Terrestrial Biodiversity Walkdown Report

Koup 2 Wind Energy Facility

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1 Introduction & Background

1.1 Project Description

The proposed Koup 2 WEF will comprise up to Thirty-two (32) wind turbines with a maximum total energy generation capacity of approximately 140 MW. The electricity generated by the proposed WEF development will be fed into the national grid via a 132kV overhead power line. The location of the site, to the south-west of Beaufort West in the Western Cape province, is indicated in Figure 1 below, indicated in yellow.

Koup 2 is part of a cluster of two WEF facilities namely Koup 1 (indicated in yellow - east) and Koup 2 (indicated in red - west), which have a shared access road. While the walkdown component of this report pertains specifically to Koup 2, portions of the background components of this report may apply to both facilities, as they share a similar biophysical environment and area of influence.

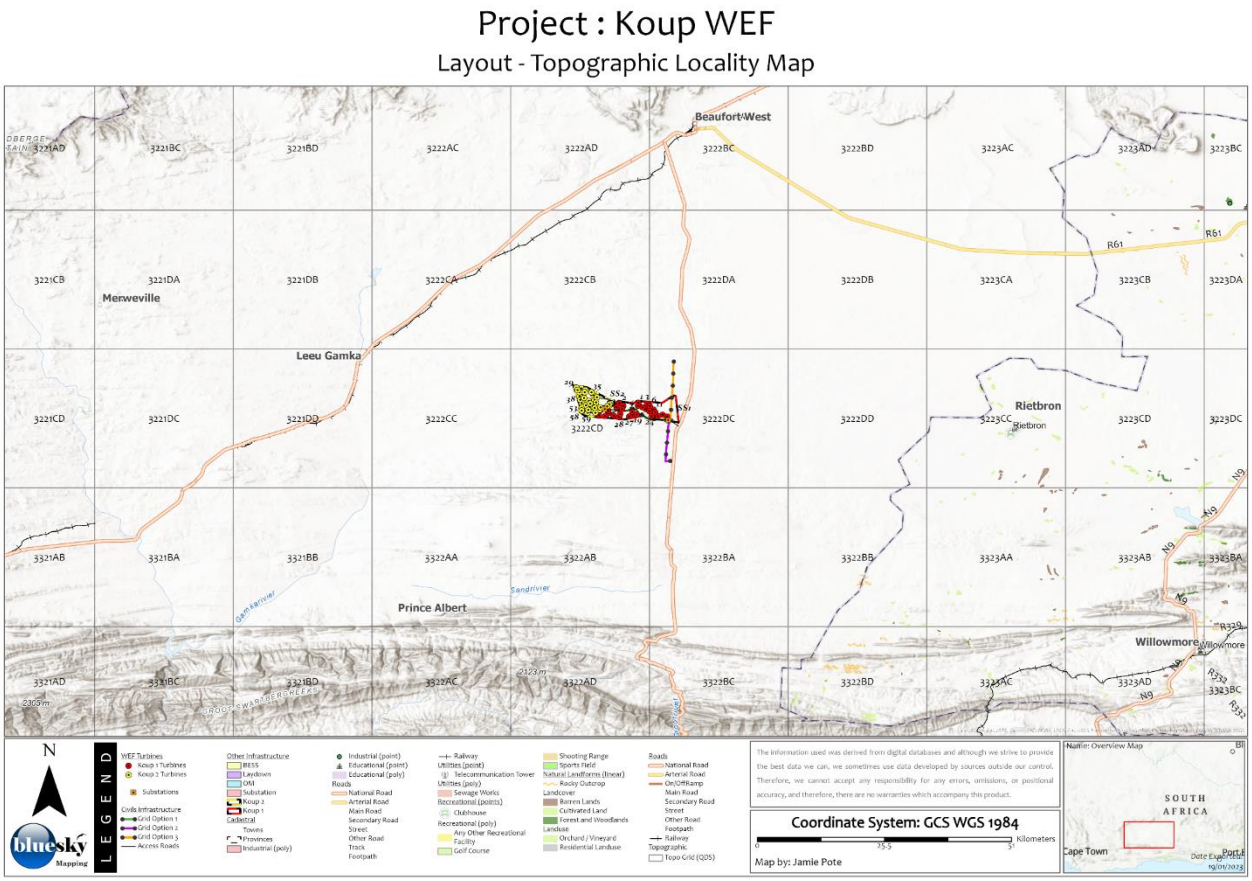


Figure 1: Site Locality (indicated in yellow)

1.2 Purpose of Report

The Wind Energy Facility Ecological walkdown has been undertaken in fulfilment of specific conditions contained in the environmental authorisation (Reg. No. 14/12/16/3/3/2/2121) dated 22 September 2022 and subsequent amendments issued by Department of Forestry, Fisheries and the Environment for the project, as follows:

- Condition 13: A final site layout plan for the Koup 1 WEF and its associated infrastructure near Beaufort West in the Western Cape Province, as determined by the detailed engineering phase and micro-siting of the wind turbine positions, and all mitigation measures as dictated by the final site layout plan, must be submitted to the Department for approval prior to construction. A copy of the

final site layout map must be made available for comments to registered Interested and Affected Parties and the holder of this Environmental Authorisation must consider such comments. Once amended, the final development layout map must be submitted to the Department for written approval prior to commencement of the activity. All available biodiversity information must be used in the finalisation of the layout map. Existing infrastructure must be used as far as possible e.g., roads. The layout map must indicate the following:

13.1. The position of wind turbines and associated infrastructure;
13.2. Internal and access roads indicating width;
13.3. The BESS, substation(s) inverters and / or transformer(s) sites including their entire footprints;
13.4. Connection routes (including pylon positions) to the distribution/transmission network;
13.5. Buildings, including accommodation;
13.6. All existing infrastructure on the site;
13.7. Wetlands, drainage lines, rivers, stream and water crossing of roads and cables;
13.8. All sensitive features e.g., Important Bird Areas, Critical Biodiversity Areas, Ecological Support Areas, heritage sites, wetlands, pans and drainage channels that will be affected by the facility and associated infrastructure; and
13.9. All "no-go" and buffer areas.

- Condition 39: A pre-construction walk through of the approved power line alignment and turbine positions by a bat specialist, avifaunal specialist and ecologist, must be conducted to ensure that the micro-siting of the turbines, pylons and power line alignment have the least possible impact, there are no nests sites of priority species on or close to the construction corridor, and all protected plant species impacted are identified.
- Condition 43: The 'no-go' areas of the development property must be clearly demarcated and must be excluded from the final layout plan.
- Condition 44: All watercourses and associated wetlands are regarded as sensitive. All developments within 500 m of watercourses must comply with the National Water Act.
- Condition 45: No transmission line towers, substations and construction camps will be placed within the delineated water courses as well as their respective buffers without obtaining the required approvals. A 32 m buffer must be applied along all identified watercourses and a 50m buffer must be applied along all identified wetlands.
- Condition 46: A pre-construction survey of the final development footprint must be conducted by a qualified floral specialist to identity protected species affected by the proposed development. Prior to the commencement of construction, a rescue and rehabilitation operation for these species which could survive translocation must be conducted.
- Condition 47: Construction activities must be restricted to demarcated areas to restrict the impact on sensitive environmental features.
- Condition 54: Where roads pass right next to major water bodies, provision shall be made for fauna such as toads to pass under the roads by using culverts or similar structures.
- Condition 55: Bridge design must be such that it minimise impact to riparian areas with minimal alterations to water flow and must allow the movement of fauna and flora.
- Condition 56: The final development area should be surveyed for species suitable for search and rescue, which should be trans-located prior to the commencement of construction.
- Condition 59: Wetlands, rivers and river riparian areas must be treated as "no-go" areas and appropriately demarcated as such.

The primary purpose of the ecological walkdown, as per the EA conditions are to ensure that the micro-siting of the turbines and power line has the least possible impact and all protected plant species impacted are identified. As a secondary outcome a species list of protected species as well as species

suited to translocation is provided. Some conditions outlines above are pertinent to aquatic rather than terrestrial environment and are subject to an aquatic specialist walkdown, however the terrestrial and aquatic environment are linked and hence consideration will be given to aquatic aspects where relevant during the walkdown.

This report is one of two undertaken for a pair of adjacent Wind Energy Facility Projects within an overlapping Area of Influence, namely Koup 1 (east) and Koup 2 (west). The general descriptions provided in this report are thus an overview of the broader area and may contain information that has been summarised from separate but contiguous or overlapping site assessments in order to more effectively contextualise the broader environment and the area of influence as well as to better understand the 'bigger picture', since the natural environment is interconnected, and as will become evident the local environment is strongly influenced by the surrounding area.

1.3 Methodology

The site walkdown was undertaken in the time-period between 06 and 20 February 2023. The site walkdown was during late summer after a reasonably good summer rainfall period. While the seasonal response of local flora does vary throughout the year, with certain species flowering during different seasons, the time during which the walkdown was undertaken is deemed to have been undertaken during an adequate seasonal period. It is possible that certain flora was not visible at the time of the walkdown, including certain geophytic species, that are active in spring and early summer may have been dormant or less visible at the time of the walkdown. The main purpose of the walkdown has been to microsite and refine turbines footprints and other infrastructure based on landscape level ecological processes and identification of potentially sensitive habitat that could be avoided. As a secondary measure the original species list(s) have been updated with several additional species in order to better inform permit application and flora and fauna search and rescue requirements but is also informed by the findings of the original assessment.

1.4 Data sources and references

A comprehensive list of references, including data sources is provided in Section 5. Data sources that were utilised for the walkdown and report include the following:

- National (DFFE) Web Based Screening Tool – to generate the sites potential environmental sensitivity.
- National Vegetation Map 2018 (NVM, 2018), Mucina & Rutherford (2006) and National Biodiversity Assessment (NBA, 2019) – description of vegetation types, species (including endemic) and vegetation unit conservation status.
- National and Regional Legislation including Provincial Nature Conservation Ordinance (P.N.C.O). NEM:BA Threatened or Protected Species (ToPS).
- Botanical Database of Southern Africa (BODATSA) and New Plants of Southern Africa (POSA) – lists of plant species and potential species of concern found in the general area (SANBI.)
- International Union for Conservation of Nature (IUCN) - Red List of Threatened Species.
- Animal Demography Unit Virtual Museum (VM) – potential faunal species.
- Global Biodiversity Information Facility (GBIF) – potential faunal species.
- Southern African Bird Atlas Project 2 (SABAP2) – for bird species records.
- National Red Books and Lists - mammals, reptiles, frogs, dragonflies & butterflies.

- National Freshwater Ecosystem Priority Areas assessment (NFEPA, 2011) - important catchments.
- National Protected Areas Expansion Strategy (NPAES, 2018) and South Africa Protected Area database (2020) – protected area information.
- Critical Biodiversity Areas of the Northern Cape (2016) – Bioregional Plan.
- SANBI BGIS – All other biodiversity GIS datasets.
- Aerial Imagery – Google Earth, Esri, Chief Surveyor General (http://csg.dla.gov.za).
- Cadastral and other topographical country data - Chief Surveyor General (http://csg.dla.gov.za).
- Original Ecological conducted for the project, excluding bats and avifauna by Todd (2022)
- Other sources include peer-reviewed journals, regional and local assessments and studies in the general location of the project and its area of influence, landscape prioritization schemes (Key Biodiversity Areas), systematic conservation planning assessments and plans (as above), and any pertinent masters and doctoral theses, among others.

1.5 Assumptions and Limitations

- The site visit was undertaken in late summer 2023, at the end of a reasonable rainy season and it is possible that certain spring flowering flora groups including geophytes may not have been visible. The site visit was deemed adequate however for micro siting purposes, supplemental to other information sources.
- Threatened and protected species are by their nature elusive to find and can be missed when surveying extensive areas. All reasonable measures have been taken to minimise this risk.
- Flora species are known to grow and flower at slightly different times of the year and in some cases do not lower every year, hence it is possible that certain species may not have been representing at the time of survey. The time period of the survey was thus at a time when most species were likely to be visible.

1.6 National Environmental Screening Tool

While the original assessment for this project was undertaken after the requirements for screening where published and implemented, the following section is included to confirm that no changes to the screening tool have come into effect since publication of the assessments.

The DEA Screening Tool (dated 12/12/2022) indicates the following:

- Terrestrial Biodiversity is Low (*Figure 2*).
- Plant species sensitivity is Medium (*Figure 3*).
- Animal Species sensitivity is High & Medium (*Figure 4*).
- Aquatic Sensitivity is Low & Very High (*Figure 5*)

