							
Bovidae	*Pelea capreolus*	Grey Rhebok	Near Threatened	-	Protected	Sourveld grassland and scrubland in hills and mountainous areas.	Unlikely – no suitable habitat
Bovidae	*Redunca fulvorufula fulvorufula*	Mountain Reedbuck	Endangered	-	Protected	Rolling grassy hillsides and mountain slopes.	Unlikely – no suitable habitat
Canidae	*Vulpes chama*	Cape Fox	Least Concern	Protected	-	Range of habitats, including grassland and arid savanna.	Unlikely – limited suitable habitat present
Chrysochloridae	*Amblysomus septentrionalis*	Highveld Golden Mole	Near Threatened	-	-	Sandy soils in undisturbed grassland areas.	Unlikely – no suitable habitat
Chrysochloridae	*Chrysospalax villosus*	Rough-haired Golden Mole	Vulnerable	Critically Endangered	-	Sandy soils in undisturbed grassland areas.	Unlikely – no suitable habitat
Erinaceidae	*Atelerix frontalis*	South African Hedgehog	Near Threatened	Protected	Protected	Range of habitats, including undisturbed grassland and savanna.	Unlikely – limited suitable habitat
Felidae	*Felis nigripes*	Black-footed Cat	Vulnerable	Protected	-	Open, short grass areas in savanna and grassland habitats.	Unlikely – limited suitable habitat
Felidae	*Leptailurus serval*	Serval	Near Threatened	Protected	-	Wetland, tall grassland and well-watered savanna habitats.	Unlikely – limited suitable habitat
Felidae	*Acinonyx jubatus*	Cheetah	Vulnerable	-	-	Occurs in a wide-range of habitats including savanna, grassland, thicket and karoo shrublands.	Unlikely – no suitable habitat & sensitive to disturbance
Felidae	*Panthera pardus*	Leopard	Vulnerable	Vulnerable	-	Wide range of habitats, including grassland and savanna.	Unlikely – no suitable habitat & sensitive to disturbance
Hipposideridae	*Cloeotis percivali*	Short-eared Trident Bat	Endangered	-	-	Savanna and woodland habitats, with caves or mine adits present.	Unlikely – no suitable habitat

Family	Scientific Name	Common Name	Regional Red List Status	NEMBA ToPS List (2007)	Gauteng Status	Habitat Preferences	Probability of Occurrence
Hyaenidae	*Parahyaena brunnea*	Brown Hyaena	Near Threatened	Protected	Protected	Savanna and grassland habitats.	Unlikely - sensitive to disturbance
Muridae	*Dasymys robertsii*	Robert's Marsh Rat	Vulnerable	-	-	Moist grassland and wetland habitats.	Unlikely – no suitable habitat
Mustelidae	*Aonyx capensis*	Cape Clawless Otter	Near Threatened	Protected	-	Riparian habitats, with permanent water.	Unlikely – no suitable habitat
Mustelidae	*Hydrictis maculicollis*	Spotted-necked Otter	Vulnerable	Protected	-	Riparian habitats, favouring large, open water bodies.	Unlikely – no suitable habitat
Nesomyidae	*Mystromys albicaudatus*	White-tailed Rat	Vulnerable	-	-	Undisturbed grassland habitats, as well as succulent karoo and fynbos.	Unlikely – no suitable habitat
Soricidae	*Crocidura maquassiensis*	Maquassie Musk Shrew	Vulnerable	-	-	Moist grassland habitats in savanna and grassland ecosystems.	Unlikely – no suitable habitat
Soricidae	*Crocidura mariquensis*	Swamp Musk Shrew	Near Threatened	-	-	Reedbeds, wetlands and thick moist grassland in riverine habitats.	Unlikely – no suitable habitat
Herpetofauna							
Pythonidae	*Python natalensis*	South African Python	Least Concern	Protected	-	Occurs in a wide variety of habitats but generally favours riverine and rocky areas.	Unlikely – no suitable habitat
Pyxicephalidae	*Pyxicephalus adspersus*	Giant Bullfrog	Least Concern	Protected	Protected	Seasonally shallow pans, wetland and rained-filled depressions in savanna and grassland ecosystems.	Unlikely – no suitable habitat
*Habitat preferences as per Stuart and Stuart (2007) and Child *et al.,* (2016) for mammals, and Bates, *et al*., (2014) and Du Preez and Carruthers (2009) for herpetofauna.							

