FINAL BASIC ASSESSMENT REPORT

Basic Assessment for the proposed development of the up to 150 MW Padloper Solar PV Facility 5 (i.e., Padloper PV 5), the proposed development of 132 kV Electrical Grid Infrastructure between the proposed Padloper PV 4 and the proposed Padloper PV 5 (i.e., Padloper EGI 5), and their associated infrastructure, near Murraysburg in the Western Cape Province

APPENDIX D.4:
Terrestrial Biodiversity and Species



TERRESTRIAL BIODIVERSITY AND SPECIES IMPACT ASSESSMENT:

Basic Assessment for the Proposed Development of an up to 150MW Padloper Solar Photovoltaic 5 - 7 Facilities, and the Associated 132 kV Overhead Power Lines and their Associated Infrastructure, near Murraysburg in the Western Cape Province

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Report prepared for:	*Report prepared by:*
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July 2023

Executive Summary

African Clean Energy Developments (Pty) Ltd (ACED) appointed EnviroSci (Pty) Ltd (EnviroSci) to conduct a terrestrial assessment for the proposed Padloper Solar Photovoltaic (PV) Cluster, near Murraysburg located in the Northern and Western Cape Provinces.

The Project Applicant, Padloper PV (Pty) Ltd (hereinafter referred to as "Padloper PV" or "the Applicant")1, is proposing the development 7 x Solar Photovoltaic (PV) Facilities with a capacity of between 100 and 250 MW , the associated 7 x 132 kV overhead power lines and their associated infrastructure (. Each solar PV facility will have a range of associated infrastructure, including, but not limited to, an on-site substation and Battery Energy Storage System (BESS) complex and will connect to the existing Gamma Main Transmission Substation (MTS) via dedicated 132 kV overhead power lines (OHLs). This assessment assesses the Padloper PV 5, PV 6 and PV 7 projects sites, as well as the respective grid connections to the switching station at the PV 4 site.

The findings of this report are based on the Terrestrial Ecological Screening Assessment, supported by baseline data collected during a detailed site visits in February and March 2022 (summer). Additional information collected by EnviroSci for other renewable energy projects surrounding Murraysburg, which included several detailed walkdowns for adjacent projects and or grid connections that will use the same corridor to the Gamma MTS were also used to supplement the information contained in this report. Thus this assessment is based both winter and summer seasonal data for the area.

The regulatory requirements are also discussed with regard NEMA in Section 3 of this report. While the *Protocol for specialist assessment and minimum report content requirements for the environmental impacts on terrestrial biodiversity* (Government Gazette 43110, 20 March 2020), supersede the Appendix 6 NEMA requirements, they were also adhered to. This report thus meets the criteria to fulfil a Terrestrial Biodiversity Specialist Assessment Report, as the proposed site contains areas rated as **Very High**, **High, Medium, and Low** sensitivity by the Department of Forestry, Fisheries and Environment (DFFE) Screening Tool (See Screening Verification Statement – Appendix 3).

This is due to the presence of:

- Riverine Rabbit (*Bunolagus monticularis*)
- Presence of several Critical Biodiversity Areas (CBAs) (Western Cape)
- *Hereroa concave*
- Sensitive species 945
- *Anisodontea malvastroides*
- *Tridentea virescens*

The study area is however not associated within any Strategic Water Resource Areas, Wetland Clusters or Threatened Ecosystems.

The sites (i.e. the area in which the 3 study sites are located, are situated within the Eastern Upper Karoo (NKu 4) vegetation unit, that is considered Least Concern from a conservation status, and is characterised by low lying areas separated by a higher lying plateaus and/ or inselbergs (koppies). These higher lying areas also contain several areas with rocky outcrops, ridges and or cliffs. While the sites are largely untransformed, current impacts are localised due to grazing and the presence of previously cultivated areas near homesteads and the current road and tracks found.

Based on a desktop assessment of the potential species associated with the above vegetation unit, approximately 842 terrestrial species are expected to occur within the footprint areas, most being plants, reptiles and amphibians, insects and small mammals. Most of these were confirmed to be present within the site, observed during the site visits conducted, with several protected under the species of conservation concern

[1]Padloper PV (Pty) Ltd is the Project Applicant, whereas African Clean Energy Developments (Pty) Ltd (ACED) is the Project Developer.

were extracted from the list based on their status according to Red List of South African Plants version 2020.1. Downloaded from Redlist.sanbi.org on 2023/05/15 or species listed as protected under the Western Cape Nature Conservation Ordinance as amended (No. 3 of 2000). The Screening Tool listed plant species were however not observed within the footprint area, but outside of the project area within a rocky ridge that will be avoided by the proposed development and associated infrastructure.

The sensitivity ratings of High (No-Go) to Low were determined through an assessment of the habitat sensitivity and related constraints in accordance with the Biodiversity Assessment protocols related to the determination of Sensitivity and Ecological Importance (SEI). However, any No-Go areas (with buffers) relate in general terms to the project and there are areas where encroachment on these areas would occur (i.e. existing road crossings within systems) and is considered acceptable since these areas have already been impacted.

These proposed constraints / buffers do not include bird and or bat specialist buffers / constraints as their buffers along aquatic features are at times far larger around aquatic features, than those required for the known aquatic species within this region.

Results of the sensitivity rating / constraints assessment

Development Component	Habitat Type	Conservation Status and Importance	Functional Integrity	Sensitivity and Ecological Importance (SEI)	Recommended Buffer	Development Acceptability	Sensitivity Rating Override[2]
PV Panels	Rocky ridges or outcrops	Very High & High	High	Very High	25 m buffer	No-go	Yes
	Remainder of site	Low & Low	High	Low	0m	Yes	N/A
Buildings / Substations & BESS	Rocky ridges or outcrops	Very High & High	High	Very High	25 m buffer	No-go	Very High & High
	Remainder of site	Low & Low	High	Low	0m	Yes	N/A
Roads	Rocky ridges or outcrops	Very High & High	High	Very High	25 m buffer	No-go	Very High & High
	Remainder of site	Low & Low	High	Low	0m	Yes	N/A
OHL	Rocky ridges or outcrops	Very High & High	High	Very High	25 m buffer	No-go	Yes
	Remainder of site	Low & Low	High	Low	0m	Yes	N/A

In summary, structures such as buildings, substations and Battery Energy Storage System (BESS), should be placed outside of the High Sensitivity habitats, while remaining structures (PV panels, roads and transmission lines) could cross or span the Moderate / Low Sensitivity areas. Noting that Low Sensitivity can also = Moderate areas but with existing impacts e.g., current roads, farm tracks of previously disturbed areas.

[2] **If an impact such as a road or disturbance already occurs within the proposed footprint, and confirmed during a site walkdown process and / or a technical solution can be provided that would not impact on the form or function of the habitat in question, then sensitivity rating for that particular habitat against the activity can be overridden.**

Several potential issues, risks and related impacts are summarised below and then discussed in more detail in Section 7 of this report, however all the impacts assessed were found to be similar for all the projects and associated grid connections were relevant as listed below. This is largely since the proposed layouts have avoid Very High sensitivity / No go areas identified in this assessment as a means to impact avoidance rather the impact mitigation:

Construction Phase

- Potential impact 1: Loss of Species of Special Concern.
- Potential impact 2: Damage and disturbance of the habitats rated as Very High Sensitivity.
- Potential impact 3: Loss of ecosystem services, and or habitats that would result in habitat fragmentation, especially those included in any Biodiversity Conservation plans as CBAs or Ecological Support Areas. This in turn could also lead to habitat fragmentation.
- Potential Impact 4: Displacement of any animals because of any disturbance or habitat loss. This includes animal mortalities related to construction vehicle traffic.

Operational and Maintenance (O&M) Phase

- Potential impact 5: Displacement of any animals which mostly includes animal mortalities related to vehicle traffic.

Decommissioning Phase

- Potential impact 6: Damage and disturbance of the habitats rated as Very High Sensitivity
- Potential impact 7: Displacement of any animals because of any disturbance or habitat loss. This includes animal mortalities related to construction vehicle traffic.

Cumulative Impacts

- Cumulative impact 8: All activities, when combined with present day activities.

In summary, the impacts upon terrestrial biodiversity associated with these projects (i.e. Padloper Solar PV Facilities 5-7 and EGI 5-7, and their associated infrastructure) are of Low significance, after mitigation. The loss of irreplaceable habitat and/or important biota is highly unlikely. The impacts are easily mitigated, provided the mitigation measures and monitoring plan included within the EMPr and this report are implemented and adhered to during all phases of the project.

The specialist has no objection to the authorisation of the proposed activities assuming that all mitigations and no-go zones are implemented. Without the implementation of mitigation measures, the project has potential to cause a Moderate cumulative impact upon terrestrial biodiversity. However, with the adoption of mitigation, the proposed project will have a Low impact upon the observed biodiversity.

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List of Abbreviations

BESS	Battery Energy Storage System
CARA	Conservation of Agricultural Resources Act
CBA	Critical Biodiversity Area
CSIR	Council for Scientific and Industrial Research
DFFE	Department of Forestry, Fisheries and Environment
DWAF	Department of Water Affairs and Forestry, now Department of Water and Sanitation (DWS)
DWS	Department of Water and Sanitation, formerly the Department of Water Affairs (DWA)
EA	Environmental Authorisation
EIA	Environmental Impact Assessment
EIS	Ecological Importance and Sensitivity
EMPr	Environmental Management Plan/Programme Report
ESA	Ecological Support Area
GA	General Authorisation (Water Use Authorisation [WUA] type)
GIS	Geographic Information System
IUCN	International Union of Conservation of Nature
NFEPA	National Freshwater Ecosystem Priority Atlas (Nel *et al*., 2011).
O&M	Operations and Maintenance
OHL	Overhead Line – transmission line cable that is not buried
ORC	Off Road Cable – underground or overhead transmission cable not within a road reserve
RTU	Recognisable Taxonomic Unit
SANBI	South African National Biodiversity Institute
SSC	Species of Special Concern
ToR	Terms of Reference
PV	Photovoltaic
NEMA	National Environmental Management Act (Act No. 107 of 1998)
MTS	Main Transmission Substation
SEI	Sensitivity and Ecological Importance
SAPAD	South African Protected Areas Database
SWMP	Stormwater Management Plan
WCBSP	Western Cape Biodiversity Spatial Plan
NBA	National Biodiversity Assessment, 2018 also referred to as the National Biodiversity Assessment, 2018
NEM:BA	National Environmental Management: Biodiversity Act 10 of 2004
NFEPA	National Freshwater Ecosystem Priority Atlas (Nel *et al*., 2011)
WRC	Water Research Commission
DEA	Department of Environmental Affairs
EO	Environmental Officer (Site)
ECO	Environmental Control Officer
BA	Basic Assessment
VEGMAP	NSBA 2018 vegetation

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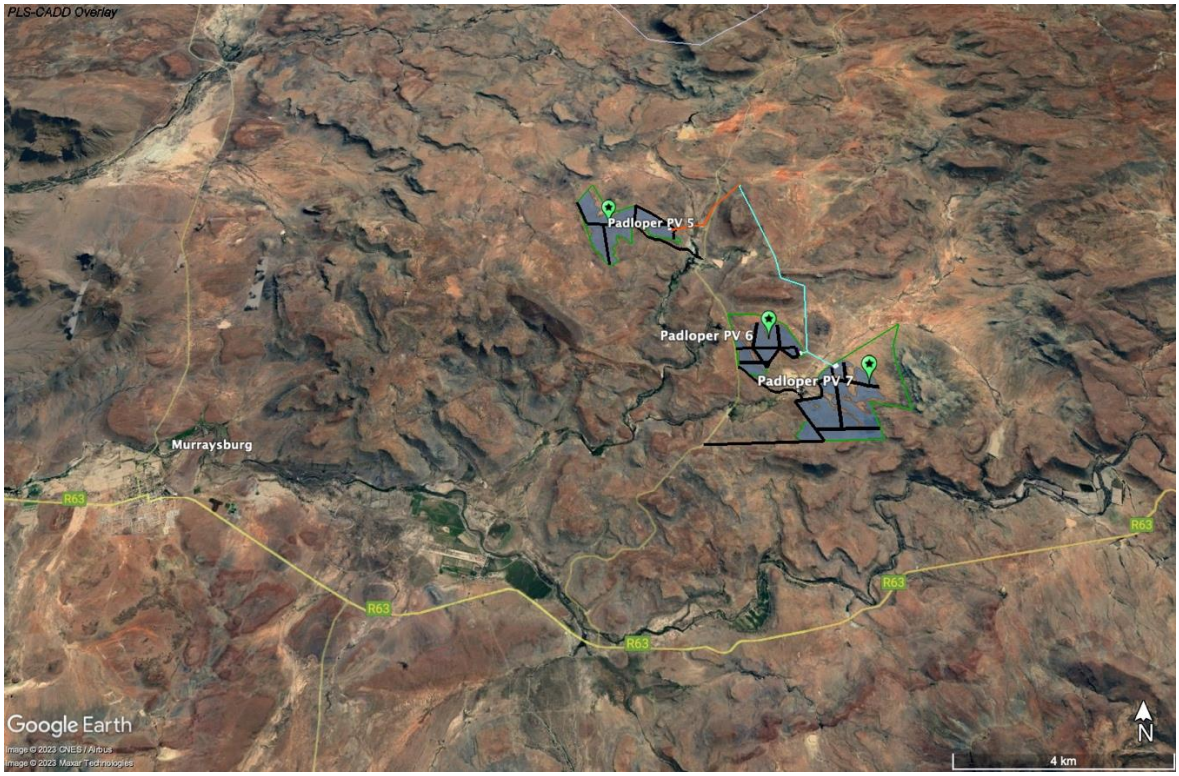


Figure 1: The study area in relation to the general environment.

1. Introduction

1.1. Scope, Purpose, and Objectives of this Specialist Report

The aim of this report is to provide a summary of the terrestrial baseline and identify, discuss and assess the potential impacts that may arise should the project be authorised. The report also makes recommendations with regards to management and mitigation, to further reduce, avoid or mitigate the potential impacts, and ultimately ensure the responsible and sustainable use of South Africa's terrestrial resources. This report, in part, aims to provide the Competent Authority with sufficient information regarding the projects impacts on terrestrial biodiversity resources to inform responsible decision making.

[3]It is important to note that Padloper PV(Pty) Ltd is the Project Applicant, whereas African Clean Energy Developments (Pty) Ltd (ACED) is the Project Developer.

Information regarding the state and function of the observed habitats, including suitable no-go buffers areas and assessment of the potential direct and cumulative impacts, where relevant, are also provided.

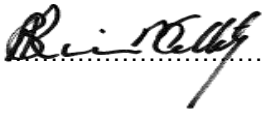
1.2. Details of Specialist

This report has been prepared as per the requirements of the Environmental Impact Assessment (EIA) Regulations and the National Environmental Management Act (NEMA; Act No. 107 of 1998), any subsequent amendments and any relevant National and / or Provincial Policies related to biodiversity assessments.

Report prepared by: Dr. Brian Colloty Pr.Sci.Nat. 400268/07 (Ecology)

Expertise / Field of Study: BSc (Hons) Zoology, MSc Botany (Rivers), PhD Botany Conservation Importance rating, and has worked as an independent consulting specialist from 1996 to present.

I, **Dr. Brian Michael Colloty** declare that this report has been prepared independently of any influence or prejudice as may be specified by the National Department of Forestry, Fisheries and the Environment (DFFE) and or the Department of Water and Sanitation (DWS).

Signed:…  Date:…24 June 2023……

1.3. Terms of Reference

- Comply with the Assessment Protocols that were published on 20 March 2020, in Government Gazette 43110, GN 320. This specifically includes the Terrestrial Biodiversity Protocol that applies to all activities requiring EA. This protocol replaces the requirements of Appendix 6 of the 2014 NEMA EIA Regulations (as amended).
- Comply with the Assessment Protocols that were published on 30 October 2020, in Government Gazette 43855, GN 1150. This specifically includes the protocol for the specialist assessment and minimum report content requirements for environmental impacts on terrestrial animal species and terrestrial plant species. This protocol replaces the requirements of Appendix 6 of the 2014 NEMA EIA Regulations (as amended).
- Provide a Site Sensitivity Verification Report based on the requirements documented in the Assessment Protocols published on 20 March 2020, in Government Gazette 43110, GN 320, and 30 October 2020, in Government Gazette 43855, GN 1150.
- Provide a Terrestrial Biodiversity and Species Specialist Report or Compliance Statement based on the requirements documented in the Assessment Protocols published on 20 March 2020, in Government Gazette 43110, GN 320, and 30 October 2020, in Government Gazette 43855, GN 1150. All necessary taxa specialists must be appointed, as required by the Species Protocol (excluding Avifauna).
- The Specialist Assessment and/or Compliance Statement must also be in adherence to any additional relevant legislation and guidelines that may be deemed necessary. It must also comply with the report templates provided by the CSIR. In addition, it must comply with the 2014 NEMA EIA Regulations (as amended), where applicable. Provide information as captured in the quote dated February 2021.