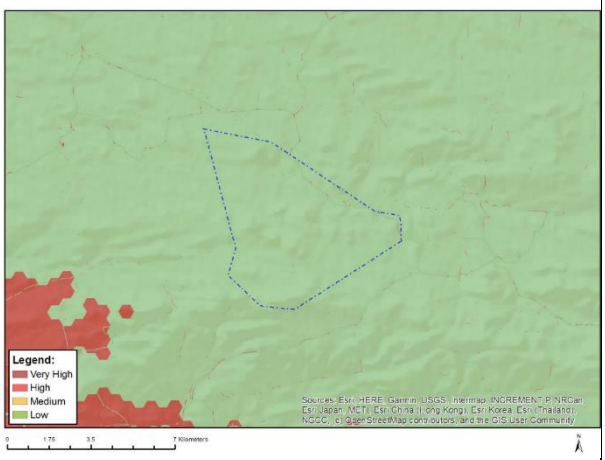


Figure 2: Terrestrial Biodiversity Sensitivity

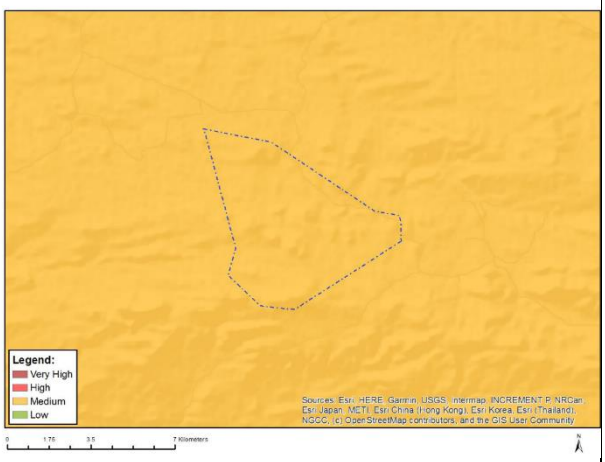


Figure 3: Plant Species Sensitivity

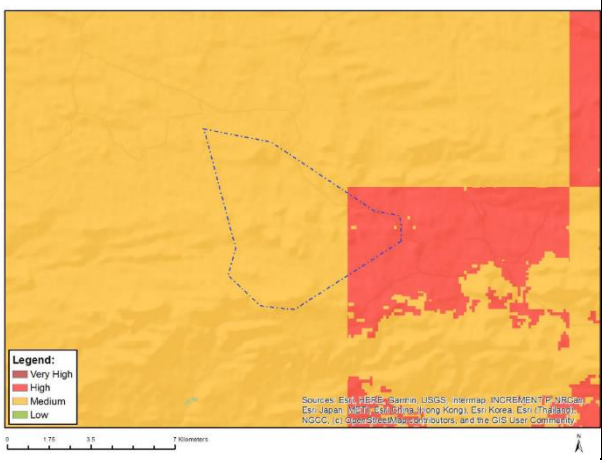


Figure 4: Animal Species Sensitivity

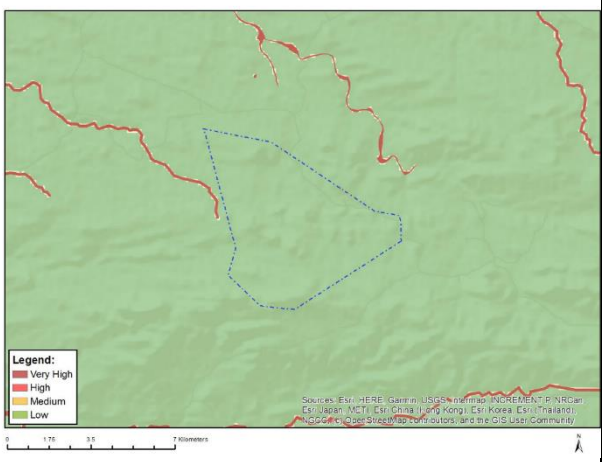


Figure 5: Aquatic Sensitivity

Terrestrial Sensitivity	**Feature(s) in proximity**
Very High	ESA 2
High	None
Medium	None
Low	None
Plant Sensitivity	**Feature(s) in proximity**
Very High	None
High	None
Medium	Sensitive species 383, *Peersia frithii* & *Tritonia florentiae*
Low	Present
Animal Sensitivity	**Feature(s) in proximity**
Very High	None
High	*Neotis ludwigii* & *Polemaetus bellicosus* (birds)
Medium	*Neotis ludwigii*, *Afrotis afra* (birds) & *Chersobius boulengeri* (reptile)
Low	Present
Aquatic Sensitivity	**Feature(s) in proximity**
Very High	Strategic Water Source Area
High	None
Medium	None
Low	Present

NOTE: as per point 1.5 of the Terrestrial Biodiversity Specialist Assessment and Minimum Report Content Requirements:

*'If any part of the proposed development footprint falls within an area of 'very high' sensitivity, the assessment and reporting requirements prescribed for the 'very high' sensitivity apply to the entire footprint, **excluding linear activities** for which impacts on terrestrial biodiversity are temporary and the land in the opinion of the terrestrial biodiversity specialist, based on the mitigation and remedial measures, can be returned to the current state within two years of the completion of the construction phase, in which case a compliance statement applies. Development footprint in the context of this protocol means the area on which the proposed development will take place and includes any area that will be disturbed.'*

Based on the above reporting protocol condition, the entire access roads and OHL grid connection components will fall into the above category, which implies that for a temporary linear activity, such as a pipeline or powerline, the screening tool designated high sensitivity should be reduced to a low sensitivity and only a complicated statement would be required.

The site walkdown has physically screened for the presence of any of the listed, and other possible species or sensitivities that are not identified in the screening tool over and above and above the findings of the original assessments. Not all features are directly affected, but being in proximity, the risks associated with the activity will be investigated further and addressed in the report.

2 General Terrestrial Biodiversity

The site falls within a large basin between the Great Escarpment (Nuweveld Mountains) in the north and northwest and Cape Fold Belt Mountains (mostly Swartberg Mountains) in the south and typically consists of extremely irregular to slightly undulating low lying plains interspersed with hilly and mountainous ridges. The low-lying plains of the site consist of typical Eastern Upper Karoo which is a widespread vegetation type of low overall sensitivity. The slopes of the site are considered generally of moderate to high sensitivity on account of their high biodiversity value for fauna and flora as well as their vulnerability to disturbance and consequent erosion. The plateau areas consist of Upper Karoo Hardeveld elements, which is considered to be generally of moderate sensitivity. The plains and slopes are bisected by a somewhat complex network of seasonal drainage lines and watercourses, having Southern Karoo Riviere vegetation elements. Low lying flat areas often have deeper sandy soils and a grassier karroid vegetation. All of the affected vegetation types are still generally intact, other than evidence of overgrazing and significant erosion in the valleys associated with deeper soils. No significant transformation is evident other than limited cultivated areas, in the valleys also associated with deeper soils.

The fauna of the area is considered to be composed of widespread species, with very few species of conservation concern likely to be present at the site. The most important areas for fauna at the site are the drainage systems and well-vegetated slopes which are largely outside of the development footprint and would not be significantly affected. The major impact on fauna would be habitat loss associated largely with the high-elevation plateau habitat of the site. As there are no species of high conservation concern prevalent in the area, impacts on terrestrial fauna were deemed likely to be relatively low and of local significance only.

2.1 Vegetation Units and Habitats

According to the national vegetation map, four vegetation types occur within the study area (Figure 6); most of the wind farm site falls entirely within the Gamka Karoo vegetation type. Vegetation was confirmed by Todd (2022) to be as designated. Other units in the surrounding area include Southern Karoo Riviere in riverine areas and Upper Karoo Hardeveld on higher lying mountains plains. Elements of these units from the surrounding area may be present within the site in riverine areas and/or elevated areas respectively, which are not reflected on the scale of mapping based on the National Vegetation Map. These different units are briefly described below and then illustrated and characterised as they occur at the site.

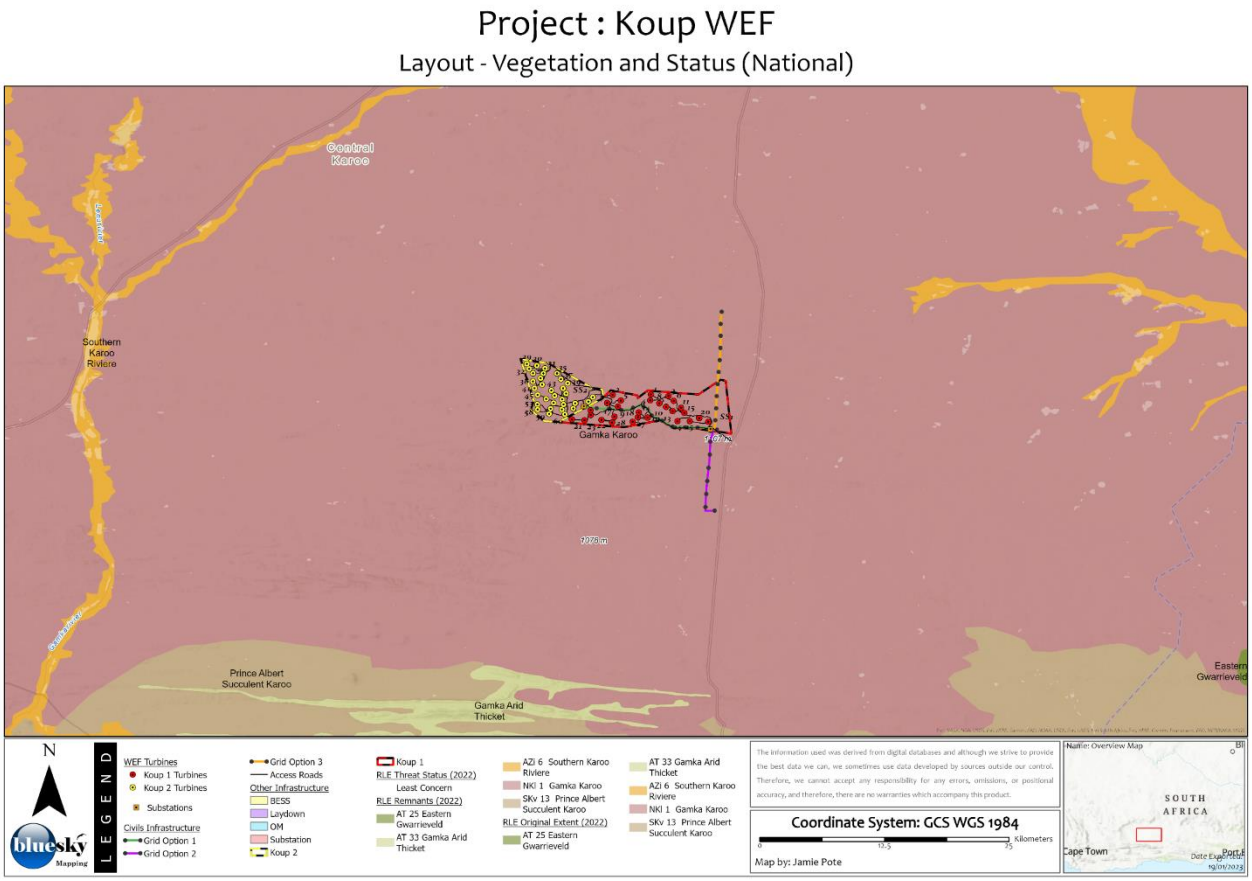


Figure 6: Regional Vegetation Units

As described by Todd (2022), Mucina & Rutherford (2006) designates the vegetation unit for the entire site as Gamka Karoo (Figure 6), with no other vegetation types for some distance from the site. Gamka Karoo occurs in the Western Cape and Eastern Cape Provinces and marginally into the Northern Cape Province. It occupies the large basin between the Great Escarpment (Nuweveld Mountains) in the north and northwest and Cape Fold Belt Mountains (mostly Swartberg Mountains) in the south. From approximately the edge of the Gamka basin catchment area (i.e. of the Dwyka River tributary) in the west to about the Kariega River in the east. The landscape typically consists of extremely irregular to slightly undulating plains covered with dwarf spiny shrubland dominated by Karoo dwarf shrubs with rare low trees (e.g. *Euclea undulata*). Geology is primarily mudstones and sandstones of the Beaufort Group (Adelaide Subgroup) with some Ecca (Fort Brown Formation) shales supporting very shallow and stony soils of the Glenrosa and/or Mispah forms. Mucina et al. (1996) list *Chasmatophyllum stanleyi, Hereroa incurva, Hoodia dregei, Ruschia beaufortensis. Jamesbrittenia tenuifolia, Manulea karrooica* and *Piaranthus comptus* as species endemic to this vegetation type. Gamka Karoo is classified as Least Concern (NBA, 2018) and less than 1% has been lost to

transformation. The Conservation status in the more recent NBA (2022) is still designated Least Concern, hence the status has not changed since the original assessment was undertaken.

Within the site and along the power line corridor, two basic communities can be recognised (Todd, 2022), the rocky hills and low ridges and then the plains of the site. The plains tend to be homogenous with few features of significance present and are dominated by low woody and succulent shrubs with occasional areas of calcrete or sandy soils where grasses are more abundant. The rocky hills are more heterogenous and have a higher abundance of larger woody species than the plains and may also contain localised communities of low succulents. In general, the rocky hills are considered more sensitive than the surrounding plains as the diversity of the hills is usually higher than the plains.

Within the site, the areas of Gamka Karoo plains (Table 1) are dominated by *Pentzia incana, Hirpicium alienatum, Ruschia beaufortensis, Lycium cinereum, Stipagrostis ciliata, Stipagrostis obtusa, Aristida congesta, Thesium lineatum, Enneapogon desvauxii, Asparagus capensis, Asparagus glauca, Fingerhuthia africana, Euphorbia mauritanica, Limeum aethiopicum* and *Aloe claviflora*.

Table 1: Gamka Karoo (NKl 1).

GROWTH FORM	DESCRIPTION/SPECIES[1]
Geophytic Herbs	*Drimia intricata, Moraea polystachya.*
Grasses	*Aristida congesta (d), A. diffusa (d), Fingerhuthia africana (d), Stipagrostis ciliata (d), S. obtusa (d), Aristida adscensionis, Cenchrus ciliaris, Digitaria argyrograpta, Enneapogon desvauxii, Enneapogon scaber, Eragrostis homomalla, E. lehmanniana, E. obtusa, Tragus berteronianus, T. koelerioides.*
Herbs	*Gazania lichtensteinii (d), Chamaesyce inaequilatera, Dicoma capensis, Galenia glandulifera, Lepidium africanum subsp. africanum, L. desertorum, Lessertia pauciflora var. pauciflora, Leysera tenella, Osteospermum microphyllum, Sesamum capense, Tetragonia microptera, Tribulus terrestris, Ursinia nana.*
Tall Shrubs	*Lycium cinereum (d), L. oxycarpum (d), Rhigozum obovatum (d), Acacia karroo, Cadaba aphylla, Lycium schizocalyx, Rhus burchellii, Sisyndite spartea.*
Low shrubs	*Chrysocoma ciliata (d), Eriocephalus ericoides subsp. ericoides (d), E. spinescens (d), Felicia muricata (d), Galenia fruticosa (d), Limeum aethiopicum (d), Pentzia incana (d), Pteronia adenocarpa (d), Rosenia humilis (d), Aptosimum indivisum, Asparagus burchellii, Blepharis mitrata, Eriocephalus microphyllus var. pubescens, Felicia filifolia subsp. filifolia, F. muricata subsp. cinerascens, Galenia secunda, Garuleum bipinnatum, G. latifolium, Gomphocarpus filiformis, Helichrysum lucilioides, Hermannia desertorum, H. grandiflora, H. spinosa, Melolobium candicans, Microloma armatum, Monechma spartioides, Pentzia pinnatisecta, Plinthus karooicus, Polygala seminuda, Pteronia glauca, P. sordida, P. viscosa, Selago geniculata, Sericocoma avolans, Zygophyllum microcarpum, Z. microphyllum.*
Succulent Shrubs	*Ruschia intricata (d), Aridaria noctiflora subsp. straminea, Crassula muscosa, Drosanthemum lique, Galenia sarcophylla, Kleinia longiflora, Ruschia spinosa, Salsola tuberculata, Sarcocaulon patersonii, Trichodiadema barbatum, Tripteris sinuata var. linearis.*
Semiparasitic Shrub	*Thesium lineatum*
Biogeographically Important Taxa	(*Endemic to Great Karoo Basin)

[1] (d) Dominant

GROWTH FORM	DESCRIPTION/SPECIES[1]
	Succulent Shrubs: *Hereroa latipetala** (also found in Prince Albert Succulent Karoo), *Hereroa odorata** (also found in Koedoesberge-Moordenaars Karoo), *Pleiospilos compactus* (southern and western limits of distribution), *Rhinephyllum luteum**, *Stapelia engleriana**. Geophytic Herb: *Tritonia tugwelliae**. Low Shrub: *Felicia lasiocarpa**. Succulent Herbs: *Piaranthus comptus**, *Tridentea parvipuncta* subsp. *parvipuncta**. Graminoid: *Oropetium capense* (westernmost limit of distribution).
Endemic Taxa	Succulent Shrubs: *Chasmatophyllum stanleyi, Hereroa incurva, Hoodia dregei, Ruschia beaufortensis*. Low Shrubs: *Jamesbrittenia tenuifolia*. Herb: *Manulea karrooica*. Succulent Herb: *Piaranthus comptus*.