7. ADDITIONAL DISCUSSION

7.1. Ecological Corridors

The site is surrounded by transformed (i.e., developed) or modified land. The south of the site is bordered by the R501 tarred provincial road, while land to the east and west is characterised by existing industrial operations (*viz*. Kwastna Corobrik Factory and Murray and Roberts Cementation) and the R 559 tarred provincial road, which is a major transport route connecting Johannesburg and Carletonville.

The Kwastna Corobrik Factory and Murray and Roberts Cementation industrial operations are enclosed by security fencing and characterised by various forms of built infrastructure. Land to the north of the site boundary is under cultivation, and is regularly disturbed through ploughing, seeding and harvesting, and is dominated by commercial crop species (e.g., maize).

The site, including the proposed LILO and Substation footprint, is therefore surrounded by modified land. It is thus not considered a functionally important component of local landscape connectivity or an ecological corridor. The proposed development of the proposed LILO and Substation footprint is therefore considered unlikely to cause a significant reduction in landscape connectivity.

8. CONCLUDING STATEMENT

The verification field visits indicated that the proposed LILO and Substation footprint and the remainder of the broader Merafong PV Project site have been subject to historic dryland cultivation. Habitat is currently characterised by *Hyparrhenia hirta* secondary grassland (old lands), with a stands of aliens *Eucalyptus* trees and cultivated fields also present. The DFFE mapping of the proposed LILO and Substation footprint as Low sensitivity for Terrestrial Biodiversity theme is therefore confirmed.

No Red List flora were recorded on-site during the verification field visit and considering the modified and secondary character of on-site vegetation, no Red List flora are likely to be present within the proposed LILO and Substation footprint. Similarly, no Red List fauna species were recorded on-site during the verification field visit, and habitat suitability assessments indicate that no Red List are likely to be present. The sensitivity ratings for both the Plant Species and Animal Species theme are therefore also considered to be Low.

Pursuant to the above findings, the proposed LILO and Substation footprint has been positioned in the south-west corner of the site, which, like the remainder of the site, has low sensitivity with respects to all three assessed themes – shown in Figure 11.

Negative ecological impacts may arise as a result of the development of the proposed Project activities. These, however, can be effectively mitigated through the application of several standard environmental management measures that are presented in the Generic EMPr.

Figure 11: Map showing the proposed LILO and Substation footprint within the larger Merafong site, has Low sensitivity for Terrestrial Biodiversity, Plant Species and Animal Species themes.

This site sensitivity verification was undertaken by *Andrew Zinn* from *Hawkhead Consulting*

Andrew Zinn

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Appendix A: Merafong Loop In – Loop Out Powerline & Eskom Switching Station – Exclusion Norms Checklist

No	Requirement	Comment/s
B.3.	Terrestrial Biodiversity including Plant and Animal Species	
The confirming statement must be prepared by a specialist registered with SACNASP with relevant expertise in terrestrial biodiversity or similar, and must contain, as a minimum, the following information:		
21	A statement on the duration, date and season of the site sensitivity verification inspection and walkthrough as well as the relevance of the season to the outcome of the confirming statement;	Refer to Section 2: Site Sensitivity Verification Field Visits and Literature Review
22	Confirmation that the terrestrial biodiversity (flora and fauna) within the final pre-negotiated corridor is low or medium sensitivity based on the most recently available desktop data, site sensitivity verification inspection and walkthrough or how the requirements contemplated under Paragraph 1.4 (c), (d) and (e) have been met, as relevant;	Refer to: • Section 3: Summary of DFFE Screening Tool and outcome of Site Sensitivity Verification • Section 4.1: On Site Habitat Characteristics • Section 5: Discussion on Terrestrial Biodiversity, Plant Species and Animal Species Themes.
23	Identification of terrestrial biodiversity areas to be avoided within the final pre-negotiated corridor, including buffers;	No sensitive sites were identified to be avoided within the proposed LILO and Substation footprint. Refer to Section 4.1: On Site Habitat Characteristics.
24	A terrestrial biodiversity sensitivity map, using the information generated by the screening tool and enhanced by any relevant additional information including from the walkthrough or any other sources, identifying any areas of sensitivity including a buffer in which no development must take place, overlaid with the proposed development footprint (i.e. pylon placement as well as supporting infrastructure)	No sensitive sites with respects to the Terrestrial Biodiversity, Animal Species and Plant Species themes were identified for avoidance within the proposed LILO and Substation footprint or the broader site. Refer to: • Section 4.1: On Site Habitat Characteristics. • Section 5: Discussion on Terrestrial Biodiversity, Plant Species and Animal Species Themes. • Refer to Section 7: Concluding Statement.
25	A description on how the identified environmental sensitivity, relating to terrestrial biodiversity, has been considered in determining the final pre-negotiated corridor	No sensitive sites with respects to the Terrestrial Biodiversity, Animal Species and Plant Species themes were identified for avoidance within the proposed LILO and Substation footprint or the broader site. Refer to:

No	Requirement	Comment/s
		• Section 4.1: On Site Habitat Characteristics. • Section 5: Discussion on Terrestrial Biodiversity, Plant Species and Animal Species Themes. • Section 7: Concluding Statement.
26	A description on how the identified engineering constraints, relating to terrestrial biodiversity, have been considered in determining the final pre-negotiated corridor	No engineering constraints have been identified.
27	A description of the implementation of the mitigation hierarchy in order to determine the final pre-negotiated corridor	Refer to Section 7: Concluding Statement The proposed LILO and Substation footprint is located within the site assessed for the proposed Merafong PV Solar Facility. This entire site was rated as having Low sensitivity with respects to the Terrestrial Biodiversity, Plant Species and Animal Species themes.
28	How the inputs made by I&APs were considered when determining the final pre-negotiated corridor	N/A
29	A statement confirming that: a) impact management actions as contained in the pre-approved Generic EMPr template are sufficient for the avoidance, management and mitigation of impacts and risks; or	Refer to Section 7: Concluding Statement.
	b) where required, specific impact management outcomes and actions are required and have been provided as part of the site specific EMPr.	N/A

APPENDIX B: DETAILS OF THE EXPERTISE OF THE SPECIALIST

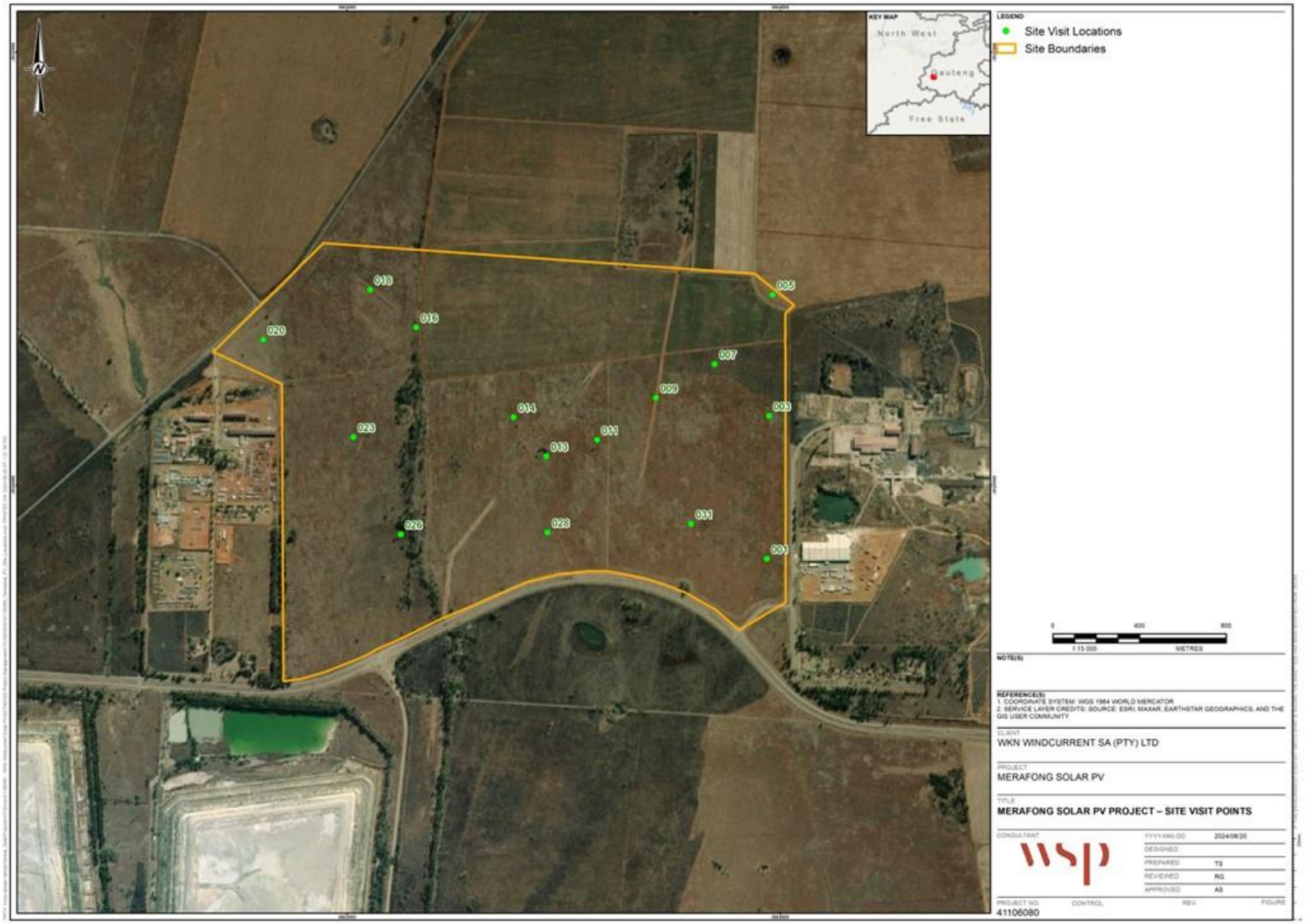
Specialist Information	
Name	Andrew D. Zinn Pr.Sci.Nat. - Ecological Science (400687/15)
Designation	Report Author – Terrestrial Ecologist
Cell Phone Number	+27 83 361 0373
Email Address	andrew@hawkhead.co.za
Qualifications	M.Sc. Resource Conservation Biology B.Sc. Hons. Ecology and Conservation Biology B.Sc. Zoology and Grassland Science
Affiliations	Member of the South African of Natural Scientific Professions Member of the South African of Wildlife Management Association Member of the South African of Association of Botanists
Summary of Past Experience	Andrew Zinn is a terrestrial ecologist with Hawkhead Consulting. In this role, he conducts varied specialist ecology studies, including flora and fauna surveys, for baseline ecological assessments and ecological impact assessments. He has over 15 years of experience working in the fields of ecology and conservation research, and is registered as a Professional Natural Scientist (*Pr.Sci.Nat.*) – Ecological Science, with the South African Council of Natural Scientific Professions (SACNASP). Andrew has worked on projects in several African countries including Botswana, Democratic Republic of Congo, Ethiopia, Ghana, Mozambique, South Africa, Tanzania and Zambia.