- Provide inputs to the Draft BA Report to include a description of the affected environment and environmental sensitivities, key legislation, key issues and detailed assessment of impacts. A template for such inputs will be provided by the CSIR.
- The specialist must undertake a site visit in order to identify the level of sensitivity assigned to the project area on the Screening Tool, and to verify and confirm this sensitivity and land-use and either compile a Terrestrial Biodiversity and Species Specialist Report or Compliance Statement, as documented in the Assessment Protocols published on 20 March 2020, in Government Gazette 43110, GN 320, and 30 October 2020, in Government Gazette 43855, GN 1150.
- Determine, describe and map of the baseline environmental condition and sensitivity of the study area. Specify set-backs or buffers, and provide clear reasons for these recommendations. Also map the extent of disturbance and transformation of the site.
- Provide sensitivities in KMZ or similar GIS format.
- Provide review input on the preferred infrastructure layout following the sensitivity analysis and layout identification.
- The report must also describe the terrestrial ecology features of the project area, with focus on features that are potentially impacted by the proposed project. The description should include the major habitat forms within the study site, giving due consideration to terrestrial ecology (flora) and terrestrial ecology (fauna).
- Consider seasonal changes and long-term trends, such as due to climate change.
- Identify any Species of Special Concern or protected species on site (e.g. protected tree species).
- The assessment is to be based on existing information, national and provincial databases, and professional experience and field work conducted by the specialist, as considered necessary and in accordance with relevant legislated requirements. The assessment must also consider the maps generated by the National Screening Tool.
- Identify and assess the potential direct, indirect and cumulative impacts of the proposed development on terrestrial biodiversity and species. Impact significance must be rated both without and with mitigation, and must cover the construction, operational and decommissioning phases of the project as provided by the CSIR.
- Identify any protocols, legal and permit requirements that are relevant to this project and the implications thereof.
- Provide recommendations with regards to potential monitoring programmes.
- Determine mitigation and/or management measures which could be implemented to as far as possible reduce the effect of negative impacts and enhance the effect of positive impacts. Also identify best practice management actions, monitoring requirements, and rehabilitation guidelines for all identified impacts. This must be included in the EMPr.
- Incorporate and address all review comments made by the Project Team (CSIR and Project Applicant) during the various revisions of the specialist report.
- Incorporate and address all issues and concerns raised by Stakeholders (e.g. DFFE Biodiversity and Conservation, WESSA, EWT etc.), CA, I&APs and the public during the Public Participation Process (where relevant and applicable).
- Review the Generic EMPr for 1) Power Lines and 2) Substations (GN 435) and confirm if there are any specific environmental sensitivities or attributes present on the site and any resultant site-specific impact management outcomes and actions that are not included in the pre-approved generic EMPr (Part B – Section 1). If so, provide a list of these specific impact management outcomes and actions based on the format of the report template provided by the CSIR.

2. Approach and Methodology

A desktop and literature review of the study area under investigation was conducted to collate as much information as possible prior to detailed fieldwork conducted specifically in the summer months of February (4 – 8) and March (22 – 24) 2022. The purpose of the desktop assessment was to rank relevant areas according to their ecological sensitivity and to identify areas of ecological risk prior to the site visit.

Other relevant literature, for example from the South African Biodiversity Information Facility, South African Herpetological Atlas Projects, relevant Red Data books, ordinances and all systematic bioregional / conservation plans) was also reviewed.

Fieldwork was limited to visual sightings by means of transect walks and plot-based sampling. Particular attention was paid to the occurrence of Red Data species or protected species as follows:

Vegetation units were sampled by means of the following techniques at each of the proposed development sites:

- Data collection was plot-based and in the form of vegetation samples within selected reference areas to categorise the various vegetation units.
- Results from the data analysis provided a description of the dominant and typical species occurring on the site(s), and includes:
    - Threatened, endemic or rare species, with an indication of the relative functionality and conservation importance of the specific community in the area under investigation (i.e., study area);
    - Invasive or exotic species present and localities in the area; and the
    - Functional and conservation importance of all vegetation communities in the investigation area.

Mammals were sampled by means of the following techniques:

- Fieldwork included visual sightings by means of transect walks to evaluate the presence of mammal taxa. During the site visit, specific attention was given to signs (droppings, burrows, vocalisations, etc.) of taxa and the presence of suitable habitat;
- A full list of species observed and expected to occur was made; and
- Specific reference was made to the occurrence of Red Data species.

Herpetofauna (reptiles and amphibians) were sampled by means of the following techniques:

- Visual observations (including nocturnal surveys);
- Active searching techniques; and
- Vocalisations (for amphibians).

Invertebrates were sampled by means of the following techniques:

- Random linear transects using standard hand nets while focussing on specific indicator groups;
- All taxa caught, were identified to species level if appropriate taxonomic literature is available (as is the case for butterflies), otherwise the concept known as Recognisable Taxonomic Units (RTUs) or morphospecies will be applied;
- The presence of conservation important taxa was verified by intensive searching of likely habitat types or burrows.
- Additional information on faunal communities residing within the area of investigation was sourced from distributional data/records (both recent and historical), relevant literature, the private sector and other atlas projects.

Habitat areas (based on the species compositions of the vegetation analysis, topography and soils) were ranked into High / No-Go, Medium or Low classes in terms of their significance based on the Ecological Sensitivity and Conservation Importance. A sensitivity and habitat map (including buffer zones if applicable) was produced based on the above information. This combined with the aquatic sensitivity map and was utilised by the project proponent to finalise the development layout.

2.1. Information Sources

Table 1: Key information sources used to conduct this assessment.

Data / Information	Source	Date	Type	Description
South African National Protected Areas Database (SAPAD)	Department of Environmental Affairs (DEA)	2022, Q3	Spatial	Spatial delineation of protected areas in South Africa. Updated quarterly
National Biodiversity Assessment	South African National Biodiversity Institute (SANBI)	2018	Report and Spatial	Latest assessment of South African biodiversity and ecosystems, including, vegetation types, wetlands and rivers.
Technical Report for the National Freshwater Ecosystem Priority Areas project. WRC Report No. K5/1801.	Nel, J.L., Murray, K.M., Maherry, A.M., Petersen, C.P., Roux, D.J., Driver, A., Hill, L., Van Deventer, H., Funke, N., Swartz, E.R., Smith-Adao, L.B., Mbona, N., Downsborough, L. and Nienaber, S.	2011	Report	NFEPA
FrogMAP (2019)	Animal Demography Unit. Accessed from http://frogmap.adu.org.za/?sp=400; on 2022-10-09	2022	Spatial databases	Frog distribution map
Western Cape Biodiversity Spatial Plan (WCBSP, 2017)	Pool-Stanvliet, R., Duffell-Canham, A., Pence, G. & Smart, R. 2017. The Western Cape Biodiversity Spatial Plan Handbook. Stellenbosch: CapeNature.	2017	Spatial	Spatial conservation planning units and associated management recommendations for the province.

The reference list at the end of this report (Section 12) also includes various sources of literature with regard the assessment of birds and, amphibia associated with aquatic systems where relevant.

2.2. Assumptions, Knowledge Gaps and Limitations

To obtain a comprehensive understanding of the dynamics of both the flora and fauna of communities within a study site, as well as the status of endemic, rare or threatened species in any area, assessments should always consider investigations at different time scales (across seasons/years) and through replication. However, due to time constraints these long-term studies are not feasible, and the assessment is thus mostly based on instantaneous sampling. This limitation is common to many impact assessment type studies, but the findings are deemed adequate for the purposes of decision-making support regarding project acceptability, unless otherwise stated.

Therefore, due to the scope of the work presented in this report, a long-term investigation of the proposed site was not possible and as such not perceived as part of the Terms of Reference (ToR).

However, a concerted effort was made to sample and assess as much of the potential site, as well as make use of any supporting literature, species distribution data and aerial photography.

It should be emphasised that information, as presented in this document, only has reference to the study area as indicated on the accompanying maps. Therefore, this information cannot be applied to any other area without detailed investigation.

2.3. Consultation Processes Undertaken

None directly during the assessments, other than discussions with some of the landowners with regard current and past animal occurrences or known areas containing “unusual” plants which has been used to inform the assessment.

None received during the process thus far.

3. Description of Project Aspects relevant to Terrestrial Biodiversity

The clearing of natural vegetation, and the creation of hard surfaces associated, with required roads, PV panel areas, substations, operations buildings and temporary laydowns and camps in the construction phase, typically results in this highest number of impacts. Therefore, from a terrestrial standpoint, the impacts will firstly result in the disturbance of the natural vegetation, which then impacts on the available animal habitat and any corridors. However, these impacts are related to the creation of the needed cleared areas, while the remaining landscape then remains unchanged.

4. Baseline Environmental Description

4.1. General Description

The area is characterised by low lying areas separated by a higher lying plateaus / escarpments and inselbergs (koppies) (Plate 1). These higher lying areas also contain several areas with rocky outcrops, ridges and or cliffs. It is largely untransformed, other than being used for grazing and the presence of previously cultivated areas near homesteads.

4.1.1. Terrestrial Ecosystems

According the Mucina and Rutherford (2006) and the updated Vegetation Map of South Africa released by SANBI in 2018 (NBA, 2018 beta version 2019), the project areas are located within the Eastern Upper Karoo (NKu 4) vegetation type (Figure 2). The vegetation unit, which is largely uniform in species composition and species abundance throughout the 3 sites is listed as Least Concern with regard Conservation Status.

A 100m portion of the grid connection between PV 6 and PV 4 is located within Upper Karoo Hardeveld (NKu 2), a vegetation unit associated with rocky substrates, although with similar species to Eastern Upper Karoo, but includes a higher number of succulent and geophytic species such as *Aloe, Drosanthemum and Pachypodium* species. These species are also protected within the Province and has been indicated as a no-go area, however with these areas can be avoid with careful placement of the grid towers /poles during the post authorisation micrositing process.

The dominant plant species associated with remaining Eastern Upper Karoo vegetation type (Mucina and Rutherford, 2006) and confirmed during the site visits included the following species (Table 2):

The NEM:BA, promulgated on 9 December 2011 (Act No. 10 of 2004) lists 225 threatened ecosystems based on vegetation type (VEGMAP, 2006 as amended). Should a vegetation type or ecosystem be

listed, actions in terms of NEM:BA are triggered. None of the vegetation types or ecosystems observed to occur within the study area are, however, listed in the Act.

Table 2: Dominant plant species that were observed during the assessment

Growth Form	Taxon
Graminoids	*Aristida congesta*
Graminoids	*Aristida diffusa*
Graminoids	*Cynodon incompletes*
Graminoids	*Eragrostis bergiana*
Graminoids	*Eragrostis bicolor*
Graminoids	*Sporobolus fimbriatus*
Graminoids	*Stipagrostis ciliata*
Graminoids	*Tragus koelerioides*
Graminoids	*Aristida adscensionis*
Graminoids	*Chloris virgate*
Graminoids	*Cyperus usitatus*
Graminoids	*Digitaria eriantha*
Graminoids	*Enneapogon desvauxii*
Graminoids	*Enneapogon scoparius*
Graminoids	*Eragrostis curvula*
Graminoids	*Fingerhuthia africana*
Graminoids	*Heteropogon contortus*
Graminoids	*Sporobolus ludwigii*
Graminoids	*Sporobolus tenellus*
Graminoids	*Stipagrostis obtusa*
Graminoids	*Themeda triandra*
Graminoids	*Tragus berteronianus*
Herbs	*Indigofera alternans*
Herbs	*Pelargonium minimum*
Herbs	*Tribulus terrestris*
Low Shrubs	*Chrysocoma ciliata*
Low Shrubs	*Eriocephalus ericoides* subsp. *ericoides*
Low Shrubs	*Eriocephalus spinescens*
Low Shrubs	*Pentzia globose*
Low Shrubs	*Pentzia incana*
Low Shrubs	*Phymaspermum parvifolium*
Low Shrubs	*Salsola calluna*
Low Shrubs	*Aptosimum procumbens*
Low Shrubs	*Felicia muricata*

Growth Form	Taxon
Low Shrubs	*Gnidia polycephala*
Low Shrubs	*Helichrysum dregeanum*
Low Shrubs	*Limeum aethiopicum*
Low Shrubs	*Osteospermum leptolobum*
Low Shrubs	*Pteronia glauca*
Low Shrubs	*Rosenia humilis*
Low Shrubs	*Selago geniculate*
Low Shrubs	*Selago saxatilis*
Low Shrubs	*Aspalathus acicularis* subsp. *planifolia*
Low Shrubs	*Selago persimilis*
Succulent Herbs	*Psilocaulon coriarium*
Succulent Herbs	*Tridentea jucunda*
Succulent Shrubs	*Ruschia intricate*
Succulent Shrubs	*Hertia cluytiifolia*
Succulent Shrubs	*Rabiea albinota*
Succulent Shrubs	*Salsola tetrandra*
Tall Shrub	*Phymaspermum scoparium*
Tall Shrubs	*Lycium horridum*
Tall Shrubs	*Lycium oxycarpum*

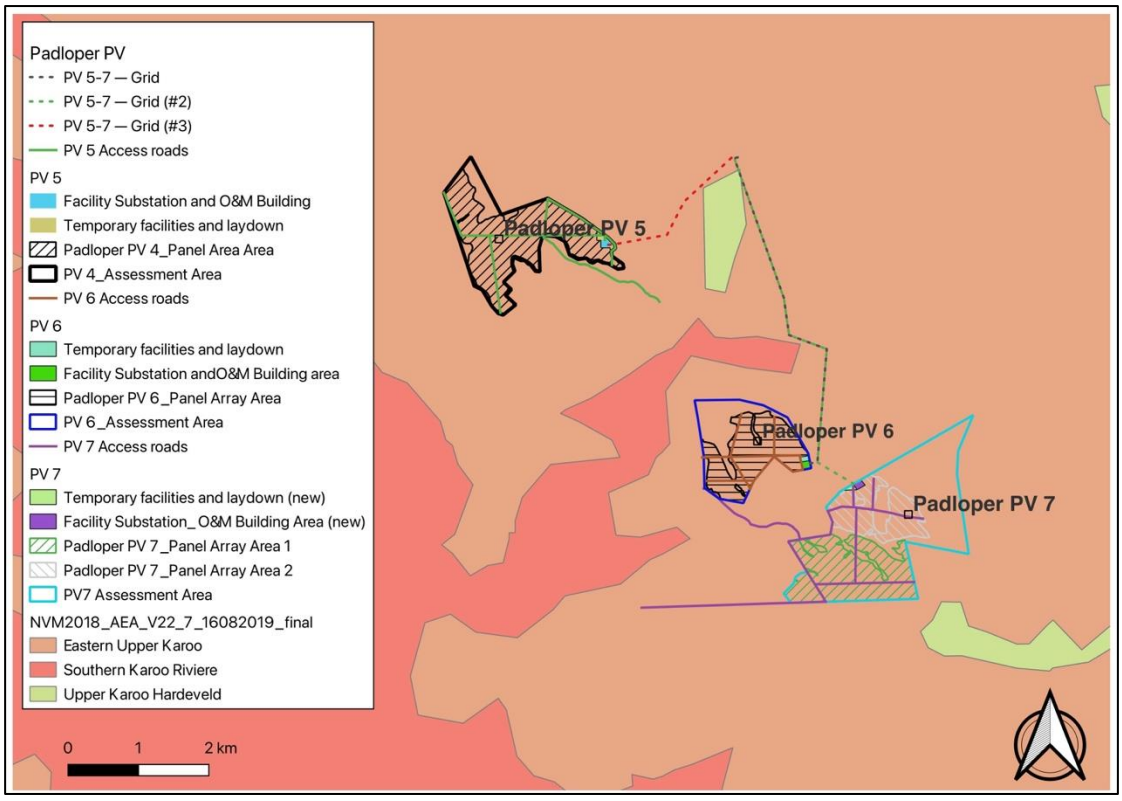


Figure 2: The vegetation units as shown in NBA 2018 vegetation map spatial data (VEGMAP)

4.1.2. Ecological Processes, Functioning and Drivers

The grasslands within the greater region are typically fire and or frost driven, which keeps these areas from becoming woody tree dominated. Currently little occurs in terms of habitat fragmentation, except for naturally occurring ridges and outcrops mentioned above, however these areas provide certain microclimates for unique species, most listed or protected. This is also largely since the rocky areas also protect these species from the fires and frost, thus providing them with opportunities to develop / survive.