Upper Karoo Hardeveld elements (Table 2) are present on the Gamka Karoo stony hills, which have common and dominant species including *Carissa haematocarpa, Euclea undulata, Nenax microphylla, Thesium lineatum, Tragus koelerioides, Hermannia cuneifolia, Hermannia desertorum, Eriocephalus microcephalus, Searsia burchellii, Hirpicium alienatum, Galenia fruticosa, Pteronia glomerata, Dianthus namaquensis, Rhigozum obovatum, Helichrysum zeyheri, Cissampelos capensis, Pegolettia retrofracta, Garuleum bipinnatum, Kleinia longiflora, Cotyledon orbiculata, Enneapogon scaber, Asparagus striatus, Astroloba corrugata* and *Pteronia incana*.

Trees and taller shrubs are not common in the open veld but are usually prevalent around the rocky outcrops which occur scattered across the plateau areas as well as near drainage lines and watercourses, with species such as *Euclea undulata*, *Lycium cinereum, Acacia karroo and Rhus burchellii.* The abundance of Species of Conservation Concern (SCC) within this habitat is relatively low and no species of high conservation concern were observed, including Sensitive Species 383. Some provincially protected species are however present including *Aloe claviflora*. Rockier areas tend to have elements of Upper Karoo Hardeveld, as described below. A general list of species that are represented in the vegetation type and conservation status characteristics is provided in Table 1.

Table 2: Upper Karoo Hardeveld (NKl 2).

GROWTH FORM	DESCRIPTION/SPECIES[2]
Geophytic Herbs	*Albuca setosa, Androcymbium albomarginatum, Asplenium cordatum, Boophone disticha, Cheilanthes bergiana, Drimia intricata, Oxalis depressa*
Grasses	*Aristida adscensionis (d), A. congesta (d), A. diffusa (d), Cenchrus ciliaris (d), Enneapogon desvauxii (d), Eragrostis lehmanniana (d), E. obtusa (d), Sporobolus fimbriatus (d), Stipagrostis obtusa (d), Cynodon incompletus, Digitaria eriantha, Ehrharta calycina, Enneapogon scaber, E. scoparius, Eragrostis curvula, E. nindensis, E. procumbens, Fingerhuthia africana, Heteropogon contortus, Merxmuellera disticha, Stipagrostis ciliata, Themeda triandra, Tragus berteronianus, T. koelerioides*
Herbs	*Troglophyton capillaceum subsp. capillaceum, Dianthus caespitosus subsp. caespitosus, Gazania krebsiana, Lepidium africanum subsp. africanum, Leysera tenella, Pelargonium minimum, Sutera pinnatifida, Tribulus terrestris.*
Tall Shrubs	*Lycium cinereum (d), Rhigozum obovatum (d), Cadaba aphylla, Diospyros austro-africana, Ehretia rigida subsp. rigida, Lycium oxycarpum, Melianthus comosus, Rhus burchellii.*
Low shrubs	*Chrysocoma ciliata (d), Eriocephalus ericoides subsp. ericoides (d), Euryops lateriflorus (d), Felicia muricata (d), Limeum aethiopicum (d), Pteronia glauca (d), Amphiglossa triflora, Aptosimum elongatum, A. spinescens, Asparagus mucronatus, A. retrofractus, A. striatus, A. suaveolens, Eriocephalus spinescens, Euryops annae, E. candollei, E. empetrifolium, E. nodosus, Felicia filifolia subsp. filifolia, Garuleum latifolium, Helichrysum lucilioides, H. zeyheri, Hermannia filifolia var. filifolia, H. multiflora, H. pulchella, H. vestita, Indigofera sessilifolia, Jamesbrittenia atropurpurea, Lessertia frutescens, Melolobium candicans, M. microphyllum, Microloma armatum, Monechma incanum, Nenax microphylla, Pegolettia retrofracta, Pelargonium abrotanifolium, P. ramosissimum, Pentzia globosa, P. spinescens, Plinthus karooicus, Polygala seminuda, Pteronia adenocarpa, P. sordida, Rosenia humilis, Selago albida, Solanum capense, Sutera halimifolia, Tetragonia arbuscula, Wahlenbergia tenella.*
Succulent Shrubs	*Aloe broomii, Drosanthemum lique, Faucaria bosscheana, Kleinia longiflora, Pachypodium succulentum, Trichodiadema barbatum, Zygophyllum flexuosum.*
Semiparasitic Shrub	*Thesium lineatum (d).*
Endemic Taxa	Succulent Shrubs: *Aloe chlorantha, Crassula barbata subsp. broomii, Delosperma robustum, Sceletium expansum, Stomatium suaveolens.* Low Shrubs: *Cineraria polycephala, Euryops petraeus, Lotononis azureoides, Selago magnakarooica.* Tall Shrub: *Anisodontea malvastroides.* Herbs: *Cineraria arctotidea, Vellereophyton niveum.* Succulent Herbs: *Adromischus fallax, A. humilis.* Geophytic Herbs: *Gethyllis longistyla, Lachenalia aurioliae, Ornithogalum paucifolium subsp. karooparkense.*

[2] (d) Dominant

Although the National Vegetation Map depicts maps only Gamka Karoo in the area, the larger drainage systems of the site with well- developed woody vegetation have Southern Karoo Riviere vegetation elements (Table 3). The Southern Karoo Riviere vegetation type is associated with the rivers of the central karoo such as the Buffels, Bloed, Dwyka, Gamka, Sout, Kariega and Sundays Rivers. About 12% has been transformed as a result of intensive agriculture and the construction of dams. Although it is classified as Least Threatened, it is associated with rivers and drainage lines and as such represents areas that are considered ecologically significant. Typical and dominant species observed from the drainage lines of the site includes *Vachellia karroo, Salsola aphylla, Lycium prunus-spinosa, Atriplex vestita, Zygophyllum retrofractum, Stipagrostis namaquensis, Lycium pumilum, Lycium cinereum, Artemisia africana* and *Deverra denudata*. These areas are generally considered sensitive due to the ecological role that riparian areas and drainage systems play. Although the site falls within the broader range of the Riverine Rabbit, the riparian habitat is sparse and stony with little habitat present that would suggest that the habitat within the site is suitable for this species.

Typical larger drainage line from within the site comprise *Vachellia karroo* dominating the banks and common and dominant species in the drainage lines and within the adjacent floodplain vegetation include *Sporobolus ioclados, Drosanthemum lique, Salsola aphylla, Tribulus terrestris, Felicia muricata, Atriplex vestita, Zygophyllum retrofractum, Cynodon dactylon, Stipagrostis namaquensis, Lycium pumilum, Lycium cinereum, Artemisia africana, Tripteris spinescens* and *Exomis microphylla*.

Table 3: Southern Karoo Riviere (AZi 6).

GROWTH FORM	DESCRIPTION/SPECIES[3]
Important Taxa	**Riparian thickets** Small Trees: *Acacia karroo (d), Rhus lancea (d).* Tall Shrubs: *Diospyros lycioides (d), Tamarix usneoides (d), Cadaba aphylla, Euclea undulata, Grewia robusta, Gymnosporia buxifolia, Melianthus comosus. Low Shrub: Asparagus striatus.*

[3] (d) Dominant

GROWTH FORM	DESCRIPTION/SPECIES[3]
	Succulent Shrubs: *Lycium cinereum (d), Amphiglossa callunoides, Lycium hirsutum, L. oxycarpum.* **Rocky slopes of river canals** Graminoid: *Stipagrostis namaquensis (d).* **Alluvial shrublands & herblands** Low Shrubs: *Ballota africana, Bassia salsoloides, Carissa haematocarpa, Pentzia incana.* Succulent Shrubs: *Malephora uitenhagensis (d), Salsola aphylla (d), S. arborea (d), Drosanthemum lique, Salsola geminiflora, S. gemmifera.* Graminoids: *Cynodon incompletus (d), Cenchrus ciliaris, Cyperus marginatus.* **Reed beds** Megagraminoid: *Phragmites australis (d).*
Endemic Taxa	**Alluvial shrublands & herblands** Graminoid: *Isolepis expallescens.*

2.2 Protected Flora

There is a relatively low number of Species of Conservation Concern (SCC) known from the area (Appendix 1) but given the low number of records it is expected that there would be additional species present as well. Listed and protected species are sometimes confined to specific habitats such as wetlands and rock pavements, outcrops or gravel patches.

Refer to Section 3.2 Flora.

2.3 Faunal Habitat and Communities

Observations made during the walkdown supplemented by previous ecological and biodiversity assessments undertaken by Todd (2022) identify the following faunal attributes:

2.3.1 Mammals

The study area and broad surroundings have not been well-sampled historically for mammals, with the result that the records from the existing databases do not provide a comprehensive picture of the mammalian community of the area. In order to counter this problem, the lists of mammals were extracted for a considerably larger area including the two quarter degree squares north of the site, which are considered to be those most similar to the site. Based on this larger sample area, the mammalian community is estimated at approximately 30 species. Common species observed at the site or on nearby sites that have been previously sampled, include Cape Porcupine, Steenbok, Greater Kudu, Vervet Monkey, Chacma Baboon, Cape Hare, Bat-eared Fox, Cape Fox, Black-backed Jackal, Aardwolf, Caracal, Common Duiker, Yellow Mongoose, Cape Grey Mongoose, Striped Polecat, Common Genet, Meerkat, Aardvark and Ground Squirrel. This represents a typical mammalian community for the Koup area and the lower Nama Karoo in general.

The only mammal species of conservation concern that may be present on the site is the Riverine Rabbit (*Bunolagus monticularis*) which is listed as Critically Endangered. The field assessment of the site indicated that there is minimal suitable habitat for the Riverine Rabbit present within the Koup site. The drainage lines within the Koup site are gravelly or stony in nature with very little floodplain vegetation and a general lack of silty banks with dense vegetation that provide the usual suitable habitat for this species. Specific camera trapping for Riverine Rabbit on the adjacent Beaufort West and Trakas wind farms, which has more suitable habitat than the Koup site did not pick any Riverine

Rabbits indicating that this species is very unlikely to be present. In addition, the EWT Riverine Rabbit records database indicates that there have not been any historical sightings from the site or immediate surrounds. As such, the site is considered low sensitivity for this species and an impact on this species is not expected to occur.

In general, impacts on mammals would occur due to disturbance and habitat loss. During the construction phase there would be significant disturbance at the site due to construction-related activities. During operation, there would be some disturbance at the wind farm due to noise generated by the wind turbines and some disturbance related to more general operational activities. The long-term habitat loss related to the development is estimated at 50 ha, which in context of the surrounding landscape is considered relatively minor. More mobile or disturbance-sensitive species are likely to be displaced during construction but would likely move back into the affected areas once the facility is operational. Many species are likely to become at least partly habituated to the presence and operation of the wind turbines. In general, the major long-term impacts of the development would be about 50 ha of direct habitat loss for the resident mammals and some disturbance associated with noise and human activity associated with turbine construction and operation, which would have a greater extent, dependent on the specific response of the affected species.

A potential but little-known impact may occur as a result of the noise and infra-sound generated by the wind turbines. A major source of background infrasound in the natural environment is wind-generated, with the result that increasing levels of infrasound generated by wind turbines occur simultaneously with increasing levels of natural background noise as the wind speed increases. The contribution of wind turbines to infrasound appears to become undetectable from background levels, even in rural environments within 1.5 km of wind farms (Evans et al. 2013). Apart from the infrasound, audible noise generated by the turbines may have a negative impact on noise-sensitive species. Although this impact has not been well-documented and warrants investigation, it is plausible that species that use sound for prey detection or predator avoidance may be negatively affected by the noise generated by the wind turbines. There are however no species of high conservation concern that are likely to be affected by noise at the site, so this impact is likely to be of limited extent and restricted to a subset of the fauna present. In addition, studies of noise impacts on fauna have demonstrated that many faunal species are able to use various behavioural adaptations to reduce the impact of noise on their activities.

2.3.2 Reptiles

Reptile diversity in the Koup area is expected to be moderate to low, which can be ascribed to the relative homogeneity of the habitats present and the lack of moist, well-vegetated environments or significant escarpment and cliff habitats. Based on the ReptileMap database, approximately 25 species are known from the area. The only species of potential concern known from the area is the Karoo Padloper or Karoo Dwarf tortoise, *Chersobius boulengeri* (Endangered). This small tortoise is seldom observed, even when specifically targeted during herpetofauna surveys as it is usually active for less than 15 minutes a day (or largely entirely inactive during cold or dry conditions). They are associated with dolerite ridges and rocky outcrops of the southern Succulent and Nama Karoo biomes. Threats to this species include habitat degradation due to agricultural activities and overgrazing, and predation by the Pied Crows which in recent decades have expanded in distribution range. The habitat on site is considered broadly unsuitable for the Karoo Padloper, but within some localised koppies and outcrops with sufficient rock cover to provide the shelter that this species requires. The development would however largely avoid the rocky shelter sites of this species with the result that direct habitat loss would be low. In addition, tortoises are one of the few species that have been specifically studied with regards to their responses to wind energy development and no significant negative impacts have been

detected within population's resident on wind farms (Agha et al. 2015, Lovich et al. 2011). There is potential concern that the development could result in tortoises, including the Karoo Padloper being run over by vehicles on the site. While this is a potential concern during construction due to the large number of vehicles present, during operation, this impact would be low and restricted to maintenance activities. Although tortoises could be kept off the wind farm roads by fencing or similar structures, this is not recommended as this would also function to limit tortoise movement across the landscape. In addition, the vegetation cover on the site is already very low and the reptile species present are species adapted to low-cover conditions with the result that the open areas created by the roads of the site would be represent significant obstacles for the species present.