APPENDIX C: REFERENCE POINT PHOTOGRAPHS, MAP AND GPS TRACKS FROM SITE VISIT

Ref. point No.	Co-ordinates	Habitat Descriptor	Photograph
001	S26 21.391 E27 31.430	*Hyparrhenia hirta* secondary grassland. This area is incorrectly designated an Ecological support Area (ESA) under the under the Gauteng Conservation Plan.	
003	S26 21.070 E27 31.435	*Hyparrhenia hirta* secondary grassland. This area is incorrectly designated an ESA under the under the Gauteng Conservation Plan.	
005	S26 20.798 E27 31.444	Cultivated field. This area is transformed, and incorrectly designated a Critical Biodiversity Area (CBA) under the Gauteng Conservation Plan.	
007	S26 20.954 E27 31.300	*Hyparrhenia hirta* secondary grassland.	
009	S26 21.030 E27 31.154	Cleared gravel road through the centre of the study area.	

Ref. point No.	Co-ordinates	Habitat Descriptor	Photograph
011	S26 21.124 E27 31.007	Small stand of *alien Prunus persica* trees.	
013	S26 21.161 E27 30.881	Sink hole, flanked by alien *Prunus persica* trees.	
014	S26 21.074 E27 30.800	*Hyparrhenia hirta* secondary grassland.	
016	S26 20.872 E27 30.557	Cultivated field (left), *Eucalyptus* windrow (centre) and *Hyparrhenia hirta* secondary grassland (right).	
018	S26 20.787 E27 30.443	Old dam/water impoundment, flanked by *Hyparrhenia hirta* secondary grassland.	
020	S26 20.787 E27 30.443	Short, mown lawn, dominated by the lawn grass *Cynodon dactylon,* that is located adjacent to the Murray and Roberts Cementation facility.	

Ref. point No.	Co-ordinates	Habitat Descriptor	Photograph
023	S26 21.118 E27 30.400	*Hyparrhenia hirta* secondary grassland in foreground and, in background, *Eucalyptus* tree stand along an artificial drainage channel that conveys surface water from Driefontein Mine annd village.	
026	S26 21.336 E27 30.519	*Eucalyptus* tree stand, with alien *Acacia mearnsii* and *Acacia melanoxylon* trees also present.	
028	S26 21.332 E27 30.884	*Hyparrhenia hirta* secondary grassland	
031	S26 21.313 E27 31.241	*Hyparrhenia hirta* secondary grassland	



Appendix C Figure 1: Map showing the location where reference point photographs and habitat description notes were taken.

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Appendix C Figure 2: GPS tracks from the dry season survey (9th July 2024)

Appendix C Figure 3: GPS tracks from the wet season survey (19th November 2024)