Thus, the focus of the baseline assessment was to map these habitats or corridors associated with these habitats, so that this forms the No-Go areas, as they provide habitat variability and unique species assemblages when compared to the grassland areas.

4.1.3. Species

The vegetation within the study sites is largely uniform in species diversity and plant cover (i.e., only dominated by a small number of grass and herb species) and in a fair condition (Table 2 and Plate 1). This is possibly due to the higher-than-normal rainfall, that has occurred within the region over the past two years. Grass cover (abundance) was more dominant than usually recorded within the region, however an increase in forb and geophytic species was not noted when compared to past surveys conducted by EnviroSci in the region. The only change is overall species richness / diversity, i.e., and increase in species complexity was observed along ridgelines, rocky outcrops and koppies, while the remaining portions of the site was species poor.



Plate 1: A view of a typical vegetation associated with the lower valleys and then upper plateaus in the background that dominates the region.



Plate 2: Several species observed in early spring that are protected under the Provincial Ordinance such as Gonialoe variegata (left) and Moraea spathulate (right)

The following are fauna species that potentially occur within the study area and are listed as protected species (species indicated in **bold** were observed within the study sites during the field visit):

Schedule 1: Specially Protected Fauna as per the Western Cape Nature Conservation Ordinance (Ordinance No. 3 of 2000)

- *Felis nigripes* - Black-footed cat / Miershooptier
- *Felis silvestris* - African wild cat / Afrika wildekat
- *Ictonyx striatus* - Striped polecat / Stinkmuishond
- *Mellivora capensis* - Honey badger / Ratel
- ***Otocyon megalotis* - Bat-eared fox / Bakoorvos**
- *Proteles cristatus* – Aardwolf / Maanhaarjakkals
- *Vulpes chama* - Cape fox / Silver jackal Silwervos
- *Orycteropus afer* - Aardvark / Ant-bear Erdvark / Aardvark
- Atelerix frontalis – South African hedgehog
- Family: *Chamaeleonidae* - Chamaeleons, all species
- **Family: *Cordylidae* Girdled lizards, all species**

Schedule 2: Protected Species as per the Western Cape Nature Conservation Ordinance (No. 3 of 2000), lists virtually all indigenous fauna which do not fall under Schedule 1 are classified under then Schedule 2. Except those species classified as pests.

In terms of mammals most rodents, shrews, elephant shrews, bats, hares and rabbits, carnivores such as mongoose, genets, and meerkat, antelope such as klipspringer, steenbok, Mountain reedbuck and duiker are included. In terms of other vertebrates, all tortoises, lizards, most harmless snakes and all frogs are listed under Schedule 2. The full list is contained within the Schedule and it not repeated here.

In terms of fauna, the following, *inter alia,* are protected and may not be hunted, captured or harmed without a permit:

- All tortoises [3 species observed which include Angulate tortoise (*Chersina angulate*), Karoo Padloper (*Chersobius boulengeri*) and Southern Tent Tortoise (*Psammobates tentorius tentorius*)];
- All lizards;
- All frogs;
- Most snakes [2 species were observed Mole snake (*Pseudoaspis cana*), Karoo sand snake (*Psammophylax rhombeatus rhombeatus*),
- All indigenous antelope;
- Aardvark;
- Most small carnivores such as Honey Badger, Cape Fox, Bat-eared Fox;
- Large Grey Mongoose etc.; and
- Most birds except pest species.

Except for the tortoises and snakes, the species listed above typically leave the area once construction commences, thus permits for the relocation of snakes and tortoises must be obtained.

4.1.4. Conservation Planning

Critical Biodiversity Areas (CBAs)

Figure 3 indicates the various Critical Biodiversity Areas (CBAs), as well as Ecological Support Areas, as defined by the Western Cape Biodiversity Spatial Plan (2017), where the proposed footprints have for this most part avoided all CBAs (Type 1 and 2). PV 5 and PV 6 do have small portions of the respective footprints within CBA Type 1. However during the course of this investigation fine scale mapping of the areas associated with the habitats identified by the CBA cells, where confirmed and then delineated so that these (aquatic areas for both sites) are excluded from the footprint, which was then confirmed or could thus be spanned in the case of the overhead line that extends from PV 5.

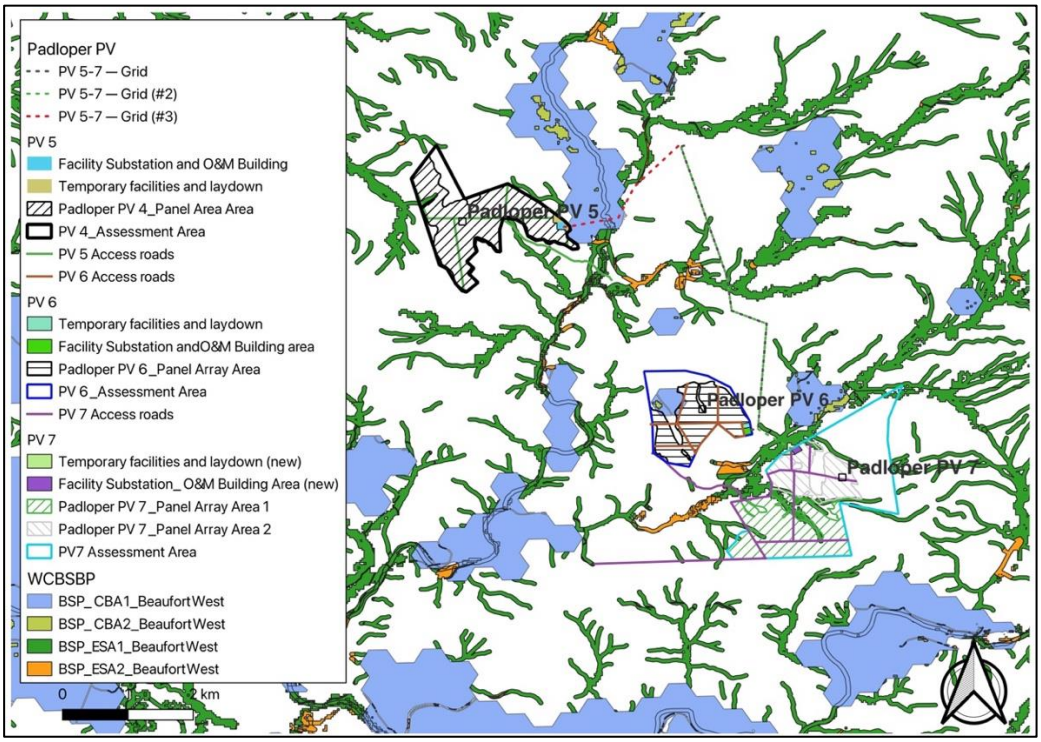


Figure 3: Western Cape Biodiversity Spatial Plan CBA and ESAs (WCBS, 2017)

Ecological Support Areas (ESAs)

Figure 3 indicates Ecological Support Areas (ESAs) as identified by the WCBSP (2017). The ESA in the study areas are associated with drainage features, that were buffered. Due to the nature of the regional hydrology, which spans large areas, not all of these systems could then be avoided.

However, as in the case of CBAs, the habitat associated with the ESAs was delineated at a finer scale, and then presented to the design team so that these areas could be avoided. Therefore, limited fragmentation of any ESA is anticipated, since the ESAs (rivers) will be crossed, previously disturbed areas will be used through the use of existing roads and tracks.

Protected Areas (PAs)

No Protected Areas (PAs) occur within the development footprints, while a portion of the PV 5 site is located within a protected area expansion site for the Karoo Escarpment Grassland region. The proposed PV 6 and PV 7 are not located within an of the areas identified as Protected Area Expansion sites.

4.1.5. Key Landscape Features

4.1.5.1. Strategic Water Source Areas

Not applicable

4.1.5.2. Freshwater Ecosystem Priority Area Sub Catchments

Only a portion of the PV 5 site is located with an National Freshwater Ecosystem Priority Area (NEFPA), and is discussed in greater detail in the aquatic assessment, however any of the aquatic habitats associated with this NFEPA were delineated a finer scale so that the footprint could be excluded from any core or function aquatic zones. The proposed PV 6 and PV 7 are not located within any of the areas identified as part of the NFEPA.

4.2. Project Specific Description

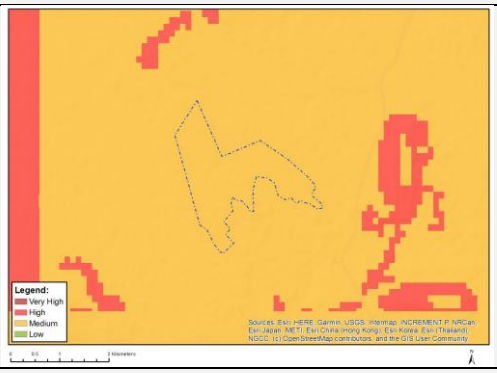
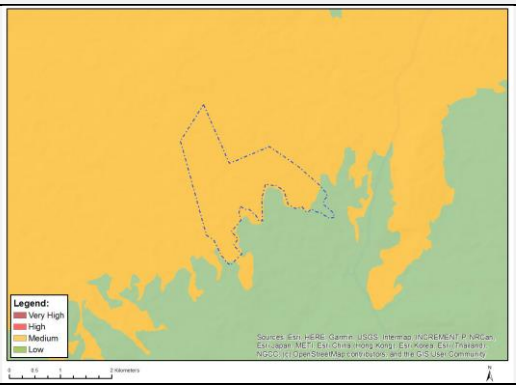
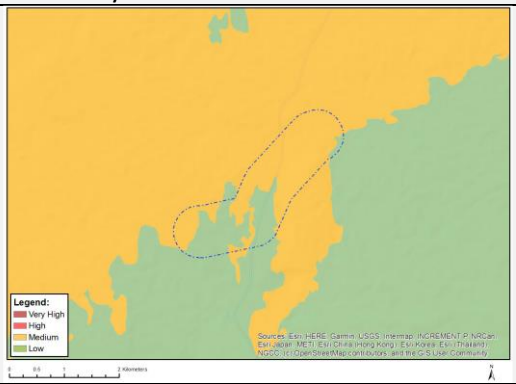
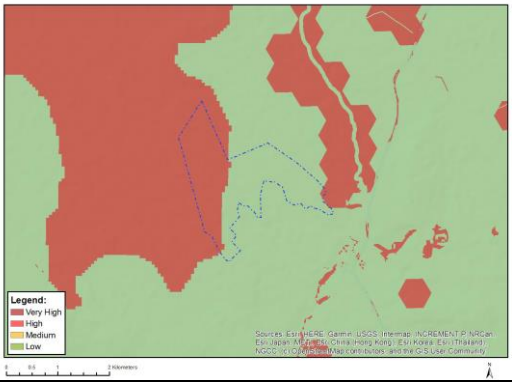
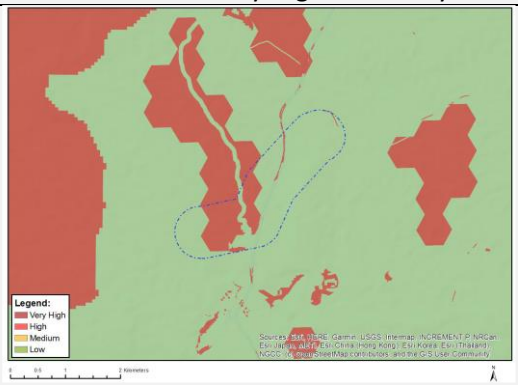
As previously state, the footprints are located in area largely uniform in species diversity and plant cover (i.e., only dominated by a small number of grass and herb species) and in a fair condition. However, Upper Karoo (NKu 4) vegetation type is listed as Least Concern with regard Conservation Status, while being poorly protected (SANBI, 2018).

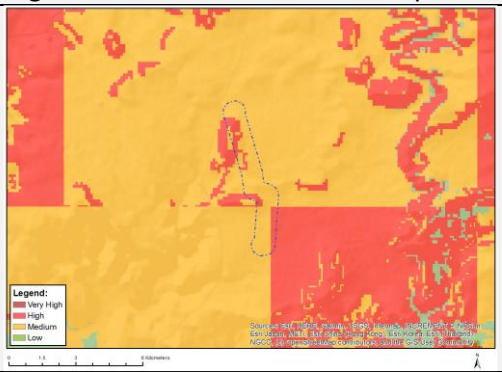
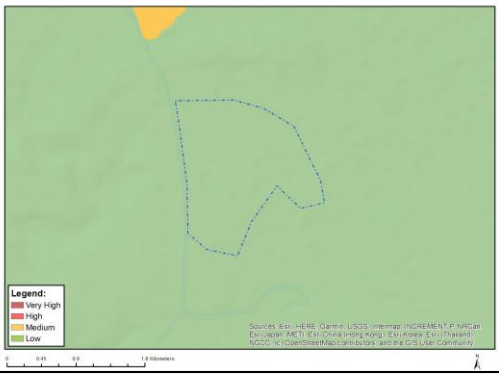
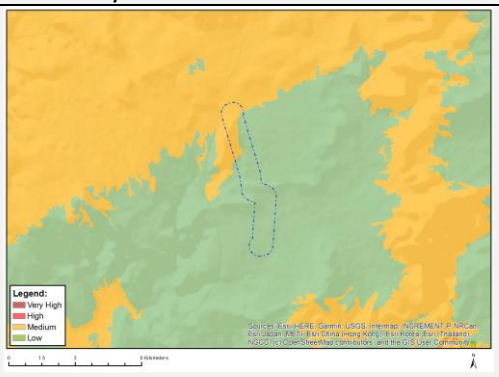
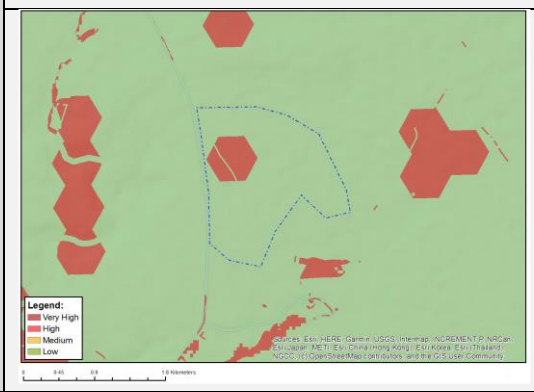
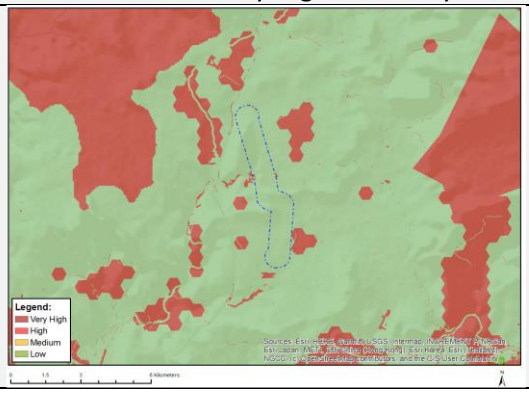
4.3. Identification of Environmental Sensitivities