In general, the major impacts on reptiles associated with the development would be disturbance and habitat loss during construction. However, there do not appear to be any species that would be especially affected.

The most important areas for reptiles are likely to be the occasional steeper rocky outcrops and the larger drainage lines with some woody vegetation which offer some cover for those species less able to deal with the low vegetation cover of most of the site. The footprint within these areas would be low and as such there do not appear to be any significant limitations or red-flag issues associated with reptiles and the development of the wind farm.

2.3.3 Amphibians

The diversity of amphibians in the study area is relatively low with only six species having being recorded in the area. Species observed at the site include the Karoo Toad and Poynton's River Frog. There are no listed amphibian species known from the area although the Giant Bull Frog *Pyxicephalus adspersus* was previously listed as Near Threatened but has revised to Least Concern. This species is associated with temporary pans in the Karoo, Grassland and Savannah Biomes, but is not commonly recorded in the study area and its presence at the site is considered unlikely as there is no suitable breeding habitat present within the site. Although there is no permanent water within the site, there are a few larger drainage lines present or small earth dams that would have temporary pools that can be used by toads and frogs for seasonal breeding purposes. The impact of the development on these breeding sites would be very low and a direct impact on these habitats is unlikely. Given the localised nature of important amphibian habitats at the site as well as the generally arid nature of the site and the low overall abundance of amphibians, a significant long-term impact on amphibians is unlikely.

2.3.4 Invertebrates

No invertebrate investigations have been undertaken and no invertebrates of conservation concern identified. It is probable that Baboon Spiders and Scorpions are present, both being ToPS protected and thus requiring permits during search and rescue.

2.4 Bioregional Planning

The Western Cape Biodiversity Spatial Plan (WC BSP, 2017) map is depicted below for the study area (Figure 7). This biodiversity assessment identifies CBAs which represent biodiversity priority areas which should be maintained in a natural to near natural state. The CBA maps indicate the most efficient selection and classification of land portions requiring safeguarding in order to maintain ecosystem functioning and meet national biodiversity objectives. The only designated CBA is on the eastern side, to the east of the overhead powerline, where no turbines are situated.

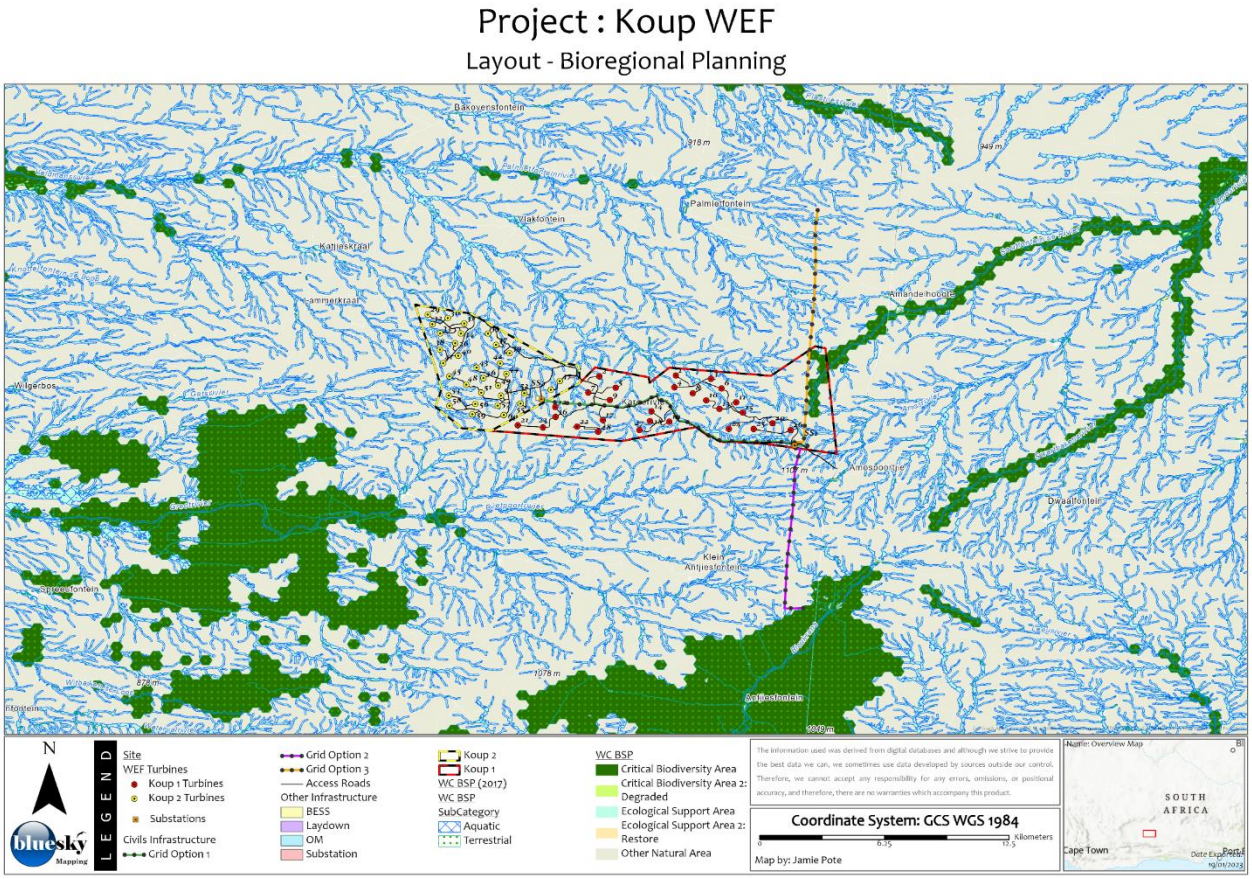


Figure 7: Bioregional Planning (Critical Biodiversity Areas).

2.5 Site Sensitivity Assessment

An ecological sensitivity map of the site was produced by integrating the results of the site visits with the available ecological and biodiversity information in the literature and various spatial databases by Todd (2022), Figure 8. This walkdown process will verify these findings and assess the layout in more depth in order to recommend any minor modifications than should or can be made to reduce the impact further. In general, the initial biodiversity assessment for the EIA phase tends to focus on the broader site, rather than fine scale layout planning and assessment, which usually get refined and addressed at this walkdown stage. The original sensitivity map and walkdown layout are indicated in Figure 9.

As per Todd (2022), sensitive features such as wetlands, drainage lines, rocky hills and steep slopes were mapped and buffered where appropriate to comply with legislative requirements or ecological considerations. Additional sensitive areas were then identified and delineated based on the results of the field assessment and satellite imagery of the site. All the different layers created were then merged to create a single coverage. The ecological sensitivity of the different units identified in the mapping procedure was rated according to the scale as indicated below.

- **Low** – Areas of natural or transformed habitat with a low sensitivity where there is likely to be a negligible impact on ecological processes and terrestrial biodiversity. Most types of development can proceed within these areas with little ecological impact.
- **Medium**- Areas of natural or previously transformed land where the impacts are likely to be largely local and the risk of secondary impact such as erosion low. These areas usually comprise the bulk

of habitats within an area. Development within these areas can proceed with relatively little ecological impact provided that appropriate mitigation measures are taken.

- **High** – Areas of natural or transformed land where a high potential impact is anticipated due to the high biodiversity value, sensitivity or important ecological role of the area. These areas may contain or be important habitat for faunal species or provide important ecological services such as water flow regulation or forage provision. Development within these areas is less desirable and should proceed with caution (such as specific consideration of the footprint within these areas and field verification of the acceptability of development within these potentially sensitive areas) as it may not be possible to mitigate all impacts appropriately.
- **Very High** – Critical and unique habitats that serve as habitat for rare/endangered species or perform critical ecological roles. These areas are essentially no-go areas from a developmental perspective and should be avoided as much as possible.

The sensitivity map for the Koup 2 WEF area is depicted below in Figure 9. Overall, Todd considered the site to be generally favourable for development of the wind farm, which is confirmed. Although there are some areas which should be excluded from development or in which the development footprint should be constrained, there are large tracts of the site that are considered low sensitivity and where development would have a low impact. The mapped no-go and high sensitivity areas have been used to inform the development layout as described in Todd (2022, Table 5). The main feature comprise the very high sensitivity areas considered unsuitable for the placement of turbines, buildings and substations (and associated battery facility) within the site are the major drainage systems. There are also numerous steep slopes present which are considered high sensitivity and which are considered unsuitable for buildings, substations and temporary lay-down areas. These slopes are however considered acceptable for the placement of some turbines and associated access roads subject to the stated limits of acceptable change. Todd (2022) noted that the footprint within the low, medium and high sensitivity areas is well within the limits of acceptable change and that the limit of acceptable change for the Very High sensitivity category is marginally exceeded. However, before this result is discussed in more detail, it is important to note that this does not imply an immediate fatal flaw for the project, as the specific context, the features affected and overall site sensitivity need to be evaluated at the same time to establish the degree and nature of conflict and the presence of options to mitigate or avoid impacts to these areas. Within the very high sensitivity areas, the footprint is marginally higher at 1.15ha than the tolerance of 0.87 ha, however, the difference of 0.25ha is not considered significant for the current site and would occur at drainage crossings and the acceptability of these would be specifically dealt with in the freshwater study. From an ecological perspective, the footprint within the Very High sensitivity areas is considered acceptable given that this would be restricted to river crossings of the wind farm access roads, the potential to mitigate impacts on these features is high and a long-term negative impact on biodiversity within these areas is low.

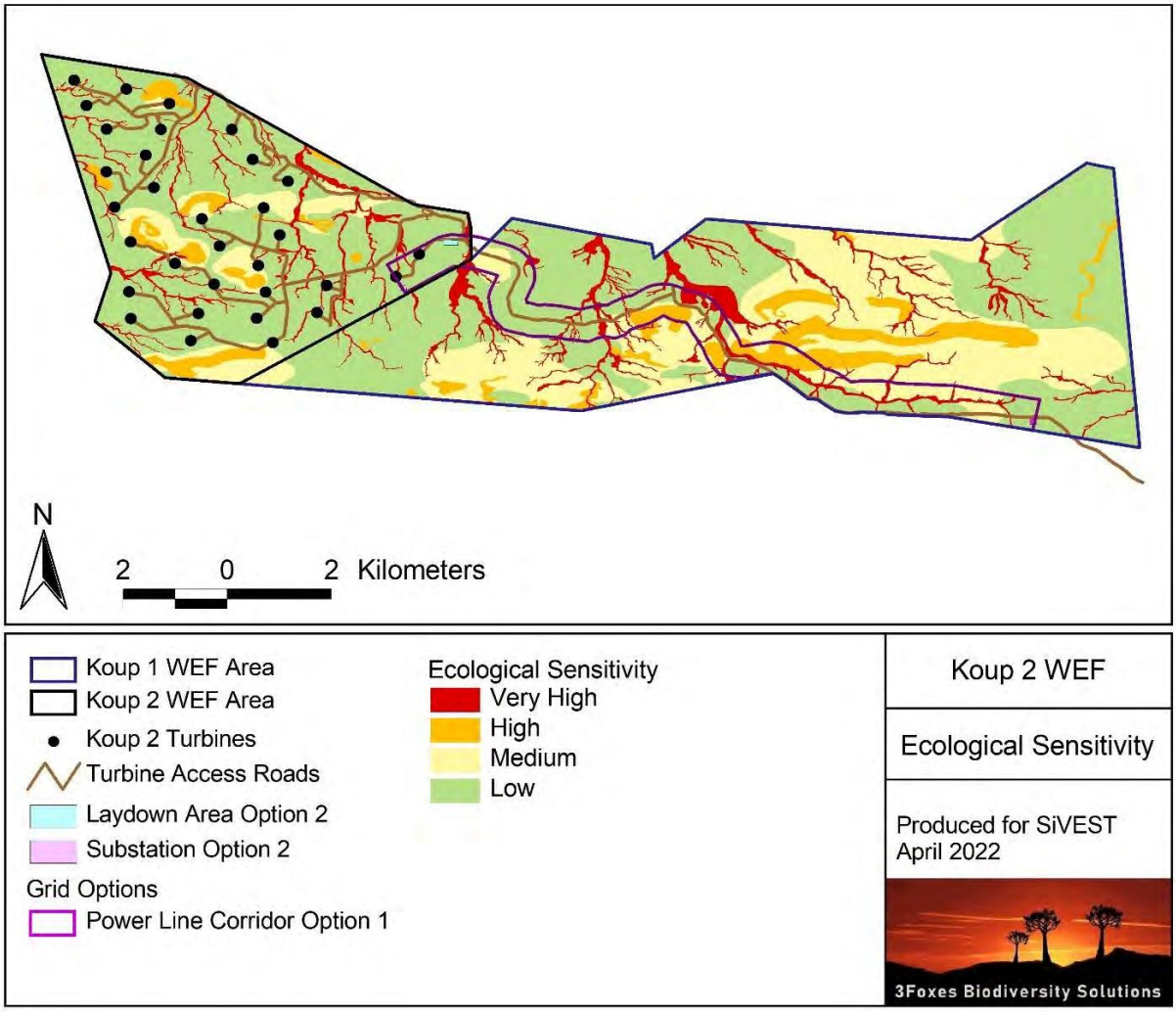


Figure 8: Original assessment site vegetation sensitivity (Todd, 2022).

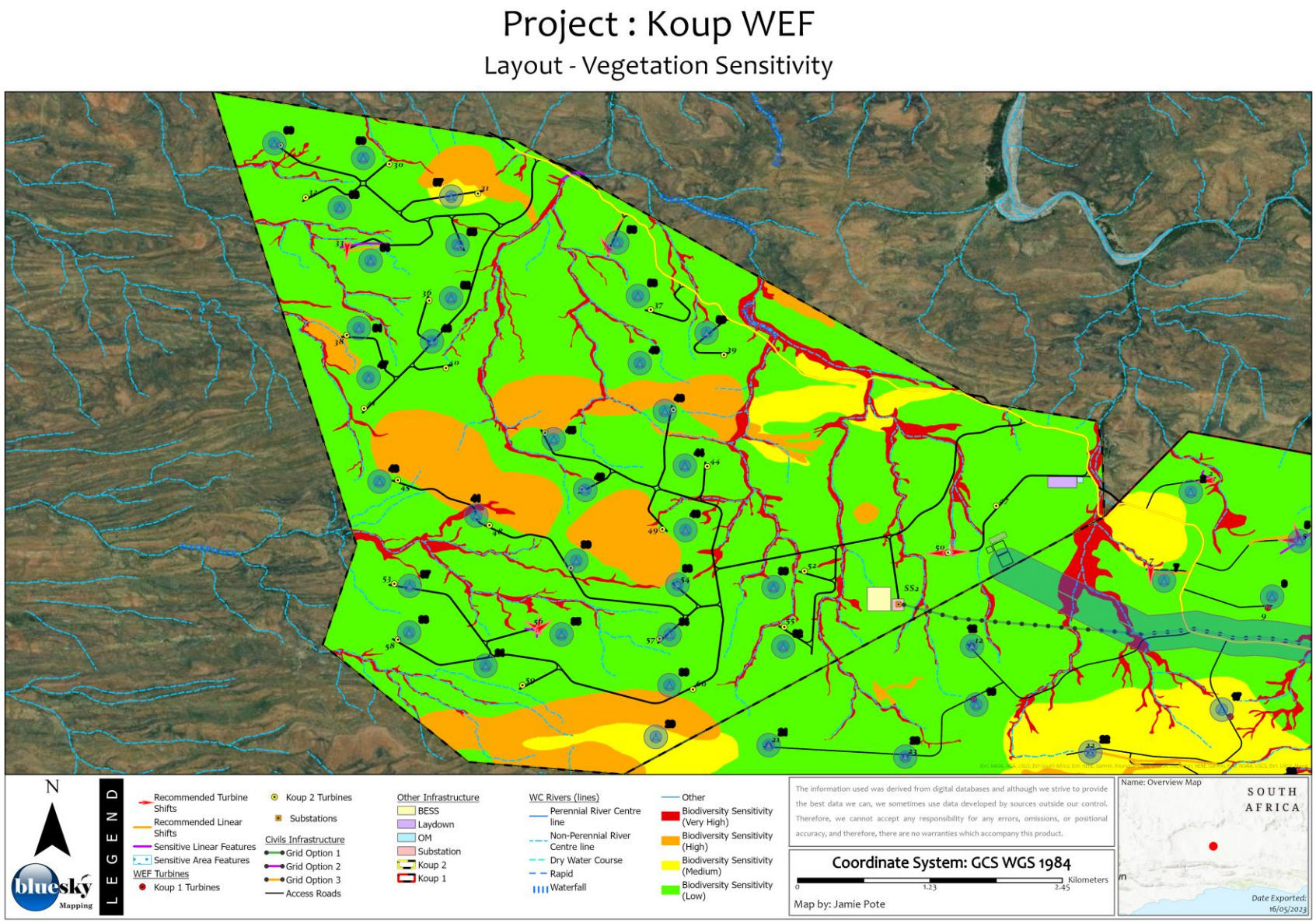


Figure 9: Site Vegetation and Sensitivity overlain on original mapped sensitivity (as per Todd, 2022). Revised positions indicated in blue.

low hills dissected by numerous drainage lines. Vegetation cover is generally very low and dominated by low shrubs and scattered low trees. In general, the vegetation of the Koup 2 site is considered low sensitivity and there are few species of concern present. In terms of fauna, the diversity of mammals, reptiles and amphibians is considered relatively low, even by Karoo standards. Although the site falls within the broad distribution of the Riverine Rabbit, the drainage lines of the site do not have extensive floodplains with dense riparian vegetation that represent the typical habitat of this species in the area. The Koup 2 site is therefore considered unsuitable for this species and the development is considered highly unlikely to have any impact on the Riverine Rabbit. The site also falls within the range of the Karoo Padloper and if present it would be associated with the hills of the site with sufficient loose rock and coarse rubble to provide shelter. The low vegetation cover and paucity of such habitat suggests that the site is not an important area for this species and no evidence of this species was observed on the site. Although there are no CBAs within the site, the smaller drainage features of the site are classified as Ecological Support Areas and it would not be possible to avoid some impact on these features. However, with the appropriate mitigation, the development would not compromise the functioning of the affected ESAs. In terms of cumulative impacts, the wider area currently has a low development impact from renewable energy and the contribution of the Koup 2 WEF to cumulative impact at less than 50ha is considered relatively low and would not generate significant broad-scale impact. The contribution of the grid connection to cumulative impact would be low and considered acceptable.

The fauna of the area is composed of widespread species, with very few species of conservation concern likely to be present in the area. The most important areas for fauna at the site are the drainage systems and the well-vegetated slopes which are largely outside of the development footprint and would not be significantly affected. The rocky outcrops on the plateau were however observed to have a high abundance of reptiles, which relates to the weathering patterns of the mudstones and the resultant abundance of refugia. The major impact on fauna would be habitat loss associated largely with the high-elevation plateau habitat of the site.

The walkdown findings concur broadly with the original assessment. Final micro-siting has led to recommendation relating to several components, locally and based on the recommendation made during the walkdown, several suggestions have been provided that will reduce the loss of very high sensitivity areas, which was indicated by Todd to marginally exceed acceptable limits.

3 Walkdown Findings

3.1 Vegetation

Since the original ecological assessments were undertaken for each of the separate wind energy facility projects, this walkdown has been undertaken for the wider project area and thus it has been possible to refine and better understand the vegetation composition and local distribution of flagged species of conservation concern within the greater area of influence.

3.2 Flora Species of Conservation Concern

Several Species of Conservation Concern were identified during the initial ecological assessments. In addition, with the inclusion of additional available information, observations and surveying during the walkdown, several additional species have been identified. These will be added to the species list for the respective permit applications. A list of flora species of conservation concern that have been identified or recorded previously or during the walkdown is provided in Table 4 below. In general, the

species are widespread and are not associated with any specific turbine or WEF infrastructure component. Several geophytic species are also likely to be present but were not recorded during the initial assessment and were not visible during the walkdown, as the season was not favourable. Respective permits will be required before commencement of flora relocation.

Table 4: Status of flora species of conservation concern confirmed to be present as per Todd (2022) with additional walkdown observations.

SCIENTIFIC NAME	FAMILY	STATUS[4]	DESCRIPTION AND DISTRIBUTION
Adromischus fallax	Crassulaceae	Rare	NOT RECORDED. Suitable habitat not present. A rare, range-restricted habitat specialist (extent of occurrence 8 km²) that is not threatened. Known currently from only two subpopulations but likely to occur at a few more.
Aloe chlorantha	Asphodelaceae	Neat Threatened	PRESENT but uncommon. Aloe chlorantha is a rare species, occurring in small, scattered subpopulations. Field observations in the 1980s of a subpopulation near Fraserburg recorded around 25 plants (H.F. Glen pers. comm. 1986), but no recent field data on the population size is available. The species is currently known from seven locations, but it is likely more common as its habitat is botanically very poorly explored.
Anisodontea malvastroides	Malvaceae	Rare.	NOT RECORDED. This species is endemic to the mountains of the Great Karoo, where it occurs in the Nuweveld and Sneeuberg mountains between Beaufort West and Middelburg.
Gethyllis longistyla	Amaryllidaceae	Rare	NOT RECORDED. May be seasonally present, but unconfirmed at times of sampling. A relatively widespread, but rare species, typically occurring in small subpopulations. It is not currently threatened. Gethyllis longistyla is known from only a few records, scattered over a wide area. It is rare, and easily overlooked, as it is cryptic when it is not flowering, and flowers, which appear in late summer, lasts only a few days. Subpopulations are typically small, occurring in subpopulations consisting of 20 or fewer plants.
Lotononis azureoides	Fabaceae	Rare	NOT RECORDED. Suitable habitat not present. A range-restricted species with an extent of occurrence (EOO) of 144 km² and is known from four subpopulations. It has no significant threats and is therefore not in danger of extinction.
Peersia frithii	Aizoaceae	NEST (M), Vulnerable	PRESENT, locally common on poorly vegetated rocky shale gravel areas. A species previously collected widely throughout the southern of the Karoo with an historic extent of occurrence (EOO) of 28913 km². It has only been recorded seven times since 1990 and is suspected to be extant at 6 locations from a current EOO of 690 km². Decline is suspected to be the result of livestock overgrazing and trampling. No historical records near the site but it does fall within east-west distribution range.
Ruschia beaufortensis	Aizoaceae	Vulnerable	NOT RECORDED, may be present in elevated areas but unlikely. A poorly known species recorded only from the

[4] NC - Northern Cape Nature Conservation Act (Act no. 9 of 2009), Schedule 1 or 2; EC – Provincial Nature Conservation Ordinance (No. 19 of 1974).; ToPS – Threatened or Protected Species [NEM:BA]; IUCN: Least Concern (LC), Near Threatened (NT), Critically Endangered (CR), Endangered (EN), Vulnerable (VU); CITIES - Conservation for International trade in Endangered Species.

SCIENTIFIC NAME	FAMILY	STATUS[4]	DESCRIPTION AND DISTRIBUTION
			arid mountains near Beaufort West (extent of occurrence 476 km²). Between two and five locations exist, subpopulations occurring outside of the park are potentially threatened by uranium mining. Site is not within typical habitat but does not exclude possible presence without further investigation.
Sensitive Species 1039	Apocynaceae		PRESENT, Uncommon and localised, more prevalent on Koup 2 site to the east. This taxon occurs in the southern Great Karoo from Aberdeen and Graaff-Reinet southwards to Rietbron and eastwards to Willowmore, Klipplaat and Steytlerville. This taxon is rare, occurring as widely scattered individuals. There are often several hundred meters between plants, one subpopulation east of Willowmore was found to include more than 50 large plants (Bruyns 2005).
Sensitive species 1212	Aizoaceae	Vulnerable	NOT RECORDED. Suitable habitat not abundant within the site. Several marginally suitable areas were surveyed and none were found. EOO <7 000 km², known from fewer than 10 locations and habitat quality and number of mature individuals are declining as a result of livestock (sheep and goat) overgrazing and illegal collection for the succulent plant trade. Potentially threatened at some locations by prospecting for uranium mining. Site is outside of known occurrence range but does not exclude possible presence without further investigation.
Sensitive species 383	Euphorbiaceae	NEST (M), Vulnerable	PRESENT. Ongoing degradation of this species' habitat as a result of livestock overgrazing and the increased intensity and duration of droughts. This species is known from only a few records, from five locations, but it is likely to be more common as it is easily overlooked when it grows sheltered under larger shrubs, and its range is botanically poorly explored.
Tridentea virescens	Apocynaceae	Rare	NOT RECORDED. May be seasonally present, but unconfirmed at times of sampling. A widespread species that occurs as sporadic small subpopulations of up to six plants. No threats are known to impact this species.
Tritonia florentiae	Iridaceae	NEST (M), Vulnerable	NOT RECORDED. May be seasonally present, but unconfirmed at times of sampling. Ongoing degradation of this species' habitat as a result of livestock overgrazing and the increased intensity and duration of droughts. This species is known from only a few records, from five locations, but it is likely to be more common as it is easily overlooked when it grows sheltered under larger shrubs, and its range is botanically poorly explored.

3.3 Fauna Species of Conservation Concern

Fauna species of Conservation Concern typical of the vegetation and site include species listed in Table 5, as per Todd (2016, 2017, 2019) with additional walkdown observations. Respective permits will be required before commencement of fauna relocation. Refer to original assessments Todd (2022) for full list of faunal species.

Table 5: Listed fauna species of conservation concern confirmed to be present as per Todd (2022).

SCIENTIFIC NAME	COMMON NAME	STATUS[5]	OCCURRENCE/COMMENT
MAMMALS			
Bunolagus monticularis	Riverine Rabbit	NEST (M), EN	The Riverine Rabbit is endemic to the semi-arid central Karoo region of South Africa (estimated extent of occurrence (EOO) is 54,227 km² and area of occupancy (AOO) is 2,943 km²). Marginally suitable habitat present but limited to main lower order watercourses. Likely to require specialist confirmation.
Felis nigripes	Black-footed cat	VU	Associated with arid country with MAR 100-500 mm, particularly areas with open habitat that provides some cover in the form of tall stands of grass or scrub. May a be transient species, but not recorded.
BIRDS			
Neotis ludwigii	Ludwig's Bustard	NEST (H), EN (SA), EN (Intl)	Refer to Avifaunal reporting.
Polemaetus bellicosus	~~Martial Eagle~~	~~NEST (M), EN (SA), VU (Intl)~~	Refer to Avifaunal reporting.
Afrotis afra	Southern Black Korhaan	NEST (M), VU (SA), VU (Intl)	Refer to Avifaunal reporting.
Aquila verreauxii			Refer to Avifaunal reporting.
REPTILES			
Psammobates tentorius subsp *tentorius*	Karoo Tent Tortoise	NT	Tortoises are highly susceptible to collisions with motor vehicles and trucks on new roads. Found throughout the project area but observed to be more common in lowland areas.
Psammobates tentorius veroxii	Bushmanland Tent Tortoise	NT	Tortoises are highly susceptible to collisions with motor vehicles and trucks on new roads. Found throughout the project area but observed to be more common in lowland areas.
Homopus femoralis	Greater Padloper	LC	Found throughout the project area but observed to be more common in lowland areas.
Stigmochelys pardalis	Leopard Tortoise	LC	Found throughout the project area. Common along roads.
Chersobius boulengeri	Karoo padloper or Karoo Dwarf Tortoise	EN	Not recorded in original assessment but possibly present.
AMPHIBIANS			
None			
INVERTEBRATES			
Scorpions		ToPS	Not confirmed during original assessment, but several species

[5]NC - Northern Cape Nature Conservation Act (Act no. 9 of 2009), Schedule 1 or 2; EC – Provincial Nature Conservation Ordinance (No. 19 of 1974).; ToPS – Threatened or Protected Species [NEM:BA]; IUCN: Least Concern (LC), Near Threatened (NT), Critically Endangered (CR), Endangered (EN), Vulnerable (VU); CITIES - Conservation for International trade in Endangered Species.

SCIENTIFIC NAME	COMMON NAME	STATUS[5]	OCCURRENCE/COMMENT
			present. Include in permit applications.
Baboon Spiders		ToPS	Likely present, not confirmed during original assessment. Include in permit applications.