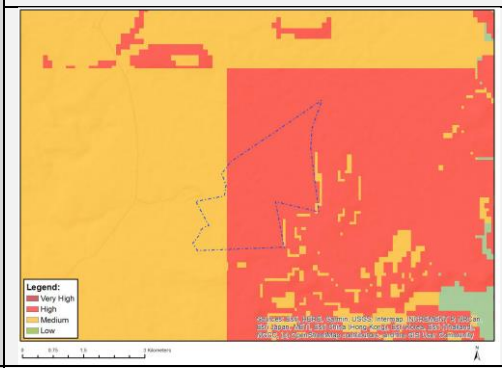
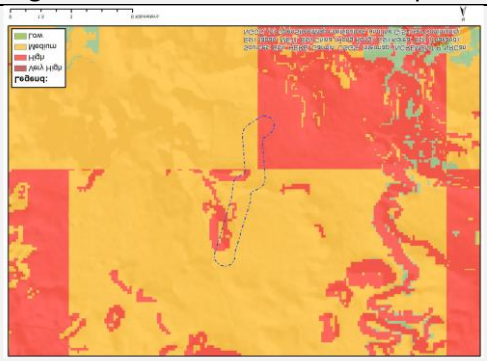
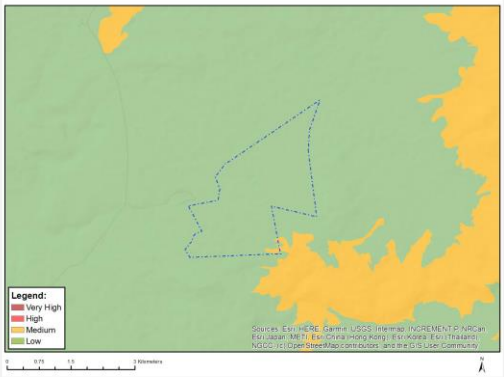
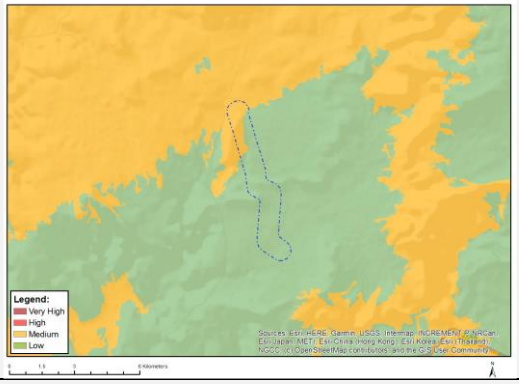
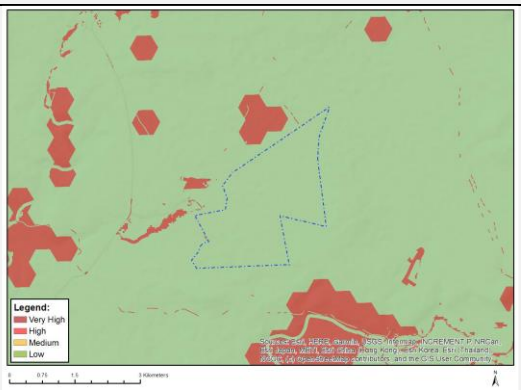
4.3.1. Sensitivities identified by the National Web-Based Environmental Screening Tool

The regulatory requirements are also discussed with regard NEMA in Section 3 of this report. While the *Protocol for specialist assessment and minimum report content requirements for the environmental impacts on terrestrial biodiversity* (Government Gazette 43110, 20 March 2020), superseding the Appendix 6 NEMA requirements, was also adhered to. This report thus meets the criteria to fulfil a Terrestrial Biodiversity Specialist Assessment Report as the proposed site contains areas rated as ***Very High***, **Medium, and Low** sensitivity by the DFFE Screening Tool for the great study area, while in Appendix 3, the Site Specific Verification Statement is discussed in more detail.

Based on the DFFE Screening Tool, results for the respective sites can be summarised as follows for each of the respective Biodiversity Themes

Theme	PV 5 Site	PV 5 Grid
Animal	Riverine Rabbit (*Bunolagus monticularis*) Medium sensitivity	Riverine Rabbit (*Bunolagus monticularis*) Medium Sensitivity. High = birds not assessed in this report
		
Plants	*Hereroa concave* Medium sensitivity	*Hereroa concave* Medium sensitivity Sensitive species 945 Medium sensitivity *Anisodontea malvastroides* Medium sensitivity
		
Terrestrial	CBA 1 Terrestrial Very High sensitivity FEPA Catchment Very High sensitivity	ESA 2 – restore from land use Very High sensitivity CBA 1 Terrestrial Very High sensitivity
		

Theme	PV 6 Site	PV 6 Grid
Animal	Riverine Rabbit (*Bunolagus monticularis*) Medium sensitivity	Riverine Rabbit (*Bunolagus monticularis*) Medium Sensitivity. High = birds not assessed in this report
		
Plants	All Low sensitivity	*Hereroa concave* Medium sensitivity Sensitive species 945 Medium sensitivity *Anisodontea malvastroides* Medium sensitivity
		
Terrestrial	CBA 1 Terrestrial Very High sensitivity CBA 2 Terrestrial Very High sensitivity	ESA 2 – restore from land use Very High sensitivity CBA 1 Terrestrial Very High sensitivity
		

Theme	PV 7 Site	PV 7 Grid
Animal	Riverine Rabbit (*Bunolagus monticularis*) Medium sensitivity	Riverine Rabbit (*Bunolagus monticularis*) Medium Sensitivity. High = birds not assessed in this report
		
Plants	*Sensitive species 945 Medium sensitivity* *Anisodontea malvastroides Medium sensitivity*	*Hereroa concave* Medium sensitivity Sensitive species 945 Medium sensitivity *Anisodontea malvastroides* Medium sensitivity
		
Terrestrial	All Low sensitivity	ESA 2 – restore from land use Very High sensitivity CBA 1 Terrestrial Very High sensitivity
		

4.3.2. Specialist Sensitivity Analysis and Verification

Using the baseline description and field data, while considering the current disturbances and site characteristics, several ecological features were identified, then categorised into one of number pre-determined sensitivity categories to provide protect and/or guide the layout planning and design processes. This was conducted using the Site Ecological Importance (SEI) Protocol as per the SANBI Guidelines.

The SEI protocol used in this assessment, provides a species and habitat ranking approach to assessing the importance and thus indirectly the sensitivity of a particular site. This was adapted from SANBI, 2020 Ver 3.1 2022, and Table 3 indicates the Sensitivity Ratings, while Table 4 indicates the results, calculated as follows and then summarised spatially in Figure 7.

Note SEI is calculated as follows based on the Section 8 of SANBI (2022):

Site Ecological Importance = Biodiversity Importance (BI) + Receptor Resilience (RR)

Where BI = Conservation Importance (CI) + Functional Integrity (FI)

Table 3: Species and habitat sensitivity ratings definitions

Sensitivity Rating	Description
Very High	Avoidance mitigation – no destructive development activities should be considered. Offset mitigation not accept- able/not possible (i.e. last remaining populations of species, last remaining good condition patches of ecosystems/ unique species assemblages). Destructive impacts for species/ecosystems where persistence target remains.
High	Avoidance mitigation wherever possible. Minimisation mitigation – changes to project infrastructure design to limit the amount of habitat impacted; limited development activities of low impact acceptable. Offset mitigation may be required for high impact activities.
Medium	Minimisation and restoration mitigation – development activities of medium impact acceptable followed by appropriate restoration activities.
Low	Minimisation and restoration mitigation – development activities of medium to high impact acceptable followed by appropriate restoration activities.
Very Low	Minimisation mitigation – development activities of medium to high impact acceptable and restoration activities may not be required.

These proposed constraints / buffers do not include bird and or bat specialist.

Table 4: Results of the sensitivity rating / constraints assessment

Development Component	Habitat Type	Conservation Status and Importance	Functional Integrity	Sensitivity and Ecological Importance (SEI)	Recommended Buffer	Development Acceptability	Sensitivity Rating Override [4]
PV Panels	Rocky ridges or outcrops	Very High & High	High	Very High	25 m buffer	No-go	Yes
	Remainder of site	Low & Low	High	Low	0m	Yes	N/A
Buildings / Substations & BESS	Rocky ridges or outcrops	Very High & High	High	Very High	25 m buffer	No-go	Very High & High
	Remainder of site	Low & Low	High	Low	0m	Yes	N/A
Roads	Rocky ridges or outcrops	Very High & High	High	Very High	25 m buffer	No-go	Very High & High
	Remainder of site	Low & Low	High	Low	0m	Yes	N/A
OHL	Rocky ridges or outcrops	Very High & High	High	Very High	25 m buffer	No-go	Yes
	Remainder of site	Low & Low	High	Low	0m	Yes	N/A

In summary, structures such as buildings, substations and BESS, should be placed outside of the High Sensitivity habitats, while remaining structures (PV panels, roads and transmission lines) could cross or span the Moderate / Low Sensitivity areas. Noting that Low Sensitivity can also = Moderate areas but with existing impacts e.g., current roads, farm tracks of previously disturbed areas.

[4] Should **an impact such as a road or disturbance already occur within the proposed footprint and be confirmed during a site walkdown process and / or a technical solution can be provided that would not impact on the form or function of the habitat in question, then the sensitivity rating for that habitat against the activity can be overridden.**

Figure 7 below indicates the proposed activities in relation to the delineated systems and the respective sensitivity ratings, noting the proposed layout has avoided Very High and High sensitivity areas. It should however be noted that these are define at a finer scale than those shown in the Screening Tool results, and which have been avoided by the proposed layout either through complete avoidance or making use of already disturbed areas such as lands or roads/tracks. For reference the aquatic zones are also shown in Figure 7 as these are related to the CBAs and ESAs discussed earlier.

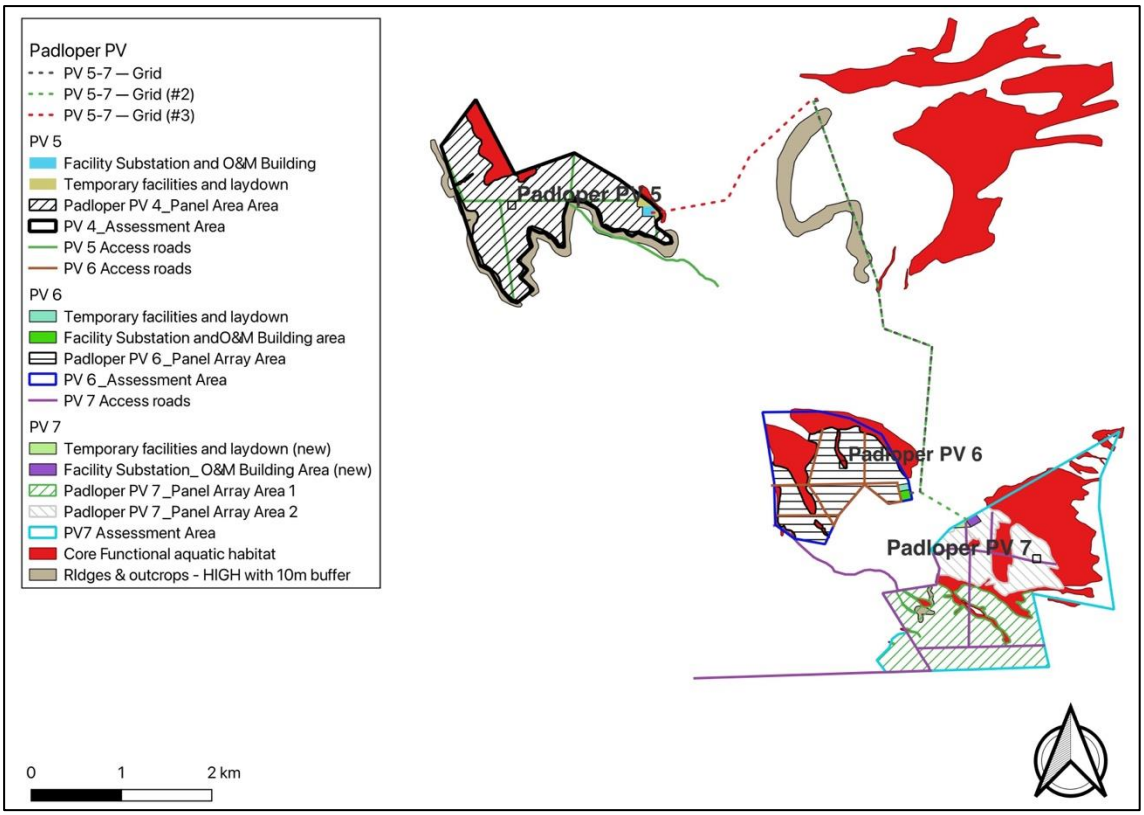


Figure 7: The delineated habitats and their respective sensitivity ratings in relation to the proposed layout inclusive of the respective buffers, where all other areas are rated as Low.

4.3.3. Sensitivity Analysis Summary Statement

When compared to the results of the DFFE National Screening Tool results in relation to the receiving environment, the proposed layout (PV areas and buildings) have avoided any areas that would be considered, as Very High sensitivity (Figure 7) which have been avoided by either through complete avoidance or making use of already disturbed areas such as lands or roads/tracks.

5. Alternative Development Footprints

The 2014 EIA Regulations require that any feasible and reasonable activity, location or technology alternatives considered must be described and comparatively assessed. However as most of the infrastructure has through a process of design iteration avoided important terrestrial habitats, no alternative layout assessment is deemed necessary.

6. Issues, Risks, and Impacts

6.1. Identification of Potential Impacts/Risks for the proposed Padloper PV and EGI 5-7

The following direct and indirect impacts of the facilities, which are aligned with those contained in the Biodiversity Assessment Protocol were assessed and included the following:

Construction Phase

- Potential impact 1: Loss of Species of Special Concern.
- Potential impact 2: Damage and disturbance of the habitats rated as Very High Sensitivity.
- Potential impact 3: Loss of ecosystem services, and or habitats that would result in habitat fragmentation, especially those included in any Biodiversity Conservation plans as CBAs or Ecological Support Areas. This in turn could also lead to habitat fragmentation.
- Potential impact 4: Displacement of any animals because of any disturbance or habitat loss. This includes animal mortalities related to construction vehicle traffic.

Operational and Maintenance Phase

- Potential impact 5: Displacement of any animals which mostly includes animal mortalities related to vehicle traffic.

Decommissioning Phase

- Potential impact 6: Damage and disturbance of the habitats rated as Very High Sensitivity.
- Potential impact 7: Displacement of any animals because of any disturbance or habitat loss. This includes animal mortalities related to construction vehicle traffic.

Cumulative Impacts

- Cumulative impact 8: All activities, when combined with present day activities.

6.2. Summary of Issues identified during the Public Consultation Phase

None received at this stage of the Basic Assessment (BA) Processes.

7. Impact Assessment

Due to the nature of the project, the overall impacts are typically related to the construction and decommissioning phases of the project, i.e. when the soils are disturbed when the road networks and hard surface areas are developed. Several potential issues, risks and related impacts are summarised below

and then discussed in more detail in Section 7 of the impact assessment below, however all the impacts assessed were found to be similar for all the projects and associated grid connections were relevant as listed below. This is largely since the proposed layouts have avoid Very High sensitivity / No go areas identified in this assessment as a means to impact avoidance rather the impact mitigation.

7.1 Potential Impacts during the Construction Phase

IMPACT 1: Loss of Species of Special Concern – Direct Impact

Several terrestrial plant SSC within the region have conservation value or are protected by the Provincial bodies of legislation, several listed species were observed within the study area, but could either be avoided during the micrositing phase post authorisation or be relocated.

IMPACT 2: Damage and disturbance of the habitats rated as Very High Sensitivity – Direct Impact

This assessment identified several Very High sensitivity terrestrial environments that have been avoided. These habitats include any areas that contain rocky ridges, large rocky outcrop areas or koppies. The rationale being that these areas contained the highest prevalence of unique microhabitat within the area, and consequently also contained the highest number of protected / listed plant species.

IMPACT 3: Loss of ecosystem services, and or habitats that would result in habitat fragmentation, especially those included in any biodiversity conservation plans as CBA or ESAs. This in turn could also lead to habitat fragmentation – Direct Impact

Due to the nature of the project design, a large area will be transformed. This to a degree creates habitat fragmentation, but unlikely to result in large scale loss of ecosystems services as the remainder of the study area remains in a natural state.

The proposed layout has avoided, any terrestrial CBA, and only roads and the overhead power lines will affect ESA. It is however the intention of the project as shown in the proposed layout that areas that will be affected, already contain impacts (e.g. watercourse crossings) or based on the fine scale mapping will be avoided, thus no additional cumulative impacts on the CBA/ESA areas. This will then also limit any additional fragmentation of these habitats.

IMPACT 4: Displacement of any animals because of any disturbance or habitat loss. This includes animal mortalities related to construction vehicle traffic – Direct Impact

The construction phase has the potential to create animal disturbance either through physical habitat destruction or displacement by plant and vehicle movement. Vehicle movement also results in animal mortalities.