3.4 Sensitive Areas and Species Populations

Sensitive areas identified either in the original biodiversity assessment and/or observed during the walkdown include the following:

- Rocky Outcrops and Ridges on slopes and mountain peaks – outcrops generally have a greater density of succulent species (Aizoaceae and Crassulaceae) that will require relocation.
- Rivers, seeps, watercourses, wetlands and pans – minimise impacts to aquatic processes.
- Sub-populations of flagged species of conservation concern – often associated with rocky areas.
- Slope and mountain edges – excessive cut and fill will elevate impact.

3.5 Turbines, Roads and other Infrastructure

A summary analysis of specific infrastructure risks is provided in Table 6 and indicated in Figure 10.

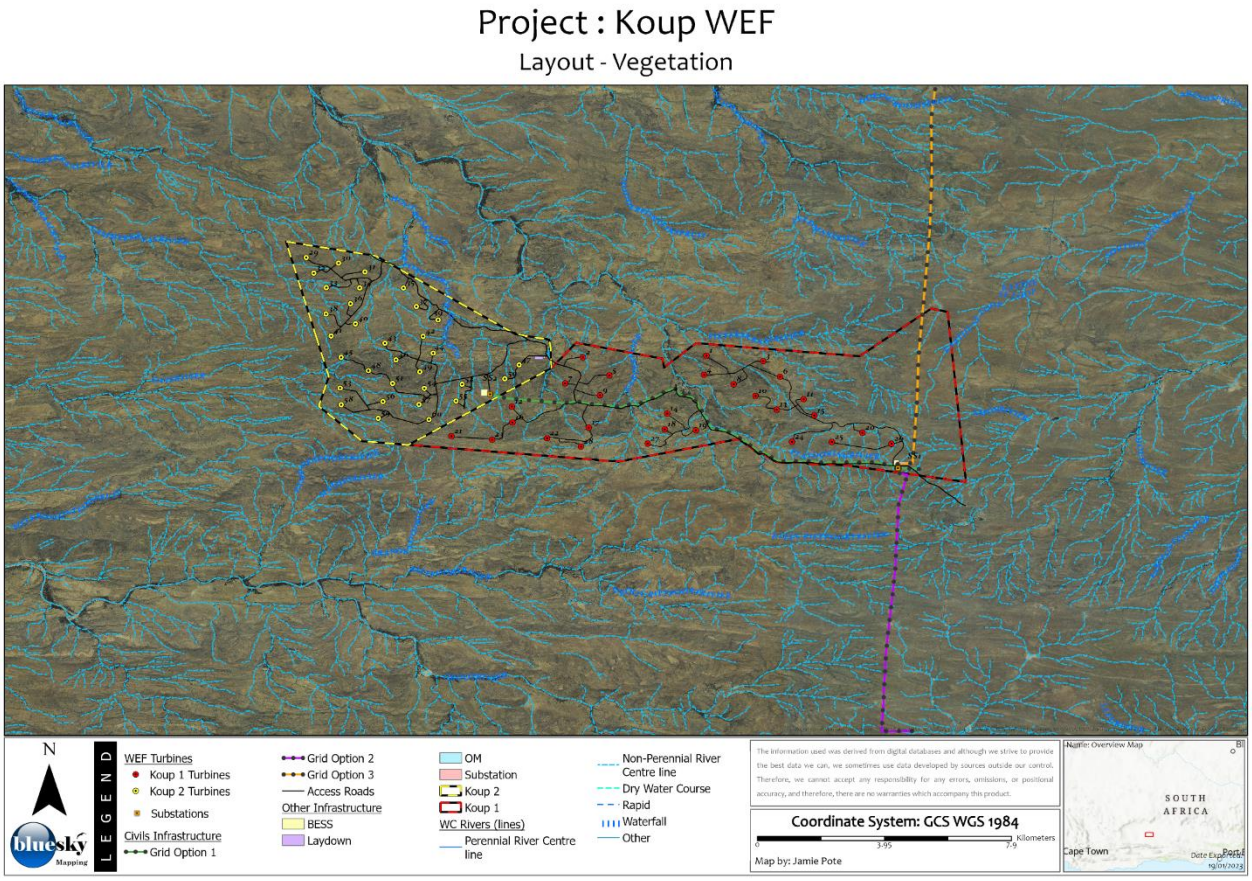


Figure 10: Analysis of turbine positions and other WEF infrastructure (Koup 1 – red, Koup 2 - yellow).

Table 6: Summary of WEF and infrastructure vegetation and sensitivities and recommended layout adjustments.

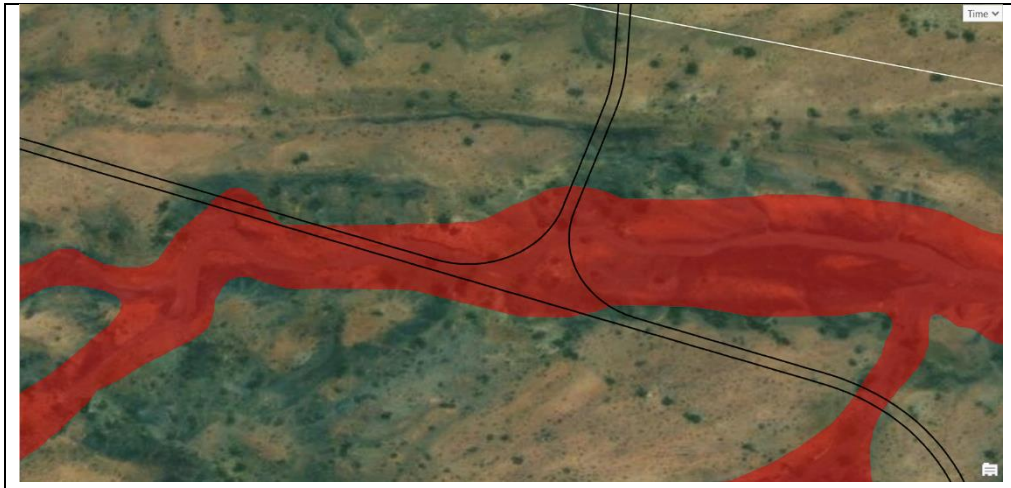
TURBINE	HABITAT[6]	COMMENT
WTG 29	Rocky shrubland	Turbine in rocky shrubland on hillslope, road through shrubland and several watercourse crossings, **no *adjustments recommended*.**
WTG 30	Rocky shrubland	Turbine in rocky shrubland on hillslope, road through shrubland, **no *adjustments recommended*.**
WTG 31	Rocky shrubland	Turbine in rocky shrubland on hillslope, road through shrubland, **no *adjustments recommended*.**
WTG 32	Rocky shrubland	Turbine in rocky shrubland on hillslope, road through shrubland, **no *adjustments recommended*.**
WTG 33	Rocky shrubland	Turbine in rocky shrubland on hillslope, road through shrubland with several watercourse crossings Road meanders over drainage line unnecessarily and turbine is on slope near minor drainage lien. Recommend slight southward shift of turbine and/or laydown area and minor road re-alignment.
WTG 34	Rocky shrubland	Turbine in rocky shrubland on hillslope, road through shrubland, **no *adjustments recommended*.**
WTG 35	Rocky shrubland	Turbine in rocky shrubland on hillslope, road through shrubland and several watercourse crossings. Road terminates and turbine overlaps with drainage line source. Recommend slight shift to west.
WTG 36	Rocky shrubland	Turbine in rocky shrubland on hillslope, road through shrubland, **no *adjustments recommended*.**
WTG 37	Rocky shrubland	Turbine in rocky shrubland on small plateaux, road through shrubland, **no *adjustments recommended*.**
WTG 38	Rocky shrubland	Turbine in rocky shrubland on hillslope, road through shrubland, **no *adjustments recommended*.**
WTG 39	Rocky shrubland	Turbine in rocky shrubland on hillslope, road through shrubland, **no *adjustments recommended*.**
WTG 40	Rocky shrubland	Turbine in rocky shrubland on hillslope, road through shrubland, **no *adjustments recommended*.**
WTG 41	Rocky shrubland	Turbine in rocky shrubland on hillslope, road through shrubland, **no *adjustments recommended*.**
WTG 42	Rocky shrubland	Turbine in rocky shrubland on hillslope, road through shrubland and watercourse, **no *adjustments recommended*.**
WTG 43	Rocky shrubland	Turbine in rocky shrubland on hillslope, road through shrubland, **no *adjustments recommended*.**
WTG 44	Rocky shrubland	Turbine in rocky shrubland on hillslope, road through shrubland and watercourse, Road intersection falls over watercourse. Recommend road shift.
WTG 45	Rocky shrubland	Turbine in rocky shrubland on hillslope, road through shrubland and watercourse, **no *adjustments recommended*.**
WTG 46	Rocky shrubland	Turbine in rocky shrubland on hillslope, road through shrubland, **no *adjustments recommended*.**
WTG 47	Rocky shrubland	Turbine in rocky shrubland on hillslope, road through shrubland, **no *adjustments recommended*.**
WTG 48	Rocky shrubland	Turbine in rocky shrubland on hillslope, road through shrubland, **no *adjustments recommended*.**
WTG 49	Rocky shrubland	Turbine close to watercourse and surrounding riparian/vlei like area. Recommended shift to east or west.
WTG 50	Rocky shrubland	Turbine in rocky shrubland on hillslope, road through shrubland, **no *adjustments recommended*.**
WTG 51	Rocky shrubland	Turbine in rocky shrubland on hillslope, road through shrubland and watercourse, **no *adjustments recommended*.**
WTG 52	Rocky shrubland	Turbine in rocky shrubland on hillslope, road through shrubland and watercourse, **no *adjustments recommended*.**
WTG 53	Rocky shrubland	Turbine in rocky shrubland on hillslope, road through shrubland and minor watercourse, **no *adjustments recommended*.**
WTG 54	Rocky shrubland	Turbine in rocky shrubland on hillslope, road through shrubland, **no *adjustments recommended*.**
WTG 55	Rocky shrubland	Turbine in rocky shrubland on hillslope, road through shrubland and minor watercourse, **no *adjustments recommended*.**

[6] Rocky habitat generally more likely to have more species of conservation concern for relocation as well as reptiles (snakes and lizards).

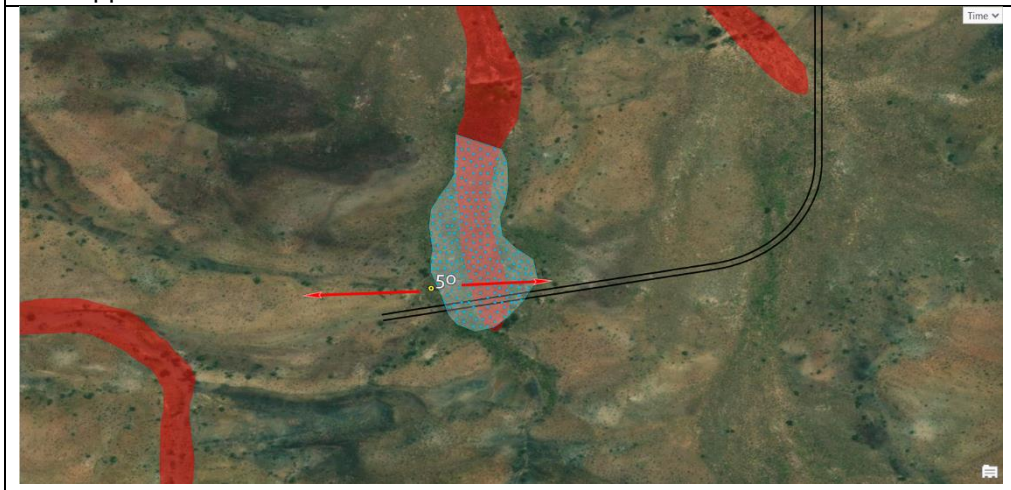
TURBINE	HABITAT[6]	COMMENT
WTG 56	Rocky shrubland	Turbine in rocky shrubland on hillslope, very near watercourse. Road through shrubland, Laydown area to be in northerly direction.
WTG 57	Rocky shrubland	Turbine in rocky shrubland on hillslope, road through shrubland, **no *adjustments recommended***.
c	Rocky shrubland	Turbine in rocky shrubland on hillslope, road through shrubland, **no *adjustments recommended***.
WTG 59	Rocky shrubland	Turbine in rocky shrubland on hillslope, road through shrubland, **no *adjustments recommended***.
WTG 60	Rocky shrubland	Turbine in rocky shrubland on hillslope, road through shrubland, **no *adjustments recommended***.
BESS	Sandy Grassland	Substation in rocky shrubland on slightly elevated area, **no *adjustments recommended*.**
Laydown Area	Sandy Grassland	Substation in rocky shrubland on slightly elevated area, **no *adjustments recommended*.**
OM	Sandy Grassland	Substation in rocky shrubland on slightly elevated area, **no *adjustments recommended*.**
Substation	Rocky Shrubland	Substation in rocky shrubland on slightly elevated area, **no *adjustments recommended*.**
Grid Option 1 (East)	Rocky/ Grassland/ Shrubland	Traverses rocky shrubland and sandy grassland and section along watercourse, follows existing access road (north side). Several adjustments recommended in order to avoid watercourse and riparian vegetation with tall trees that will likely require removal along servitude where OHL follows major watercourse. Recommend shifting OHL southwards away from river entirely.
Main Koup 2 Access Road	Rocky Shrubland & Sandy Grassland	Main access road follows existing gravel access road and traverses numerous watercourses, to be upgraded accordingly to minimise erosion risk. North-western end of main access road (towards turbines 30 to 38) crosses a major watercourse at point of high ledge on western bank. Alternatives would be recommended if feasible, as significant cut and fill and/or a large bridge structure would likely be required.

Table 7: Recommended layout adjustment maps and photos.