Impact Summary: Construction Phase

Impact 1	*Impact Criteria*		*Significance and Ranking (Pre-Mitigation)*	*Potential mitigation measures*	*Significance and Ranking (Post-Mitigation)*	*Confidence Level*
CONSTRUCTION PHASE						
Loss of Species of Special Concern (SSC)	*Status*	*Negative*	*Low*	*A preconstruction walkdown must be conducted to identify any areas that contain any terrestrial plant SSC so that these can be demarcated and avoided in the final design process* *Any remaining species that could not be avoided must then be relocated in a Search and Rescue programme that should be initiated prior to construction. Note this has not been included as a means to reduce the impact rating.* *Develop Construction EMPr, Monitoring and Rehabilitation Plan*	***Very Low***	*High*
	Spatial Extent	*Regional*				
	Duration	*Long term*				
	Consequence	*Moderate*				
	Probability	*Unlikely*				
	Reversibility	*Moderate*				
	Irreplaceability	*Low*				

Impact 2	*Impact Criteria*		*Significance and Ranking (Pre-Mitigation)*	*Potential mitigation measures*	*Significance and Ranking (Post-Mitigation)*	*Confidence Level*
CONSTRUCTION PHASE						
Damage and disturbance of the habitats rated as Very High Sensitivity – Direct Impact	*Status*	*Negative*	*Low*	*A pre-construction walkthrough by a terrestrial specialist is recommended and they can assist with the development of the Construction Rehabilitation and Monitoring Plan, coupled to micro-siting of the final layout.* *Where large cut and fill areas are required for roads, these must be stabilised and rehabilitated during the construction process, to minimise erosion and sedimentation.* *All alien plant re-growth, which is currently low within the greater region must be monitored and should it occur, these plants must be eradicated within the project footprint during the construction phase.*	***Very Low***	*High*
	Spatial Extent	*Site specific*				
	Duration	*Short term*				
	Consequence	*Moderate*				
	Probability	*Likely*				
	Reversibility	*Moderate*				
	Irreplaceability	*Low*				
	Spatial Extent	*Site specific*				
	Duration	*Short term*				
	Consequence	*Moderate*				
	Probability	*Likely*				
	Reversibility	*Moderate*				
	Irreplaceability	*Low*				

Impact 3	*Impact Criteria*		*Significance and Ranking (Pre-Mitigation)*	*Potential mitigation measures*	*Significance and Ranking (Post-Mitigation)*	*Confidence Level*
CONSTRUCTION PHASE						
Loss of ecosystem services, and or habitats that would result in habitat fragmentation, especially those included in any Biodiversity Conservation plans as Critical Biodiversity areas or Ecological Support Areas. This in turn could also lead to habitat fragmentation – Direct Impact	*Status* *Spatial Extent* *Duration* *Consequence* *Probability* *Reversibility* *Irreplaceability*	*Negative* *Site specific* *Short term* *Moderate* *Likely* *Moderate* *Low*	*Low*	*Develop and implement a Construction Rehabilitation and Monitoring Plan post Environmental Authorisation. This must be developed following the finalisation of the PV and road layout and a walk down has been completed. This plan should include relocation of suitable plant species, but more important protect any topsoil stores and promote the collection of vegetative material and propagules / seed to assist with the revegetation of the site* *Where possible, temporary construction lay-down or assembly areas should be sited on transformed areas; and* *rapid regeneration of plant cover must be encouraged by setting aside topsoil during earthmoving and replacing onto areas where the re- establishment of plant cover is desirable to prevent erosion.*	***Very Low***	*High*

Impact 4	*Impact Criteria*		*Significance and Ranking (Pre-Mitigation)*	*Potential mitigation measures*	*Significance and Ranking (Post-Mitigation)*	*Confidence Level*
CONSTRUCTION PHASE						
Displacement of any animals because of any disturbance or habitat loss. This includes animal mortalities related to construction vehicle traffic – Direct Impact	*Status* *Spatial Extent* *Duration* *Consequence* *Probability* *Reversibility* *Irreplaceability*	*Negative* *Site specific* *Short term* *Moderate* *Likely* *Moderate* *Low*	*Low*	*Clear demarcation during the construction phase of all undisturbed sensitive areas that are not within the direct footprint to ensure that there is no uncontrolled access by construction vehicles and labourers;* *Educate contractors as to the importance of the undisturbed conservations areas and importance of avoiding them;* *All vehicles must stick to designated and prepared roads and adhere to the speed limit on site of 40km/hr;* *Mitigating the risk of poaching by preventing individuals from wandering in the veld after hours; banning the possession of dogs on site by construction and maintenance staff.*	***Very Low***	*High*

7.2 **Potential Impacts during the Operational and Maintenance Phase**

- **IMPACT 5: Potential impact 5: Displacement of any animals which mostly includes animal mortalities related to vehicle traffic - Direct**

Although most of the species observed are mobile, the increase in vehicle movement could result in an increase in road mortalities.

Impact 5	*Impact Criteria*		*Significance and Ranking (Pre-Mitigation)*	*Potential mitigation measures*	*Significance and Ranking (Post-Mitigation)*	*Confidence Level*
OPERATIONAL AND MAINTENANCE PHASE						
Potential impact 5: Displacement of any animals which mostly includes animal mortalities related to vehicle traffic - Direct	*Status*	*Negative*	*Low*	*All vehicles must stick to designated and prepared roads and adhere to the speed limit on site of 40km/hr.*	***Very Low***	*High*
	Spatial Extent	*Site specific*				
	Duration	*Short term*				
	Consequence	*Moderate*				
	Probability	*Unlikely*				
	Reversibility	*Moderate*				
	Irreplaceability	*Low*				

7.3 **Potential Impacts during the Decommissioning Phase**

IMPACT 6: Damage and disturbance of the habitats rated as Very High Sensitivity – Direct Impact

This assessment identified several Very High sensitivity terrestrial environments that have been avoided. These habitats include any areas that contain rocky ridges, large rocky outcrop areas or koppies. The rationale being that these areas contained the highest prevalence of unique microhabitat within the area, and consequently also contained the highest number of protected / listed plant species.

IMPACT 7: Loss of ecosystem services, and or habitats that would result in habitat fragmentation, especially those included in any biodiversity conservation plans as Critical Biodiversity Areas (CBAs) or Ecological Support Areas (ESAs). This in turn could also lead to habitat fragmentation – Direct Impact

Due to the nature of the project design, a large area will be transformed. This to a degree creates habitat fragmentation, but unlikely to result in large scale loss of ecosystems services as the remainder of the study area remains in a natural state.

The proposed layout has avoided, any terrestrial CBAs, and only roads and the OHLs will affect ESAs. It is however the intention of the project as shown in the proposed layout that areas that will be affected, already contain impacts (e.g. watercourse crossings) or based on the fine scale mapping will be avoided, thus no additional cumulative impacts on the CBA/ESA areas. This will then also limit any additional fragmentation of these habitats.

Impact Summary: Decommissioning Phase

Impact 6	*Impact Criteria*		*Significance and Ranking (Pre-Mitigation)*	*Potential mitigation measures*	*Significance and Ranking (Post-Mitigation)*	*Confidence Level*
DECOMISSIOING PHASE						
Loss of ecosystem services, and or habitats that would result in habitat fragmentation, especially those included in any Biodiversity Conservation plans as Critical Biodiversity areas or Ecological Support Areas. This in turn could also lead to habitat fragmentation – Direct Impact	*Status*	*Negative*	*Low*	*Develop and implement a Decommissioning Rehabilitation and Monitoring Plan* *Where possible, temporary construction lay-down or assembly areas should be sited on transformed areas; and* *Rapid regeneration of plant cover must be encouraged by setting aside topsoil during earthmoving and replacing onto areas where the re- establishment of plant cover is desirable to prevent erosion.*	***Very Low***	*High*
	Spatial Extent	*Site specific*				
	Duration	*Short term*				
	Consequence	*Moderate*				
	Probability	*Likely*				
	Reversibility	*Moderate*				
	Irreplaceability	*Low*				

Impact 7	*Impact Criteria*		*Significance and Ranking (Pre-Mitigation)*	*Potential mitigation measures*	*Significance and Ranking (Post-Mitigation)*	*Confidence Level*
DECOMISSIONING PHASE						
Displacement of any animals because of any disturbance or habitat loss. This includes animal mortalities related to vehicle traffic – Direct Impact	*Status*	*Negative*	*Low*	*Clear demarcation during the decommissioning phase of all undisturbed sensitive areas that are not within the direct footprint to ensure that there is no uncontrolled access by construction vehicles and labourers;* *Educate contractors as to the importance of the undisturbed conservations areas and importance of avoiding them;* *All vehicles must stick to designated and prepared roads and adhere to the speed limit on site of 40km/hr;* *Mitigating the risk of poaching by fencing in the accommodation compounds (if present) of the construction crews, to prevent individuals from wandering in the veld after hours; banning the possession of dogs on site by construction and maintenance staff.*	***Very Low***	*High*
	Spatial Extent	*Site specific*				
	Duration	*Short term*				
	Consequence	*Moderate*				
	Probability	*Likely*				
	Reversibility	*Moderate*				
	Irreplaceability	*Low*				

8.1 Cumulative Impacts

When assessing the impacts, it is unlikely that additional large-scale impacts on the terrestrial environment would occur, this being based on the fact that once stable / vegetated, the works areas would not create any additional disturbances. This is assuming that the mitigation in the construction, operational and decommissioning phases are adhered to.

Therefore, the cumulative assessment considers the various proposed renewable projects that occur within a 30 km radius of this site and their associated grid connections as well as the remainder of the Padloper cluster projects. EnviroSci has assisted with assessing and micrositing several of these projects, thus understands these developments and the potential impacts and proposed mitigations.

Impact 8: All activities within delineated areas, when combined with present day activities

The cumulative impact of the present-day renewable energy projects combined with the proposed project activities that may impact on the respective systems were considered for this PV cluster proposal.

Impact Summary: Cumulative Impacts for this proposed project

Impact 8	*Impact Criteria*		*Significance and Ranking (Pre-Mitigation)*	*Potential mitigation measures*	*Significance and Ranking (Post-Mitigation)*	*Confidence Level*
CONSTRUCTION PHASE						
Additional activities within delineated Very High Sensitivity Areas	*Status*	*Negative*	*Low*	*It is assumed that all projects will adhere to the site-specific recommendations in their respective EMPrs to ensure that impacts are mitigated where possible – including avoidance of identified sensitive systems and usage of existing disturbance areas*	***Very low***	*High*
	Spatial Extent	*Site specific*				
	Duration	*Long term*				
	Consequence	*Moderate*				
	Probability	*Unlikely*				
	Reversibility	*Moderate*				
	Irreplaceability	*Low*				
OPERATIONAL AND MAINTENANCE PHASE						
Displacement of fauna	*Status*	*Negative*	*Very Low*	*It is assumed that all projects will adhere to the site-specific recommendations in their respective EMPrs to ensure that impacts are mitigated where possible - including usage of existing disturbance area and stabilisation of erosion points (sand bags in the short term) using gabions and reno mattress as required.*	***Very Low***	*High*
	Spatial Extent	*Site specific*				
	Duration	*Short term*				
	Consequence	*Low*				
	Probability	*Unlikely*				
	Reversibility	*Moderate*				
	Irreplaceability	*Low*				
DECOMISSIONING PHASE						
Displacement of fauna	*Status*	*Negative*	*Very Low*	*It is assumed that all projects will adhere to the site-specific recommendations in their respective EMPrs to ensure that impacts are mitigated where possible - including usage of existing disturbance area and stabilisation of erosion points (sand bags in the short term) using gabions and reno mattress as required.*	***Very Low***	*High*
	Spatial Extent	*Site specific*				
	Duration	*Short term*				
	Consequence	*Low*				
	Probability	*Unlikely*				
	Reversibility	*Moderate*				
	Irreplaceability	*Low*				

The cumulative impact of the present-day renewable energy projects combined with the proposed Padloper Cluster project activities that may impact on the respective systems were considered for all projects combined.

Impact Summary: Cumulative Impacts for the combined projects should all PV projects be approved

Impact 8	*Impact Criteria*		*Significance and Ranking (Pre-Mitigation)*	*Potential mitigation measures*	*Significance and Ranking (Post-Mitigation)*	*Confidence Level*
CONSTRUCTION PHASE						
Additional activities within delineated Very High Sensitivity Areas	*Status*	*Negative*	*Low*	*It is assumed that all projects will adhere to the site-specific recommendations in their respective EMPrs to ensure that impacts are mitigated where possible – including avoidance of identified sensitive systems and usage of existing disturbance areas*	***Very low***	*High*
	Spatial Extent	*Site specific*				
	Duration	*Long term*				
	Consequence	*Moderate*				
	Probability	*Unlikely*				
	Reversibility	*Moderate*				
	Irreplaceability	*Low*				
OPERATIONAL PHASE						
Displacement of fauna	*Status*	*Negative*	*Very Low*	*It is assumed that all projects will adhere to the site-specific recommendations in their respective EMPrs to ensure that impacts are mitigated where possible - including usage of existing disturbance area and stabilisation of erosion points (sand bags in the short term) using gabions and reno mattress as required.*	***Very Low***	*High*
	Spatial Extent	*Site specific*				
	Duration	*Short term*				
	Consequence	*Low*				
	Probability	*Unlikely*				
	Reversibility	*Moderate*				
	Irreplaceability	*Low*				
DECOMISSIONING PHASE						
Displacement of fauna	*Status*	*Negative*	*Very Low*	*It is assumed that all projects will adhere to the site-specific recommendations in their respective EMPrs to ensure that impacts are mitigated where possible - including usage of existing disturbance area and stabilisation of erosion points (sand bags in the short term) using gabions and reno mattress as required.*	***Very Low***	*High*
	Spatial Extent	*Site specific*				
	Duration	*Short term*				
	Consequence	*Low*				
	Probability	*Unlikely*				
	Reversibility	*Moderate*				
	Irreplaceability	*Low*				

8.2 No-Go Option

With regard the No-Go option it is assumed that the site would continue to function even with the due to the prevalence of agricultural land use. This would continue into the long-term with a Low intensity that would impact on the regional scale due to loss of important habitat. Little in the way of mitigation could be proposed due to the social needs of the surrounding residents, grazing areas, coupled to the need access will continue.

Impact 9	*Impact Criteria*		*Significance and Ranking (Pre-Mitigation)*	*Potential mitigation measures*	*Significance and Ranking (Post-Mitigation)*	*Confidence Level*
No-Go						
Should the project not proceed	*Status*	*Negative*	*Low*	*As present land use will continue, which has lead to little in the way of overall degradation of the site, then no mitigations are proposed.;*	***Very Low***	*High*
	Spatial Extent	*Site specific*				
	Duration	*Short term*				
	Consequence	*Moderate*				
	Probability	*Unlikely*				
	Reversibility	*Moderate*				
	Irreplaceability	*Low*				

9. Legislative and Permit Requirements

The following is pertinent to this study:

- Section 24 of The Constitution of the Republic of South Africa (1996);
- Agenda 21 – Action plan for sustainable development of the Department of Environmental Affairs and Tourism (DEAT) (1998);
- National Environmental Management Act (NEMA), 1998 (Act No. 107 of 1998) inclusive of all amendments, as well as the NEM: Biodiversity Act (NEM: BA);
- National Water Act, 1998 (NWA, Act No. 36 of 1998);
- Conservation of Agricultural Resources Act, 1983 (CARA, Act No. 43 of 1983);
- Minerals and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002);
- National Forest Act (Act No. 84 of 1998); and
- National Heritage Resources Act (Act No. 25 of 1999) – could apply if cultural use or heritage is linked to any aquatic resources.
- Protocol for Specialist assessment and Minimum Report content Requirements for the Environmental Impacts on Animals, Plant and Terrestrial Biodiversity (Government Gazette 43110, 20 March 2020).

NEMA and the CARA identify and categorise invasive plants together with associated obligations on the landowner. Several Category 1 and 2 invasive plants were observed in a number of areas within the sites under investigation.

10. Environmental Management Programme (EMPr) Inputs

The following are key recommendations, which are also critical to the proposed mitigations:

- Any of the activities, should also be monitored by the appointed Environmental Officer /Environmental Control Officer (EO/ECO) on a daily basis, especially during periods of river flow during construction.
- Search and Rescue should be initiated prior to construction for listed and protected species.
- The EMPr, must include a Specific Construction Monitoring and Rehabilitation Plan.
- Monitoring should occur on a monthly basis for 6 months post construction and where any unstable soils occur, these must be protected with temporary stabilisation dependent on the scale of the impact i.e. sand bags - hay bales) until areas become revegetated.

11. Final Specialist Statement and Authorisation Recommendation

The nature of the project de is such that it carries a low to moderate intensity impact on terrestrial resources, with highest number of impacts being associated creation of PV Panel areas, roads, installation of cables and other infrastructures across the site. The project areas are however small, allowing for retention of much of the natural area so the ecosystems should remain largely unaffected. This is largely based on the assumption that all Very High sensitivity habitats can be avoided, through the use of the existing tracks and roads shown in this assessment.

In conclusion, most of the anticipated impacts will include disturbance during the construction phase, while changes to form and function of the site will be limited in the operational and maintenance (O&M) phase, and it is anticipated that all these would be Very Low post mitigation.

11.1. Statement and Reasoned Opinion

Based on the findings of this study, the specialist finds no reason to withhold an authorisation of any of the proposed activities, assuming that the key recommended mitigations measures are implemented

11.2. Environmental Authorisation (EA) Condition Recommendations

- A key recommendation is that that during the construction mobilisation process, that the temporary construction camps, stockpiles and laydown areas are located outside of any delineated Very High systems and where possible within existing disturbed areas.
- A final walkdown by a terrestrial specialist must be conducted to ensure that any of the proposed structures are placed within disturbed areas and sensitive systems are avoided and appropriate construction methods are employed as necessary.

12. References

Agenda 21 – Action plan for sustainable development of the Department of Environmental Affairs and Tourism (DEAT) 1998.

Agricultural Resources Act, 1983 (Act No. 43 of 1983).

Du Preez, L. And Carruthers, V. 2009. A Complete Guide To Frogs Of Southern Africa. Struik Nature, Cape Town.

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Mucina, L., & Rutherford, M.C., 2006. The Vegetation of South Africa, Lesotho and Swaziland, Strelitzia 19, South Africa.

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South African Bird Atlasing Project 2 (SABAP2). 2017. Animal Demographic Unit. Available online: http://sabap2.adu.org.za/

South African National Biodiversity Institute (SANBI). 2018. National Biodiversity Assessment (NBA). Available online: http://bgis.sanbi.org/Projects/Detail/221

Stuart, C and Stuart, T. 2007. A field guide to the mammals of Southern Africa. Struik Nature, Cape Town.

Appendix A - Specialist Expertise

CURRICULUM VITAE

Dr Brian Michael Colloty
7212215031083
1 Rossini Rd
Pari Park
Port Elizabeth, 6070
brianc@envirosci.co.za
083 498 3299

Profession: Ecologist (Pr. Sci. Nat. 400268/07) Member of the South African Wetland Society
Specialisation: Ecology and conservation importance rating of inland habitats, wetlands, rivers & estuaries
Years experience: 25 years

SKILLS BASE AND CORE COMPETENCIES

- 25 years experience in environmental sensitivity and conservation assessment of aquatic and terrestrial systems inclusive of Index of Habitat Integrity (IHI), WET Tools, Riparian Vegetation Response Assessment Index (VEGRAI) for Reserve Determinations, estuarine and wetland delineation throughout Africa. Experience also includes biodiversity and ecological assessments with regard sensitive fauna and flora, within the marine, coastal and inland environments. Countries include Mozambique, Kenya, Namibia, Central African Republic, Zambia, Eritrea, Mauritius, Madagascar, Angola, Ghana, Guinea-Bissau and Sierra Leone. Current projects also span all nine provinces in South Africa.
- 15 years experience in the coordination and management of multi-disciplinary teams, such as specialist teams for small to large scale EIAs and environmental monitoring programmes, throughout Africa and inclusive of marine, coastal and inland systems. This includes project and budget management, specialist team management, client and stakeholder engagement and project reporting.
- GIS mapping and sensitivity analysis

TERTIARY EDUCATION

- 1994: B Sc Degree (Botany & Zoology) - NMU
- 1995: B Sc Hon (Zoology) - NMU
- 1996: M Sc (Botany - Rivers) - NMU
- 2000: Ph D (Botany – Estuaries & Mangroves) – NMU

EMPLOYMENT HISTORY

- 1996 – 2000 Researcher at Nelson Mandela University – SAB institute for Coastal Research & Management. Funded by the WRC to develop estuarine importance rating methods for South African Estuaries
- 2001 – January 2003 Training development officer AVK SA (reason for leaving – sought work back in the environmental field rather than engineering sector)
- February 2003- June 2005 Project manager & Ecologist for Strategic Environmental Focus (Pretoria) – (reason for leaving – sought work related more to experience in the coastal environment)
- July 2005 – June 2009 Principal Environmental Consultant Coastal & Environmental Services (reason for leaving – company restructuring)
- June 2009 – August 2018 Owner / Ecologist of Scherman Colloty & Associates cc
- August 2018 Owner / Ecologist - EnviroSci (Pty) Ltd

SELECTED RELEVANT PROJECT EXPERIENCE

World Bank IFC Standards

- Botswana South Africa 400kv transmission line (400km) biodiversity assessment on behalf of Aurecon - current
- Farim phosphate mine and port development, Guinea Bissau – biodiversity and estuarine assessment on behalf of Knight Piesold Canada – 2016.
- Tema LNG offshore pipeline EIA – marine and estuarine assessment for Quantum Power (2015).
- Colluli Potash South Boulder, Eritrea, SEIA marine baseline and hydrodynamic surveys co-ordinator and coastal vegetation specialist (coastal lagoon and marine) (on-going).
- Wetland, estuarine and riverine assessment for Addax Biofeuls Sierra Leone, Makeni for Coastal & Environmental Services: 2009
- ESHIA Project manager and long-term marine monitoring phase coordinator with regards the dredge works required in Luanda bay, Angola. Monitoring included water quality and biological changes in the bay and at the offshore disposal outfall site, 2005-2011

South African

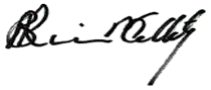
- Nuweveld Wind Farms aquatic assessment for RedCap renewables, (3 wind farms and 130km transmission line) - current
- Plant and animal search and rescue for the Karusa and Soetwater Wind Farms on behalf of Enel Green Power, Current
- Plant and animal search and rescue for the Nxuba, Oyster Bay and Garob Wind Farms on behalf of Enel Green Power, 2018 - 2019
- Plant and Animal Search and Rescue for the Port of Ngqura, Transnet Landside infrastructure Project, with development and management of on site nursery, Current
- Plant and Animal Search and Rescue for the Port of Ngqura, OTGC Tank Farm Project (2019)
- Plant search and rescue, for NMBM (Driftsands sewer, Glen Hurd Drive), Department of Social Development (Military veterans housing, Despatch) and Nxuba Wind Farm, - current
- Wetland specialist appointed to update the Eastern Cape Biodiversity Conservation Plan, for the Province on behalf of EOH CES appointment by SANBI – current. This includes updating the National Wetland Inventory for the province, submitting the new data to CSIR/SANBI.
- CDC IDZ Alien eradication plans for three renewable projects Coega Wind Farm, Sonop Wind Farm and Coega PV, on behalf of JG Afrika (2016 – 2017).
- Nelson Mandela Bay Municipality Baakens River Integrated Wetland Assessment (Inclusive of Rehabilitation and Monitoring Plans) for CEN IEM Unit - Current
- Gibson Bay Wind Farm implementation of the wetland management plan during the construction and operation of the wind farm (includes surface / groundwater as well wetland rehabilitation & monitoring plan) on behalf of Enel Green Power - 2018
- Gibson Bay Wind Farm 133kV Transmission Line wetland management plan during the construction of the transmission line (includes wetland rehabilitation & monitoring plan) on behalf of Eskom – 2016.
- Tsitsikamma Community Wind Farm implementation of the wetland management plan during the construction of the wind farm (includes surface / biomonitoring, as well wetland rehabilitation & monitoring plan) on behalf of Cennergi – completed May 2016.
- Alicedale bulk sewer pipeline for Cacadu District, wetland and water quality assessment, 2016
- Macindane bulk water and sewer pipelines wetland and wetland rehabilitation plan 2015
- Eskom Prieska to Copperton 132kV transmission line aquatic assessment, Northern Cape on behalf of Savannah Environmental 2015.
- Joe Slovo sewer pipeline upgrade wetland assessment for Nelson Mandela Bay Municipality 2014
- Cape Recife Waste Water Treatment Works expansion and pipeline aquatic assessment for Nelson Mandela Bay Municipality 2013
- Transnet Freight Rail – Swazi Rail Link (Current) wetland and ecological assessment on behalf of Aurecon for the proposed rail upgrade from Ermelo to Richards Bay
- Eskom Transmission wetland and ecological assessment for the proposed transmission line between Pietermaritzburg and Richards Bay on behalf of Aurecon (2012).
- Port Durnford Exarro Sands biodiversity assessment for the proposed mineral sands mine on behalf of Exxaro (2009)
- Fairbreeze Mine Exxaro (Mtunzini) wetland assessment on behalf of Strategic Environmental Services (2007).
- Wetland assessment for Richards Bay Minerals (2013) – Zulti North haul road on behalf of RBM.
- Biodiversity and aquatic assessments for 125 renewable projects in the past 9 years in the Western, Eastern, Northern Cape, KwaZulu-Natal and Free State provinces. Clients included RES-SA, Red Cap, ACED Renewables, Mainstream Renewable, GDF Suez, Globeleq, ENEL, Abengoa amongst others. . Several of these projects also required the assessment of the proposed transmission lines and switching stations, which were conducted on behalf of Eskom.
- Vegetation assessments on the Great Brak rivers for Department of Water and Sanitation, 2006 and the Gouritz Water Management Area (2014)
- Proposed FibreCo fibre optic cable vegetation assessment along the PE to George, George to Graaf Reinet, PE to Colesburg, and East London to Bloemfontein on behalf of SRK (2013-2015).

Appendix B - Specialist Statement of Independence

Note from the CSIR: Specialists to please complete this section. We will add the actual specialist declaration (on the DEFF prescribed form) as an appendix to the BA Report.

I, ____Brian Colloty_____, declare that –

- I act as the independent specialist in this application;
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, Regulations and all other applicable legislation;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- all the particulars furnished by me in this form are true and correct; and
- I realise that a false declaration is an offence in terms of regulation 48 and is punishable in terms of section 24F of the Act.



Signature of the Specialist: _____ _____

Name of Company: _____EnviroSci (Pty) Ltd_____

Date: _____24 / 06/ 2023_____

Appendix C: Site Sensitivity Verification

Prior to commencing with the Terrestrial Biodiversity Specialist Assessment in accordance with the Specialist Assessment and Minimum Report Content Requirements for Environmental Impacts on Animals. Plants and Terrestrial Biodiversity (Government Notice 320, dated 20 March 2020), a site sensitivity verification was undertaken in order to confirm the current land use and environmental sensitivity of the proposed project area as identified by the National Web-Based Environmental Screening Tool (Screening Tool).

The details of the site sensitivity verification are noted below:

Date of Site Visit	February (4 – 8) and March (22 – 24) 2022
Specialist Name	Dr Brian Colloty
Professional Registration Number	400268/07
Specialist Affiliation / Company	EnviroSci (Pty) Ltd

Government Notice No. 320, dated 20 March 2020, includes the requirement that an Initial Site Sensitivity Verification Report must be produced for a development footprint. As per Part 1, Section 2.3, the outcome of the Initial Site Verification must be recorded in the form of a report that-

(a) Confirms or disputes the current use of the land and environmental sensitivity as identified by the national web based environmental screening tool;

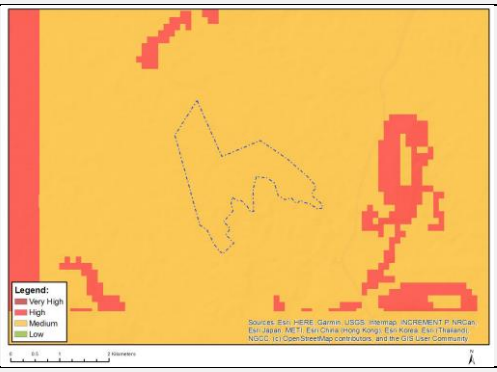
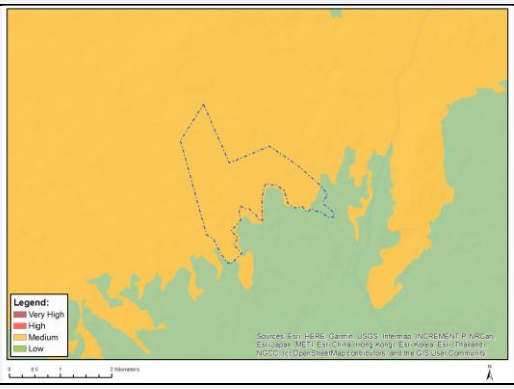
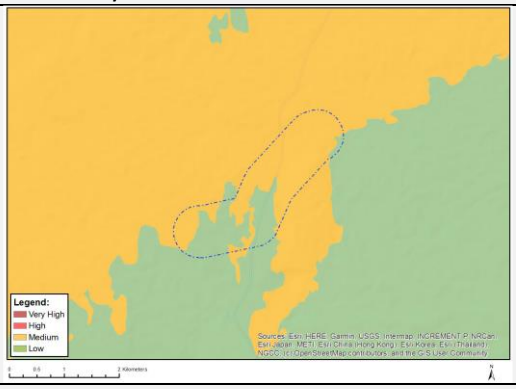
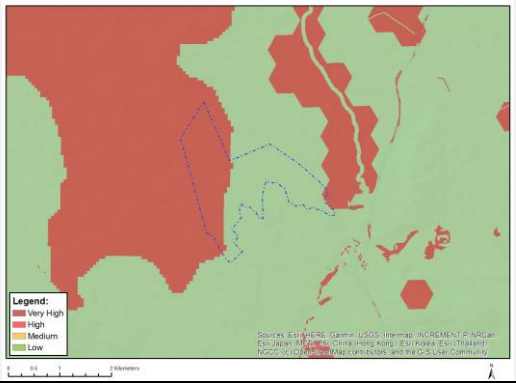
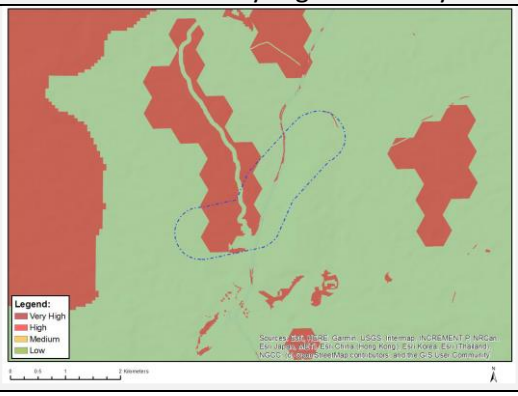
(b) Contains a motivation and evidence of either the verified or different use of the land and environmental sensitivity;

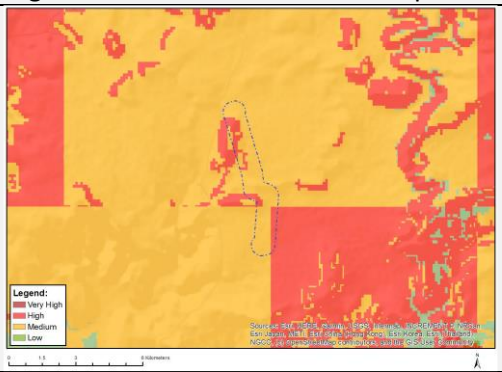
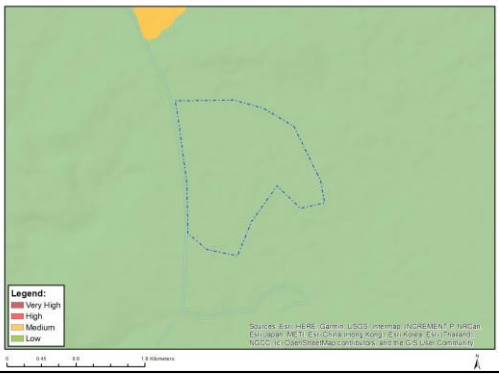
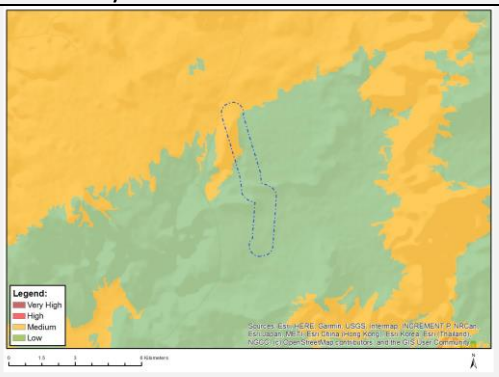
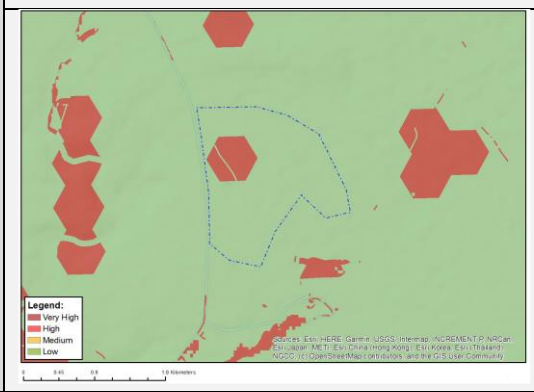
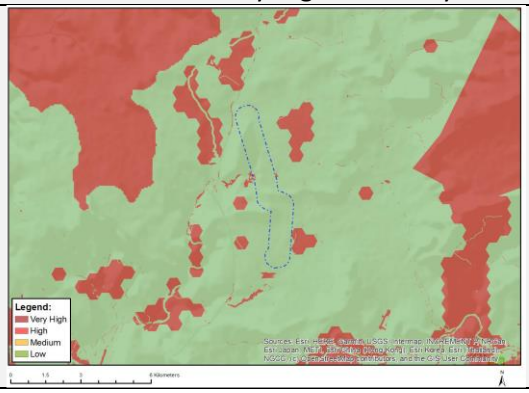
(c) Is submitted together with the relevant reports prepared in accordance with the requirements of the Environmental Impact Assessment Regulations.