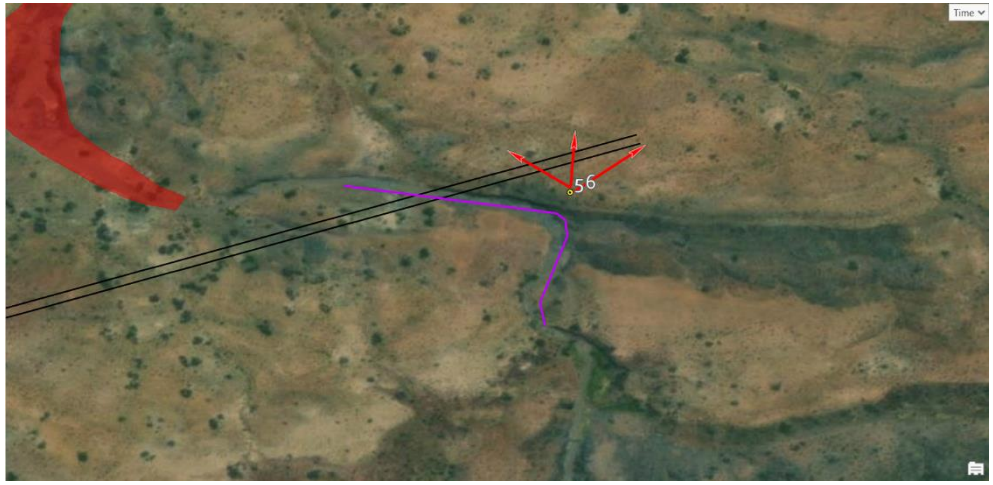
 WTG 33	
 WTG 35	



WTG 44 Road

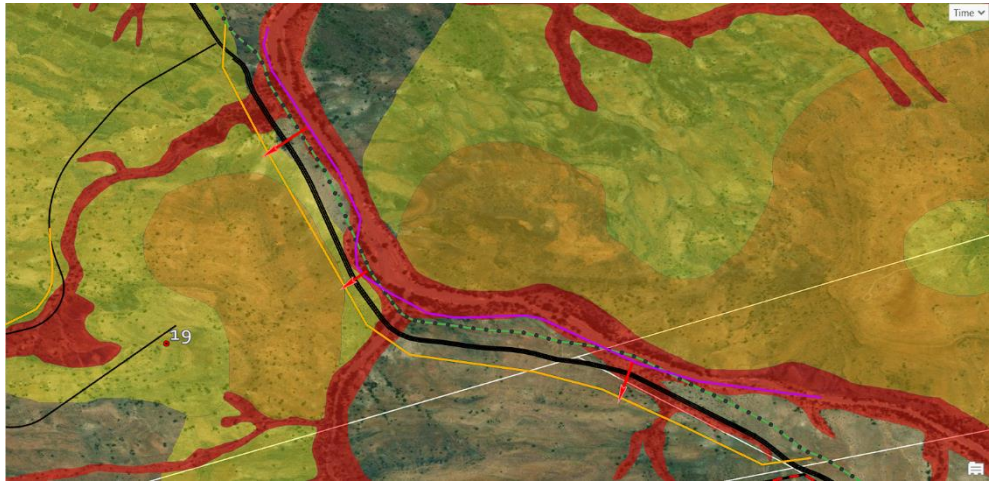


WTG 50



WTG 56

Main Access Road (west)



Grid Connection Option 1 (OHL)

4 Walkdown Conclusions and Recommendations

The following general recommendations are made based on the findings of the walkdown, with reference to Table 6 & Table 7 and Figure 10:

- No turbine positions were noted to conflict with any sensitive areas as per original assessment.
- Site walkdown determined that several turbines and roads were on or near sensitive features, including several drainage lines, watercourses and grassy veli like areas. While not directly of a terrestrial nature these features do none the less have potential indirect terrestrial habitat sensitivities, being in an arid environment where the aquatic and terrestrial environment are closely linked. Several minor alignment recommendations have been made in this regard. These will also reduce the very high sensitivity footprint slightly.
- Other potential issues that were identified in the walkdown include steep rock faces and access roads being off the edge of a mountain, which can be avoided or significantly reduced by incorporating minor turbine, infrastructure or road alignment adjustments, as recommended. The terrestrial biodiversity impact would be minimised by allowing for reduced cut and fill requirements, hence a slightly reduced terrestrial footprint.
- A realignment recommendation is made for a portion of the grid connection Option 1 (East) route.
- The following specific recommendations should be included in any updated EMPr for the project.
    - A flora and fauna search and rescue (relocation) must be undertaken before commencement of any vegetation clearing. A comprehensive (updated) list of species for which permits will be required will be included in permit applications, including several species not identified during the initial assessment.
- Where there are further changes/updates to the vertical and horizontal alignments of the road network and site laydown area, such sections/areas may require reassessed in order to determine any further risks and impacts to the ecology and/or species.

5 Appendices

5.1 Appendix 1: References

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- Todd, S. 2022. *Proposed construction of the Koup 2 Wind Energy Facility and associated grid infrastructure, near Beaufort west, Western Cape province, South Africa: Fauna & flora specialist study*. Report compiled for SiVEST Environmental on behalf of Genesis Enertrag.
- Todd, S. 2022. *Proposed construction of the Koup 1 Wind Energy Facility and associated grid infrastructure, near Beaufort west, Western Cape province, South Africa: Fauna & flora specialist study.* Report compiled for SiVEST Environmental on behalf of Genesis Enertrag.

5.2 Appendix 2: Abbreviations & Glossary

5.2.1 Abbreviations

CARA	Conservation of Agricultural Resources Act, Act 43 of 1983
CBA	Critical Biodiversity Area
DEA	Department of Environmental Affairs (*now DEFF, see below*)
DEDEAT	Department of Economic Development, Environmental Affairs and Tourism
DEFF	The Department of Environmental Affairs was renamed the Department of Environment, Forestry and Fisheries (DEFF) in June 2019, incorporating the forestry and fisheries functions from the previous Department of Agriculture, Forestry and Fisheries.
DEMC	Desired Ecological Management Class
DWS	Department of Water Affairs and Sanitation
DWAF	Department of Water Affairs and Forestry (former department name)
EA	Environmental Authorisation
ECO	Environmental Control Officer
EIA	Environmental Impact Assessment
EIR	Environmental Impact Report
EMC	Ecological Management Class
EMP	Environmental Management Plan
EMPr	Environmental Management Programme report
ER	Environmental Representative
ESS	Ecosystem Services
IAP's	Interested and Affected Parties
IEM	Integrated Environmental Management
LM	Local Municipality
masl	meters above sea level
MPAH	Maputaland-Pondoland-Albany Hotspot
NBA	National Biodiversity Assessment
NEMA	National Environmental Management Act, Act 107 of 1998
NFA	National Forests Act
NEM:BA	National Environmental Management: Biodiversity Act 10 of 2004
NFA	National Forest Act, Act 84 of 1998
PEMC	Present Ecological Management Class
PES	Present Ecological State
PNCO	Provincial Nature and Environment Conservation Ordinance (No. 19 of 1974).
RDL	Red Data List
RHS	Right Hand Side
RoD	Record of Decision
SANBI	South African National Biodiversity Institute
SDF	Spatial Development Framework
SoER	State of the Environment Report
SSC	Species of Special Concern
ToPS	Threatened of Protected Species
ToR	Terms of Reference
+ve	Positive
-ve	Negative

5.2.2 Glossary

Alien Invasive Species (AIS)	An alien species whose introduction and/or spread threaten biological diversity (Convention on Biological Diversity). Note: "*Alien invasive species*" is considered to be equivalent to "*invasive alien species*". An alien species which becomes established in natural or semi-natural ecosystems or habitat, is an agent of change, and threatens native biological diversity (*IUCN*).
Best Environmental Practice	The application of the most appropriate combination of environmental control measures and strategies (Stockholm Convention).
Best Management Practice	Established techniques or methodologies that, through experience and research, have proven to lead to a desired result (BBOP).
Biodiversity	Biological diversity means the variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are a part; this includes diversity within species, between species and of ecosystems.
Biodiversity Offset	Measurable conservation outcomes resulting from actions designed to compensate for significant residual adverse biodiversity impacts arising from project development after appropriate prevention and mitigation measures have been taken. The goal of biodiversity offsets is to achieve no net loss and preferably a net gain of biodiversity on the ground with respect to species composition, habitat structure and ecosystem function and people's use and cultural values associated with biodiversity (BBOP).
Biodiversity Threshold	The target areas (hectares) of biodiversity which must be safeguarded for the component plants and animals to exist and for ecosystems to continue functioning (e.g. pollination, migration of animals) i.e. the target areas comprise the CBA.
Bioremediation	The use of organisms such as plants or microorganisms to aid in removing hazardous substances from an area. Any process that uses microorganisms, fungi, green plants, or their enzymes to return the natural environment altered by contaminants to its original condition.
Boundary	Landscape patches have a boundary between them which can be defined or fuzzy (Sanderson and Harris, 2000). The zone composed of the edges of adjacent ecosystems is the boundary.
Catchment	In relation to a watercourse or watercourses or part of a watercourse, means the area from which any rainfall will drain into the watercourse or watercourses or part of a watercourse, through surface flow to a common point or common points.
Connectivity	The measure of how connected or spatially continuous a corridor, network, or matrix is. For example, a forested landscape (the matrix) with fewer gaps in forest cover (open patches) will have higher connectivity.
Corridors	Have important functions as strips of a landscape differing from adjacent land on both sides. Habitat, ecosystems, or undeveloped areas that physically connect habitat patches. Smaller, intervening patches of surviving habitat can also serve as "steppingstones" that link fragmented ecosystems by ensuring that certain ecological processes are maintained within and between groups of habitat fragments.
Critically Endangered (CR)	A category on the IUCN Red List of Threatened Species which indicates a taxon is considered to be facing an extremely high risk of extinction in the wild (*IUCN*).
Cultural Ecosystem Services	The non-material benefits people obtain from ecosystems through spiritual enrichment, cognitive development, reflection, recreation, and aesthetic

	experience, including, e.g. knowledge systems, social relations, and aesthetic values (Millennium Ecosystem Assessment).
Cumulative Impacts	The total impact arising from the project (under the control of the developer), other activities (that may be under the control of others, including other developers, local communities, government) and other background pressures and trends which may be unregulated. The project's impact is therefore one part of the total cumulative impact on the environment. The analysis of a project's incremental impacts combined with the effects of other projects can often give a more accurate understanding of the likely results of the project's presence than just considering its impacts in isolation (BBOP).
Data Deficient (DD)	A taxon is Data Deficient when there is inadequate information to make a direct, or indirect, assessment of its risk of extinction based on its distribution and/or population status. A taxon in this category may be well studied, and its biology well known, but appropriate data on abundance and/or distribution are lacking. Data Deficient is therefore not a category of threat(*IUCN*).
Degraded Habitat/Land	Land that has been impacted upon by human activities (including introduction of invasive alien plants, light to moderate overgrazing, accelerated soil erosion, dumping of waste), but still retains a degree of its original structure and species composition (although some species loss would have occurred) and where ecological processes still occur (albeit in an altered way). Degraded land is capable of being restored to a near-natural state with appropriate ecological management.
Disturbance	An event that significantly alters the pattern of variation in the structure or function of a system, while fragmentation is the breaking up of a habitat, ecosystem, or land-use type into smaller parcels. Disturbance is generally considered a natural process.
Ecological Function	How each of the elements in the landscape interacts based on its life cycle events [Producers, Consumers, Decomposers Transformers]. Includes the capacity of natural processes and components to provide goods and services that satisfy human needs, either directly or indirectly.
Ecological Pattern	The contents and internal order of the landscape, or its spatial (and temporal) components. May be homogenous or heterogenous. Result from the ecological processes that produce them.
Ecological Process	Includes *Physical processes* [Climate (precipitation, insolation), hydrology, geomorphology]; *Biological processes* [Photosynthesis, respiration, reproduction]; *Ecological processes* [Competition, predator-prey interactions, environmental gradients, life histories]
Ecological Processes	Ecological processes typically only function well where natural vegetation remains, and where the remaining vegetation is well-connected with other nearby patches of natural vegetation. Loss and fragmentation of natural habitat severely threatens the integrity of ecological processes. Where basic processes are intact, ecosystems are likely to recover more easily from disturbances or inappropriate actions if the actions themselves are not permanent. Conversely, the more interference there has been with basic processes, the greater the severity (and longevity) of effects. Natural processes are complex and interdependent, and it is not possible to predict all the consequences of loss of biodiversity or ecosystem integrity. When a region's natural or historic level of diversity and integrity is maintained, higher levels of system productivity are supported in the long run and the overall effects of disturbances may be dampened.
Ecological Structure	The composition, or configuration, and the proportion of different patches across the landscape. Relates to species diversity, the greater the diversity, the

	more complex the structure. A description of the organisms and physical features of environment including nutrients and climatic conditions.
Ecosystem	All the organisms of a habitat, such as a lake or forest, together with the physical environment in which they live. A dynamic complex of plant, animal and micro-organism communities and their non-living environment interacting as a functional unit.
Ecosystem Services	A dynamic complex of plant, animal and micro-organism communities and their non-living environment interacting as a functional unit. Supporting Ecosystem services are those that are necessary for the maintenance of all other ecosystem services. Some examples include biomass production, production of atmospheric oxygen, soil formation and retention, nutrient cycling, water cycling, and provisioning of habitat.
Ecosystem Status	Ecosystem status of terrestrial ecosystems is based on the degree of habitat loss that has occurred in each ecosystem, relative to two thresholds: one for maintaining healthy ecosystem functioning, and one for conserving the majority of species associated with the ecosystem. As natural habitat is lost in an ecosystem, its functioning is increasingly compromised, leading eventually to the collapse of the ecosystem and to loss of species associated with that ecosystem (Millennium Ecosystem Assessment).
Ecotone	The transitional zone between two communities. Ecotones can arise naturally, such as a lakeshore, or can be human created, such as a cleared agricultural field from a forest. The ecotonal community retains characteristics of each bordering community and often contains species not found in the adjacent communities. Classic examples of ecotones include fencerows; forest to marshlands transitions; forest to grassland transitions; or land-water interfaces such as riparian zones in forests. Characteristics of ecotones include vegetational sharpness, physiognomic change, and occurrence of a spatial community mosaic, many exotic species, ecotonal species, spatial mass effect, and species richness higher or lower than either side of the ecotone.
Edge	The portion of an ecosystem near its perimeter, where influences of the adjacent patches can cause an environmental difference between the interior of the patch and its edge. This edge effect includes a distinctive species composition or abundance in the outer part of the landscape patch. For example, when a landscape is a mosaic of perceptibly different types, such as a forest adjacent to a grassland, the edge is the location where the two types adjoin. In a continuous landscape, such as a forest giving way to open woodland, the exact edge location is fuzzy and is sometimes determined by a local gradient exceeding a threshold, as an example, the point where the tree cover falls below thirty-five percent.
Emergent Tree	Trees that grow above the top of the canopy
Endangered (En)	Endangered terrestrial ecosystems have lost significant amounts (more than 60 % lost) of their original natural habitat, so their functioning is compromised. A taxon (species) is Endangered when the best available evidence indicates that it meets any of the criteria for Endangered, and it is therefore considered to be facing a very high risk of extinction in the wild (*IUCN*).
Endemic	A plant or animal species, or a vegetation type, which is naturally restricted to a defined region or limited geographical area. Many endemic species have widespread distributions and are common and thus are not considered to be under any threat. They are however noted to be unique to a region, which can include South Africa, a specific province or a bioregion, vegetation type, or a localised area. In cases where it is highly localised or known only from a few or a few localities, and is under threat, it may be red listed either in terms of the

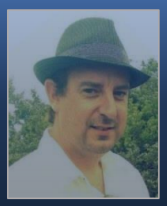
	South Africa Threatened Species Programme, NEMBA Threatened or Protected Species (ToPS) or the IUCN Red List of Threated Species.
Environment	The external circumstances, conditions and objects that affect the existence and development of an individual, organism or group. These circumstances include biophysical, social, economic, historical, and cultural aspects.
Estuary	a partially or fully enclosed body of water - (a) which is open to the sea permanently or periodically; and (b) within which the sea water can be diluted, to an extent that is measurable, with fresh water drained from land.
Evolutionary Processes	Series of actions which enable new species to evolve in response to changing Biodiversity is maintained by ecological processes at the micro-scale (such as in pollination and nutrient cycling via microbial action) through to the mega-scale (natural events e.g. fire, flood; migration of species along river valleys or coastal areas, quality and quantity of water feeding rivers and estuaries; marine sand movement and the seasonal mountain-to-coast migration of birds that pollinate plants).
Exotic	Non-indigenous; introduced from elsewhere, may also be a *weed* or alien *invasive* species. Exotic species may be invasive or non-invasive.
Fragmentation (Habitat Fragmentation)	The 'breaking apart' of continuous habitat into distinct pieces. Causes land transformation, an important current process in landscapes as more and more development occur.
Habitat	The home of a plant or animal species. Generally, those features of an area inhabited by animal or plant which are essential to its survival.
Habitat Banking	A market where credits from actions with beneficial biodiversity outcomes can be purchased to offset the debit from environmental damage. Credits can be produced in advance of, and without ex-ante links to, the debits they compensate for, and stored over time (IEEP).
IFC PS6	International Finance Corporation Performance Standard 6 – A standard guiding biodiversity conservation and sustainable management of living natural resources for projects financed by the International Finance Corporation (IFC)
Indicator	Information based on measured data used to represent an attribute, characteristic, or property of a system.
Indicator species	A species whose status provides information on the overall condition of the ecosystem and of other species in that ecosystem. They reflect the quality and changes in environmental conditions as well as aspects of community composition.
Indigenous	Native; occurring naturally in a defined area.
Indigenous Species (Native species)	A species that has been observed in the form of a naturally occurring and self-sustaining population in historical times (*Bern Convention 1979*). A species or lower taxon living within its natural range (past or present) including the area which it can reach and occupy using its natural dispersal systems (*modified after the Convention on Biological Diversity*)
Indirect Impact	Impacts triggered in response to the presence of a project, rather than being directly caused by the project's own operations (BBOP)
Instream habitat	Includes the physical structure of a watercourse and the associated vegetation in relation to the bed of the watercourse;
Intact Habitat / Vegetation	Land that has not been significantly impacted upon by man's activities. These are ecosystems that are in a near-pristine condition in terms of structure, species composition and functioning of ecological processes.
Intrinsic Value	The inherent worth of something, independent of its value to anyone or anything else.
Keystone Species	Species whose influence on ecosystem function and diversity are disproportionate to their numerical abundance. Although all species interact,

	the interactions of some species are more profound and far-reaching than others, such that their elimination from an ecosystem often triggers cascades of direct and indirect changes on more than a single trophic level, leading eventually to losses of habitats and extirpation of other species in the food web.
Landscape	An area of land that contains a mosaic of ecosystems, including human-dominated ecosystems (Millennium Ecosystem Assessment).
Landscape Approach	Dealing with large-scale processes in an integrated and multidisciplinary manner, combining natural resources management with environmental and livelihood considerations (FAO).
Landscape connectivity	The degree to which the landscape facilitates or impedes movement among resource patches.
Least threatened / Least Concern (LC)	These ecosystems have lost only a small proportion (more than 80 % remains) of their original natural habitat, and are largely intact (although they may be degraded to varying degrees, for example by invasive alien species, overgrazing, or overharvesting from the wild). A taxon (species) is Least Concern when it has been evaluated against the criteria and does not qualify for Critically Endangered, Endangered, Vulnerable or Near Threatened. Widespread and abundant taxa are included in this category (*IUCN*).
Matrix	The "*background ecological system*" of a landscape with a high degree of connectivity.
Natural Forest (Indigenous Forest)	The definition of "*natural forest*" in the National Forests Act of 1998 (NFA) Section 2(1)(xx) is as follows: 'A natural forest means a group of indigenous trees • whose crowns are largely contiguous • or which have been declared by the Minister to be a natural forest under section 7(2) This definition should be read in conjunction with Section 2(1)(x) which states that 'Forest' includes: • A natural forest, a woodland, and a plantation • The forest produce in it; and • The ecosystems which it makes up. The legal definition must be supported by a technical definition, as demonstrated by a court case in the Umzimkulu magisterial district, relating to the illegal felling of Yellowwood (Podocarpus latifolius) and other species in the Gonqogonqo forest. From scientific definitions (also see Appendix B) we can define natural forest as: • A generally multi-layered vegetation unit • Dominated by trees that are largely evergreen or semi-deciduous • The combined tree strata have overlapping crowns, and crown cover is >75% • Grasses in the herbaceous stratum (if present) are generally rare • Fire does not normally play a major role in forest function and dynamics except at the fringes • The species of all plant growth forms must be typical of natural forest (check for indicator species) • The forest must be one of the national forest types
Near Threatened (NT)	A taxon (species) is Near Threatened when it has been evaluated against the criteria but does not qualify for Critically Endangered, Endangered or Vulnerable now, but is close to qualifying for or is likely to qualify for a threatened category in the near future (*IUCN*).
Patch	A term fundamental to landscape ecology, is defined as a relatively homogeneous area that differs from its surroundings. Patches are the basic unit

	of the landscape that change and fluctuate, a process called patch dynamics. Patches have a definite shape and spatial configuration and can be described compositionally by internal variables such as number of trees, number of tree species, height of trees, or other similar measurements.
Protected Area	A clearly defined geographical space, recognised, dedicated, and managed, through legal or other effective means, to achieve the long-term conservation of nature with associated ecosystem services and cultural values.
Range restricted species	Species with a geographically restricted area of distribution. Note: Within the IFC PS6, restricted range refers to a limited extent of occurrence (EOO): • For terrestrial vertebrates and plants, restricted-range species are defined as those species that have an EOO less than 50,000 square kilometres (km2).
Refugia	A location which supports an isolated or relict population of a once more widespread species. This isolation can be due to climatic changes, geography, or human activities such as deforestation and overhunting.
Rehabilitation	Measures taken to rehabilitate degraded ecosystems or restore cleared ecosystems following exposure to impacts that cannot be completely avoided and/ or minimised. Rehabilitation emphasizes the reparation of ecosystem processes, productivity and services, whereas the goals of restoration also include the re-establishment of the pre-existing biotic integrity in terms of species composition and community structure (BBOP).
Resilience	The capacity of a natural system to recover from disturbance (OECD).
Restoration	The process of assisting the recovery of an ecosystem that has been degraded, damaged, or destroyed. An ecosystem has recovered when it contains sufficient biotic and abiotic resources to continue its development without further assistance or subsidy. It would sustain itself structurally and functionally, demonstrate resilience to normal ranges of environmental stress and disturbance, and interact with contiguous ecosystems in terms of biotic and abiotic flows and cultural interactions (IFC).
Riparian	Pertaining to, situated on, or associated with the banks of a watercourse, usually a river or stream.
Riparian Habitat	Includes the physical structure and associated vegetation of the areas associated with a watercourse which are commonly characterised by alluvial soils, and which are inundated or flooded to an extent and with a frequency sufficient to support vegetation of species with a composition and physical structure distinct from those of adjacent land areas.
River Corridors	River corridors perform several ecological functions such as modulating stream flow, storing water, removing harmful materials from water, and providing habitat for aquatic and terrestrial plants and animals. These corridors also have vegetation and soil characteristics distinctly different from surrounding uplands and support higher levels of species diversity, species densities, and rates of biological productivity than most other landscape elements. Rivers provide for migration and exchange between inland and coastal biotas.
Sustainable Development	Development that meets the needs of the present without compromising the ability of future generations to meet their own needs (WCED).
Terrestrial	Occurring on, or inhabiting, land.
Threatened Species	Umbrella term for any species categorised as Critically Endangered, Endangered or Vulnerable by the IUCN Red List of Threatened Species (*IUCN*). Any species that is likely to become extinct within the foreseeable future throughout all or part of its range and whose survival is unlikely if the factors causing numerical decline or habitat degradation continue to operate (EU).

Traditional Ecological Knowledge	Knowledge, innovations, and practices of indigenous and local communities around the world. Developed from experience gained over the centuries and adapted to the local culture and environment, traditional knowledge is transmitted orally from generation to generation. It tends to be collectively owned and takes the form of stories, songs, folklore, proverbs, cultural values, beliefs, rituals, community laws, local language, and agricultural practices, including the development of plant species and animal breeds. Traditional knowledge is mainly of a practical nature, particularly in such fields as agriculture, fisheries, health, horticulture, and forestry (CBD).
Transformation	In ecology, transformation refers to adverse changes to biodiversity, typically habitats or ecosystems, through processes such as cultivation, forestry, drainage of wetlands, urban development or invasion by alien plants or animals. Transformation results in habitat fragmentation – the breaking up of a continuous habitat, ecosystem, or land-use type into smaller fragments.
Transformed Habitat/Land	Land that has been significantly impacted upon as a result of human interferences/disturbances (such as cultivation, urban development, mining, landscaping, severe overgrazing), and where the original structure, species composition and functioning of ecological processes have been irreversibly altered. Transformed habitats are not capable of being restored to their original states.
Tributary	A small stream or river flowing into a larger one.
Untransformed Habitat/Land	Land that has not been significantly impacted upon by man's activities. These are ecosystems that are in a near-pristine condition in terms of structure, species composition and functioning of ecological processes.
Vulnerable (Vu)	Vulnerable terrestrial ecosystems have lost some (more than 60 % remains) of their original natural habitat and their functioning will be compromised if they continue to lose natural habitat. A taxon (species) is Vulnerable when the best available evidence indicates that it meets any of the criteria for Vulnerable, and it is therefore considered to be facing a high risk of extinction in the wild (*IUCN*)..
Watercourse	Natural or man-made channel through or along which water may flow. A river or spring; a natural channel in which water flows regularly or intermittently; a wetland, lake, or dam into which, or from which, water flows. and a reference to a watercourse includes, where relevant, its bed and banks;
Weed	An indigenous or non-indigenous plant that grows and reproduces aggressively, usually a ruderal pioneer of disturbed areas. Weeds may be unwanted because they are unsightly, or they limit the growth of other plants by blocking light or using up nutrients from the soil. They can also harbour and spread plant pathogens. Weeds are generally known to proliferate through the production of large quantities of seed.
Wetlands	A collective term used to describe lands that are sometimes or always covered by shallow water or have saturated soils, and where plants adapted for life in wet conditions usually grow.

5.3 Appendix 3: Specialist Profile and Professional Registration



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EDUCATION

Bachelor of Science
Rhodes University
2002 (Botany & Environmental Science)

Bachelor of Science (Honours)
Rhodes University
2003 (Botany)

Professional Natural Scientist
SACNASP: 2016 (Ecological Science)

SERVICES

Terrestrial Biodiversity Specialist Assessments
IFC PS6 Biodiversity & Critical Habitat Assessments
Terrestrial Biodiversity Compliance Statements
Geographic Information Systems
Environmental Management Plans & Programmes
Environmental Compliance & Monitoring
Independent Environmental & Ecological reviews
Bioremediation, Restoration & Rehabilitation Plans
Permit and License applications (Flora & Fauna)
Flora Search & Rescue Plans & Relocations
Invasive Alien Plant Control & Management Plans
Environmental & Mining Applications

ABOUT ME

18 years broad professional experience in Biodiversity, Ecological and Vegetation Assessments on over 250 projects in southern, western and central Africa. Environmental Assessment Practitioner on over 50 projects in the mining, infrastructure, housing and agricultural sectors. Environmental monitoring and auditing on over 50 civil infrastructure and construction projects. Have managed all aspects of projects from inception through to implementation. Advanced GIS mapping tools and Analysis.

EXPERIENCE AND CLIENTS

Key Sectors

- *Wind, Solar Energy Facilities*
- *Infrastructure and Housing*
- *Agriculture and Forestry*
- *Mining and Industrial*

Key Projects

- *Over 250 independent Biodiversity/Ecological Assessments throughout southern, western and central Africa.*
- *Basic Assessments, Mining applications and compliance monitoring on over 50 projects for various clients including the Eastern Cape Department of Roads and Public Works, Department of Transport and the South African National Roads Agency (SANRAL) throughout the Eastern Cape, including over 300 individual borrow pits.*
- *South-End Precinct Mixed Use Development for Mandela Bay Development Agency - Environmental application, Ecological assessments and Pre-Construction compliance.*
- *Coega Development Corporation IDZ projects – Ecological assessments, Flora search & rescue and Construction monitoring.*
- *Environmental applications, construction monitoring and auditing for a wide range of projects, including infrastructure and housing clients.*
- *Various agricultural expansion and infrastructure projects.*
- *Various wind and solar energy and associated infrastructure projects.*
- *Numerous infrastructure projects including electrical, water and roads.*
- *Various Environmental Management and Rehabilitation Plans.*

24/06/2021

SACNASP
South African Council for Natural Scientific Professions

herewith certifies that

Jamie Robert Claude Pote

Registration Number: 115233

is a registered scientist

in terms of section 20(3) of the Natural Scientific Professions Act, 2003
(Act 27 of 2003)
in the following fields(s) of practice (Schedule 1 of the Act)

Ecological Science (Professional Natural Scientist)

Effective **20 July 2016** Expires **31 March 2023**

Chairperson

Chief Executive Officer

To verify this certificate scan this code

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