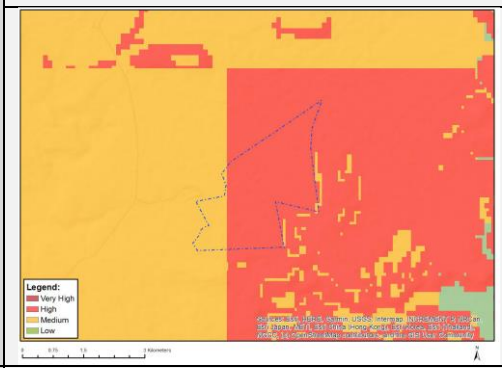
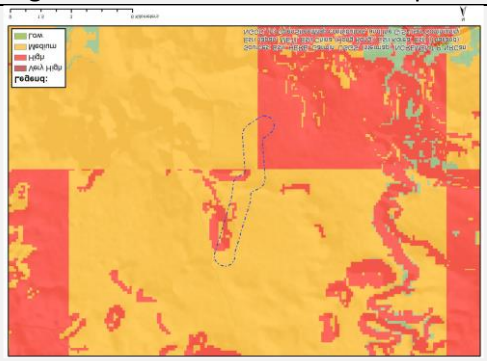
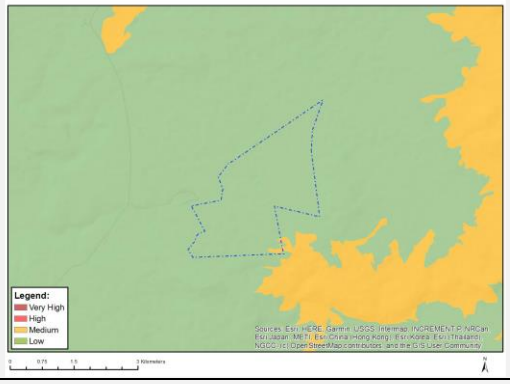
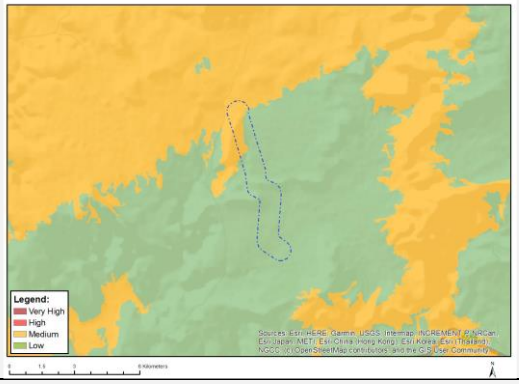
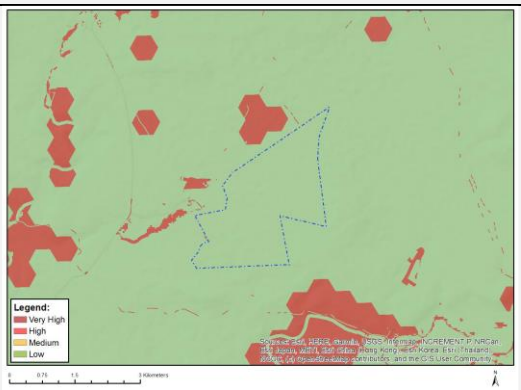
This report has been produced specifically to consider the Terrestrial biodiversity theme and addresses the content requirements of (a) and (b) above. The report will be appended to the respective specialist study included in the EA Reports produced for the projects.

The regulatory requirements are also discussed with regard NEMA in Section 3 of this report. While the PROTOCOL FOR SPECIALIST ASSESSMENT AND MINIMUM REPORT CONTENT REQUIREMENTS FOR THE ENVIRONMENTAL IMPACTS ON TERRESTRIAL BIODIVERSITY (Government Gazette 43110, 20 March 2020), superseding the Appendix 6 NEMA requirements, was also adhered to. This report thus meets the criteria to fulfil a Specialist Verification Assessment Report as the proposed site contains areas rated as ***Very High***, **Medium and Low** sensitivity by the DFFE Screening Tool. Noting that a larger area was assessed as part of the Screening phase that was then assessed in more detail in the EIA phase once the project footprint had been defined.

Based on the DFFE Screening Tool, results for the respective sites can be summarised as follows for each of the respective Biodiversity Themes

Theme	PV 5 Site	PV 5 Grid
Animal	Riverine Rabbit (*Bunolagus monticularis*) Medium sensitivity	Riverine Rabbit (*Bunolagus monticularis*) Medium Sensitivity. High = birds not assessed in this report
		
Plants	*Hereroa concave* Medium sensitivity	*Hereroa concave* Medium sensitivity Sensitive species 945 Medium sensitivity *Anisodontea malvastroides* Medium sensitivity
		
Terrestrial	CBA 1 Terrestrial Very High sensitivity FEPA Catchment Very High sensitivity	ESA 2 – restore from land use Very High sensitivity CBA 1 Terrestrial Very High sensitivity
		

Theme	PV 6 Site	PV 6 Grid
Animal	Riverine Rabbit (*Bunolagus monticularis*) Medium sensitivity	Riverine Rabbit (*Bunolagus monticularis*) Medium Sensitivity. High = birds not assessed in this report
		
Plants	All Low sensitivity	*Hereroa concave* Medium sensitivity Sensitive species 945 Medium sensitivity *Anisodontea malvastroides* Medium sensitivity
		
Terrestrial	CBA 1 Terrestrial Very High sensitivity CBA 2 Terrestrial Very High sensitivity	ESA 2 – restore from land use Very High sensitivity CBA 1 Terrestrial Very High sensitivity
		

Theme	PV 7 Site	PV 7 Grid
Animal	Riverine Rabbit (*Bunolagus monticularis*) Medium sensitivity	Riverine Rabbit (*Bunolagus monticularis*) Medium Sensitivity. High = birds not assessed in this report
		
Plants	*Sensitive species 945 Medium sensitivity* *Anisodontea malvastroides Medium sensitivity*	*Hereroa concave* Medium sensitivity Sensitive species 945 Medium sensitivity *Anisodontea malvastroides* Medium sensitivity
		
Terrestrial	All Low sensitivity	ESA 2 – restore from land use Very High sensitivity CBA 1 Terrestrial Very High sensitivity
		

Based on the above outcomes, the specialist agrees with the environmental sensitivities identified within the respective sites and grid corridors. The findings have been informed by a site visits undertaken by Dr Brian Colloty in 2022, which allowed for fine scale mapping of any of the habitats or units identified in by the screening tool where applicable

Figure 1 below shows the sensitivity map produced following the desktop assessment as well as a groundtruthing exercises, with mapping of the observed features at a finer scale.

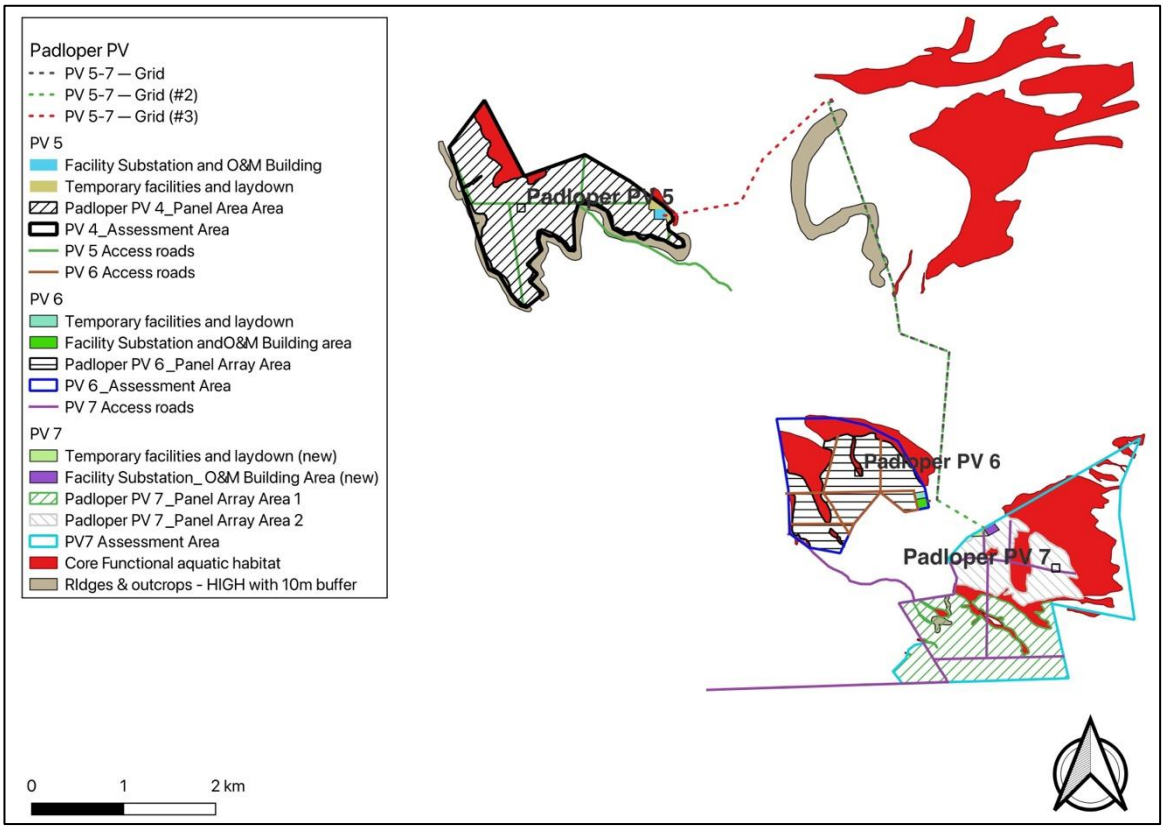


Figure 1. Environmental sensitivity map produced by the specialist

Therefore, in summary, several Very High Sensitivity habitats were confirmed and then delineated for each of the project areas and summarised as follows:

PV 5 Site and EGI

The site and grid connection corridor were earmarked as having potential CBA 1, ESA 1 and FEPA catchments associated with the main stem rivers and or terrestrial environments within the region. These were rated as Very High or Medium sensitivity in the screening tool results. Based on the site observation, the habitat associated with these areas, or habitat functions (habitats for the sensitive plant and animal species listed, important catchments (FEPAs) and or water courses (ESAs) were then mapped to a fine scale level as thus indicated as No-go (Very High) for the site. The proposed layout has thus avoided these areas by either avoiding watercourses and or ridges (rocky outcrops and inselbergs). The latter habitats contain areas that are favoured by the plant species listed, while the riverine areas could contain habitat for Riverine Rabbit. So, in short, Very High Sensitivity habitats / areas were confirmed for this project, with the project footprint being located within the remaining Low sensitivity areas (See Figure 1 above).

PV 6 Site and EGI

The site and grid connection corridor were earmarked as having potential CBA 1, CBA 2, ESA 1 and medium sensitivity plant species associated with terrestrial environments along the grid corridor (PV site was rated Low for plants). These were rated as Very High or Medium sensitivity in the screening tool results. Based on the site observation, the habitat associated with these areas, or habitat functions (habitats for the sensitive plant and animal species listed, and or water courses (ESAs) were then mapped to a fine scale level as thus indicated as No-go (Very High) for the site. The proposed layout has thus avoided these areas by either avoiding watercourses and or ridges (rocky outcrops and inselbergs). The latter habitats contain areas that are favoured by the plant species listed, while the riverine areas could contain habitat for Riverine Rabbit. Therefore, Very High Sensitivity habitats / areas were confirmed for this project, with the project footprint being located within the remaining Low sensitivity areas (See Figure 1 above). The grid line proposed will however need to traverse a ridge that was rated as High sensitivity, thus it is recommended that a detailed walkdown is conducted in this area, to ensure that any listed or protected plants can be avoided when the respective overhead line poles / towers are placed.

PV7 Site and EGI

The site and grid connection corridor were earmarked as having potential CBA 1, ESA 1 and medium sensitivity plant species associated with terrestrial environments along the grid corridor (PV site was rated Low for terrestrial habitats). These were rated as Very High or Medium sensitivity in the screening tool results. Based on the site observation, the habitat associated with these areas, or habitat functions (habitats for the sensitive plant and animal species listed, and or water courses (ESAs) were then mapped to a fine scale level as thus indicated as No-go (Very High) for the site. The proposed layout has thus avoided these areas by either avoiding watercourses and or ridges (rocky outcrops and inselbergs). The latter habitats contain areas that are favoured by the plant species listed, while the riverine areas could contain habitat for Riverine Rabbit. Thus, Very High Sensitivity habitats / areas were confirmed for this project, with the project footprint being located within the remaining Low sensitivity areas (See Figure 1 above). The grid line proposed will however need to traverse a ridge that was rated as High sensitivity, thus it is recommended that a detailed walkdown is conducted in this area, to ensure that any listed or protected plants can be avoided when the respective overhead line poles / towers are placed.

Motivation of the outcomes of the sensitivity map and key conclusions

In conclusion, the DFFE Screening Tool identified three sensitivity ratings within the development area, namely, very high, medium and low. Although there is some overlap with the findings on site and the Screening Tool's outcome, the development footprints contain various sensitivities (Very High, High and low) that were identified following the site visit and spatial input considerations and is summarised in Figure 1 above

Appendix D: Impact Assessment Methodology

The impact assessment includes:

- *the nature, significance and consequences of the impact and risk;*
- *the extent and duration of the impact and risk;*
- *the probability of the impact and risk occurring;*
- *the degree to which impacts, and risks can be mitigated;*
- *the degree to which the impacts and risks can be reversed; and*
- *the degree to which the impacts and risks can cause loss of irreplaceable resources.*

As per the DEFFT Guideline 5: Assessment of Alternatives and Impacts, the following methodology is applied to the prediction and assessment of impacts and risks. Potential impacts and risks have been rated in terms of the direct, indirect, and cumulative:

- *Direct impacts are impacts that are caused directly by the activity and generally occur at the same time and at the place of the activity. These impacts are usually associated with the construction, operation or maintenance of an activity and are generally obvious and quantifiable.*
- *Indirect impacts of an activity are indirect or induced changes that may occur as a result of the activity. These types of impacts include all the potential impacts that do not manifest immediately when the activity is undertaken, or which occur at a different place as a result of the activity.*
- *Cumulative impacts are impacts that result from the incremental impact of the proposed activity on a common resource when added to the impacts of other past, present or reasonably foreseeable future activities. Cumulative impacts can occur from the collective impacts of individual minor actions over a period of time and can include both direct and indirect impacts.*

The impact assessment methodology includes the following aspects:

- *Nature of impact/risk - The type of effect that a proposed activity will have on the environment.*

- *Status - Whether the impact/risk on the overall environment will be:*
    - *Positive - environment overall will benefit from the impact/risk;*
    - *Negative - environment overall will be adversely affected by the impact/risk; or*
    - *Neutral - environment overall not be affected.*

- *Spatial extent – The size of the area that will be affected by the impact/risk:*
    - *Site specific;*
    - *Local (<10 km from site);*
    - *Regional (<100 km of site);*
    - *National; or*
    - *International (e.g., Greenhouse Gas emissions or migrant birds).*

- *Duration – The timeframe during which the impact/risk will be experienced:*
    - *Very short term (instantaneous);*
    - *Short term (less than 1 year);*
    - *Medium term (1 to 10 years);*
    - *Long term (the impact will cease after the operational life of the activity (i.e., the impact or risk will occur for the project duration)); or*
    - *Permanent (mitigation will not occur in such a way or in such a time span that the impact can be considered transient (i.e., the impact will occur beyond the project decommissioning)).*

- *Consequence – The anticipated consequence of the risk/impact:*
    - *Extreme (extreme alteration of natural systems, patterns or processes, i.e., where environmental functions and processes are altered such that, they permanently cease);*
    - *Severe (severe alteration of natural systems, patterns or processes, i.e., where environmental functions and processes are altered such that they temporarily or permanently cease);*
    - *Substantial (substantial alteration of natural systems, patterns or processes, i.e., where environmental functions and processes are altered such that they temporarily or permanently cease);*

- *Moderate (notable alteration of natural systems, patterns or processes, i.e., where the environment continues to function but in a modified manner); or*
- *Slight (negligible alteration of natural systems, patterns or processes, i.e., where no natural systems/environmental functions, patterns, or processes are affected).*

- *Reversibility of the Impacts - the extent to which the impacts/risks are reversible assuming that the project has reached the end of its life cycle (decommissioning phase):*
  - *High reversibility of impacts (impact is highly reversible at end of project life i.e., this is the most favourable assessment for the environment);*
  - *Moderate reversibility of impacts;*
  - *Low reversibility of impacts; or*
  - *Impacts are non-reversible (impact is permanent, i.e., this is the least favourable assessment for the environment).*

- *Irreplaceability of Receiving Environment/Resource Loss caused by impacts/risks – the degree to which the impact causes irreplaceable loss of resources assuming that the project has reached the end of its life cycle (decommissioning phase):*
  - *High irreplaceability of resources (project will destroy unique resources that cannot be replaced, i.e., this is the least favourable assessment for the environment);*
  - *Moderate irreplaceability of resources;*
  - *Low irreplaceability of resources; or*
  - *Resources are replaceable (the affected resource is easy to replace/rehabilitate, i.e., this is the most favourable assessment for the environment).*

Using the criteria above, the impacts have been further assessed in terms of the following:

- *Probability – The probability of the impact/risk occurring:*
  - *Extremely unlikely (little to no chance of occurring);*
  - *Very unlikely (<30% chance of occurring);*
  - *Unlikely (30-50% chance of occurring)*
  - *Likely (51 – 90% chance of occurring); or*
  - *Very Likely (>90% chance of occurring regardless of prevention measures).*

To determine the significance of the identified impact/risk, the consequence is multiplied by probability (qualitatively as shown in Figure 1).

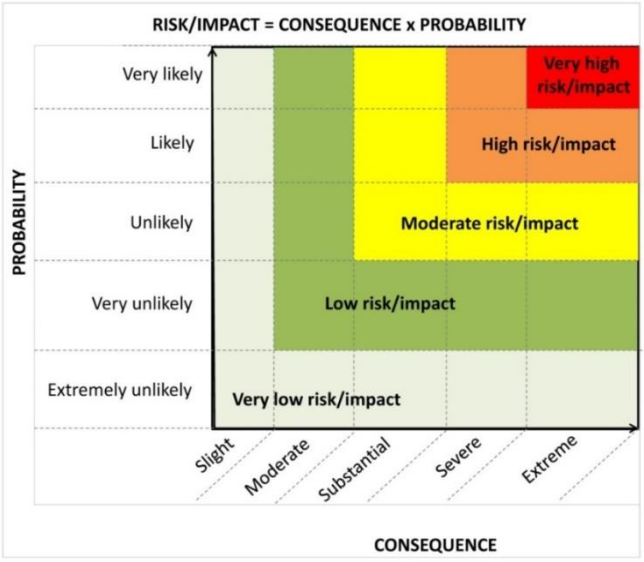


Figure 1. Guide to assessing risk/impact significance as a result of consequence and probability.

- *Significance – Will the impact cause a notable alteration of the environment?*

- *Very low (the risk/impact may result in very minor alterations of the environment and can be easily avoided by implementing appropriate mitigation measures, and will not have an influence on decision-making);*
- *Low (the risk/impact may result in minor alterations of the environment and can be easily avoided by implementing appropriate mitigation measures, and will not have an influence on decision-making);*
- *Moderate (the risk/impact will result in moderate alteration of the environment and can be reduced or avoided by implementing the appropriate mitigation measures, and will only have an influence on the decision-making if not mitigated);*
- *High (the risk/impact will result in major alteration to the environment even with the implementation on the appropriate mitigation measures and will have an influence on decision-making); and*
- *Very high (the risk/impact will result in very major alteration to the environment even with the implementation on the appropriate mitigation measures and will have an influence on decision-making (i.e., the project cannot be authorised unless major changes to the engineering design are carried out to reduce the significance rating)).*

With the implementation of mitigation measures, the residual impacts/risks are ranked as follows in terms of significance:

- *Very low = 5;*
- *Low = 4;*
- *Moderate = 3;*
- *High = 2; and*
- *Very high = 1.*

Confidence – The degree of confidence in predictions based on available information and specialist knowledge:

- *Low;*
- *Medium; or*
- *High.*

Appendix E: Compliance with the Terrestrial Biodiversity Protocol (GN 320, 20 March 2020)

Protocol for the Specialist Assessment and Minimum Report Content Requirements for Environmental Impacts on Terrestrial Biodiversity	***Section where this has been addressed in the Specialist Report***
The assessment must provide a baseline description of the site which includes, as a minimum, the following aspects: *2.3.1. a description of the ecological drivers or processes of the system and how the proposed development will impact these;*	*Section 4 Page 13*
2.3.2. ecological functioning and ecological processes (e.g., fire, migration, pollination, etc.) that operate within the preferred site;	*Section 4 Page 13*
2.3.3. the ecological corridors that the proposed development would impede including migration and movement of flora and fauna;	*Section 4 Page 13*
2.3.4. the description of any significant terrestrial landscape features (including rare or important flora- faunal associations, presence of strategic water source areas (SWSAs) or freshwater ecosystem priority area (FEPA) sub catchments;	*Section 4 and 6*
2.3.5. a description of terrestrial biodiversity and ecosystems on the preferred site, including: *a) main vegetation types;* *b) threatened ecosystems, including listed ecosystems as well as locally important habitat types identified;* *c) ecological connectivity, habitat fragmentation, ecological processes and fine-scale habitats; and* *d) species, distribution, important habitats (e.g., feeding grounds, nesting sites, etc.) and movement patterns identified;*	*Section 4 Page 13*
2.3.6. the assessment must identify any alternative development footprints within the preferred site which would be of a low" sensitivity as identified by the screening tool and verified through the site sensitivity verification; and	*Section 5 Page 26*
2.3.7. the assessment must be based on the results of a site inspection undertaken on the preferred site and must identify: *2.3.7.1. terrestrial critical biodiversity areas (CBAs), including:* *a) the reasons why an area has been identified as a CBA;* *b) an indication of whether or not the proposed development is consistent with maintaining the CBA in a natural or near natural state or in achieving the goal of rehabilitation;* *c) the impact on species composition and structure of vegetation with an indication of the extent of clearing activities in proportion to the remaining extent of the ecosystem type(s);* *d) the impact on ecosystem threat status;* *e) the impact on explicit subtypes in the vegetation;*	*Section 4 and 6*

Protocol for the Specialist Assessment and Minimum Report Content Requirements for Environmental Impacts on Terrestrial Biodiversity	***Section where this has been addressed in the Specialist Report***
f) the impact on overall species and ecosystem diversity of the site; and *g) the impact on any changes to threat status of populations of species of conservation concern in the CBA;*	
2.3.7.2. terrestrial ecological support areas (ESAs), including: *a) the impact on the ecological processes that operate within or across the site;* *b) the extent the proposed development will impact on the functionality of the ESA; and* *c) loss of ecological connectivity (on site, and in relation to the broader landscape) due to the degradation and severing of ecological corridors or introducing barriers that impede migration and movement of flora and fauna;*	*Sections 4 and 6*
2.3.7.3. protected areas as defined by the National Environmental Management: Protected Areas Act, 2004 including- *a) an opinion on whether the proposed development aligns with the objectives or purpose of the protected area and the zoning as per the protected area management plan;*	*Sections 4 and 6*
2.3.7.4. priority areas for protected area expansion, including- *a) the way in which in which the proposed development will compromise or contribute to the expansion of the protected area network;*	*Sections 4 and 6*
2.3.7.5. SWSAs including: *a) the impact(s) on the terrestrial habitat of a SWSA; and* *b) the impacts of the proposed development on the SWSA water quality and quantity (e.g., describing potential increased runoff leading to increased sediment load in water courses);*	*Sections 4 and 6 however none occur within the development footprints*
2.3.7.6. FEPA sub catchments, including- *a) the impacts of the proposed development on habitat condition and species in the FEPA sub catchment;*	*Sections 4 and 6*
2.3.7.7. indigenous forests, including: *a) impact on the ecological integrity of the forest; and* *b) percentage of natural or near natural indigenous forest area lost and a statement on the implications in relation to the remaining areas.*	*N/A*
3.1. The Terrestrial Biodiversity Specialist Assessment Report must contain, as a minimum, the following information:	
3.1.1. contact details of the specialist, their SACNASP registration number, their field of expertise and a curriculum vitae;	*Appendix A*
3.1.2. a signed statement of independence by the specialist;	*Attached SEIA*
3.1.3. a statement on the duration, date and season of the site inspection and the relevance of the season to the outcome of the assessment;	*Sections 4 and 6*
3.1.4. a description of the methodology used to undertake the site verification and impact assessment and site inspection, including equipment and modelling used, where relevant;	*Section 2*

Protocol for the Specialist Assessment and Minimum Report Content Requirements for Environmental Impacts on Terrestrial Biodiversity	***Section where this has been addressed in the Specialist Report***
3.1.5. a description of the assumptions made and any uncertainties or gaps in knowledge or data as well as a statement of the timing and intensity of site inspection observations;	*Section 2*
3.1.6. a location of the areas not suitable for development, which are to be avoided during construction and operation (where relevant);	*Sections 4 and 6*
3.1.7. additional environmental impacts expected from the proposed development;	*Section 7*
3.1.8. any direct, indirect, and cumulative impacts of the proposed development;	*Section 7*
3.1.9. the degree to which impacts, and risks can be mitigated;	*Section 7*
3.1.10. the degree to which the impacts and risks can be reversed;	*Section 7*
3.1.11. the degree to which the impacts and risks can cause loss of irreplaceable resources;	*Section 7*
3.1.12. proposed impact management actions and impact management outcomes proposed by the specialist for inclusion in the Environmental Management Programme (EMPr);	*Section 7*
3.1.13. a motivation must be provided if there were development footprints identified as per paragraph 2.3.6 above that were identified as having a "low" terrestrial biodiversity sensitivity and that were not considered appropriate;	*Section 7*
3.1.14. a substantiated statement, based on the findings of the specialist assessment, regarding the acceptability, or not, of the proposed development, if it should receive approval or not; and	*Section 11*
3.1.15. any conditions to which this statement is subjected.	*Section 11*
3.2. The findings of the Terrestrial Biodiversity Specialist Assessment must be incorporated into the Basic Assessment Report or the Environmental Impact Assessment Report including the mitigation and monitoring measures as identified, which must be incorporated into the EMPr, where relevant.	*Yes*
3.2.1. A signed copy of the assessment must be appended to the Basic Assessment Report or Environmental Impact Assessment Report.	*Yes*

forestry, fisheries
& the environment

Department:
Forestry, Fisheries and the Environment
REPUBLIC OF SOUTH AFRICA

Private Bag X447, Pretoria, 0001, Environment House, 473 Steve Biko Road, Pretoria, 0002 Tel: +27 12 399 9000, Fax: +27 86 625 1042

SPECIALIST DECLARATION FORM – AUGUST 2023

Specialist Declaration form for assessments undertaken for application for authorisation in terms of the National Environmental Management Act, Act No. 107 of 1998, as amended and the Environmental Impact Assessment (EIA) Regulations, 2014, as amended (the Regulations)

REPORT TITLE

Basic Assessment for the proposed development of the Padloper Solar PV Facility 5 (i.e., Padloper PV 5), the proposed development of 132 kV Electrical Grid Infrastructure between the proposed Padloper PV 4 and the proposed Padloper PV 5 (i.e., Padloper EGI 5), and their associated infrastructure, near Murraysburg in the Western Cape Province

Kindly note the following:

1. This form must always be used for assessment that are in support of applications that must be subjected to Basic Assessment or Scoping & Environmental Impact Reporting, where this Department is the Competent Authority.
2. This form is current as of August 2023. It is the responsibility of the Applicant / Environmental Assessment Practitioner (EAP) to ascertain whether subsequent versions of the form have been published or produced by the Competent Authority. The latest available Departmental templates are available at https://www.dffe.gov.za/documents/forms.
3. An electronic copy of the signed declaration form must be appended to all Draft and Final Reports submitted to the department for consideration.
4. The specialist must be aware of and comply with *'the Procedures for the assessment and minimum criteria for reporting on identified environmental themes in terms of sections 24(5)(a) and (h) and 44 of the act, when applying for environmental authorisation - GN 320/2020)'*, where applicable.

1. SPECIALIST INFORMATION

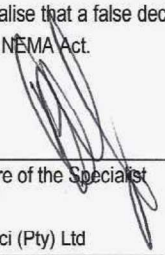
Title of Specialist Assessment	Padloper Terrestrial Assessment PV 5
Specialist Company Name	EnviroSci (Pty) Ltd
Specialist Name	Dr Brian Colloty
Specialist Identity Number	[redacted]
Specialist Qualifications:	PhD Botany BSc Hons Zoology
Professional affiliation/registration:	SACNASP 400268/07 Ecological
Physical address:	[redacted]
Postal address:	
Postal address	
Telephone	
Cell phone	
E-mail	

SPECIALIST DECLARATION FORM – AUGUST 2023

2. DECLARATION BY THE SPECIALIST

I, Brian Colloty declare that –

- I act as the independent specialist in this application;
- I am aware of the procedures and requirements for the assessment and minimum criteria for reporting on identified environmental themes in terms of sections 24(5)(a) and (h) and 44 of the National Environmental Management Act (NEMA), 1998, as amended, when applying for environmental authorisation which were promulgated in Government Notice No. 320 of 20 March 2020 (i.e. "the Protocols") and in Government Notice No. 1150 of 30 October 2020.
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, Regulations and all other applicable legislation;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing –
    - any decision to be taken with respect to the application by the competent authority; and;
    - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- All the particulars furnished by me in this form are true and correct; and
- I realise that a false declaration is an offence in terms of Regulation 48 and is punishable in terms of section 24F of the NEMA Act.



Signature of the Specialist

EnviroSci (Pty) Ltd

Name of Company:

07 Aug 2023

Date

3. UNDERTAKING UNDER OATH/ AFFIRMATION

I, _ Brian Colloty_____, swear under oath / affirm that all the information submitted or to be submitted for the purposes of this application is true and correct.

Signature of the Specialist

EnviroSci (Pty) Ltd
Name of Company

7 August 2023
Date

Click or tap here to enter text.
Signature of the Commissioner of Oaths

10 August 2023
Date

KERRY AUGUST
Commissioner of Oaths
Master HR Professional (MHRP)
Member Number: 53544596
25 Bordeaux Close
Stellenbosch
7600

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