# Proposed Development of a Battery Energy Storage System (BESS) and Associated Infrastructure at the Cuprum Substation located at Copperton, near the town of Prieska, Northern Cape Province

## Avifaunal Compliance Statement

Compiled for

AECOM

By

Cossypha
Ecological

04 August 2022

Attention: Andrea Siebritz
**AECOM**
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Dear Andrea

**PROPOSED DEVELOPMENT OF A BATTERY ENERGY STORAGE SYSTEM (BESS) AND ASSOCIATED INFRASTRUCTURE AT THE CUPRUM SUBSTATION LOCATED AT COPPERTON, NORTHERN CAPE**

Cossypha Ecological was appointed in 2021 to undertake an Animal Species (Avifauna) Assessment for the environmental process (Basic Assessment) required for the Application for an Environmental Authorisation (EA) for the for the installation of a 70 Mega Watt, 280 Mega Watt hour Battery Energy Storage System (BESS) and associated infrastructure at the Cuprum Substation in Copperton, near Prieska in the Northern Cape.

## Summary and Validity of Findings

The field survey was undertaken on the 2nd of June 2021 where aspects pertaining to avifauna such as current land use of the site and immediate surrounds, current ecological state of habitats on site, the potential for terrestrial avifaunal species of conservation concern (SCC) to inhabit the site, ecological drivers, functioning and processes within the study area, and significant landscape features, ecological corridors and landscape connectivity, were assessed.

The on-site inspection confirmed that the site is mostly degraded and has been modified and disturbed by past and present human activities. The site supports very limited natural vegetation that serves as suitable avifaunal habitat, which is likely only used by birds as transient habitat. The site experiences regular disturbance due to the nature of the land use and proximity to the activities in the surrounding landscape. Habitat connectivity with the surrounding natural areas is limited. It is the opinion of the specialist therefore that the site is of **Low** sensitivity for the Animal (Avifauna) Species Theme, and the impacts on avifauna will be minimal. The report therefore serves as a Terrestrial Animal Species Compliance Statement, and impact management actions and monitoring recommendations for inclusion in the EMPr have been added. The report concludes that the project may be authorised subject to the recommendations in the EMPr being adhered to.

It is understood that the previous Application for EA was rejected due to an administrative error and a new application is now needed. This letter serves to confirm that the findings of the study are still valid as the work was undertaken relatively recently (within the last five 14 months) and it is unlikely that anything has changed significantly within the study area.

I trust you will find the above in order. Please contact me should you have any queries.

Yours sincerely

**Robyn Phillips**
**Terrestrial Ecologist for Cossypha Ecological**

## REPORT PRODUCTION

| Specialist | Role | Project Component | Qualifications and Professional Registration |
|---|---|---|---|
| Robyn Phillips | Terrestrial Ecologist | Ecological assessment of avifauna;<br>Field work and report compilation | MSc (Zoology) UNP<br>SACNASP: *Pr.Sci.Nat.*<br>Reg. no.: 400401/12<br>Fields: Zoological and Ecological |

Refer to **Appendix B** for an abridged CV of the specialist.

## CONTACT INFORMATION

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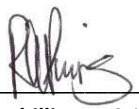
## SPECIALIST DECLARATION OF INDEPENDENCE

I, **Robyn Phillips**, in my capacity as a specialist consultant, hereby declare that I –

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



22 July 2021

**Robyn Phillips** *Pr.Sci.Nat.*
Terrestrial Ecologist
SACNASP Reg. No. 400401/12

Date

## EXECUTIVE SUMMARY

Eskom SOC Ltd (Eskom) proposes to install a 70 Mega Watt, 280 Mega Watt hour Battery Energy Storage System (BESS) and associated infrastructure at the Cuprum Substation in Copperton, near Prieska in the Northern Cape. As part of the Basic Assessment (BA) process, the National Web-Based Environmental Screening Tool identified the need for an Animal Species (Avifauna) Assessment or Compliance Statement for the proposed development due to the potential occurrence of a bird species of conservation concern (SCC) on or near the site.

The study area is located within the Bushmanland Bioregion, which forms part of the Nama Karoo Biome. The site falls within the original extent of the Bushmanland Basin Shrubland, which is classified as Least Threatened. The site does not fall within any Ecosystem (threatened or in need of protection) listed in terms of Section 52 of NEMBA. According to the Northern Cape Critical Biodiversity Areas Map, the site does not occur within any Critical Biodiversity Area (CBA) or Ecological Support Area (ESA), while the re-alignment of the two powerlines will occur within an area classified as Other Natural Area (ONA). ONA are identified as natural and/or near natural environmental areas (i.e. not 100% modified) but not identified as an optimal area for the conservation of biodiversity.

The study area incorporates the existing Cuprum Substation and its associated infrastructure, and the immediate surroundings comprised of bare patches of gravelly sandy soil, sparsely covered with grasses and scrubby vegetation. A number of alien plants species are present including the invasive *Prosopis glandulosa* var. *torreyana* (Honey Mesquite). The areas adjacent to and surrounding the study area include powerline servitudes, mining infrastructure, open pits, stock piles, railway lines, gravel roads and a solar farm. Areas immediately adjacent to the substation and other existing buildings and infrastructure are generally devoid of vegetation and highly disturbed.

The National Web-Based Environmental Screening Tool identified site environmental sensitivity of **Medium** for the Animal Species theme, due to the possibility of *Neotis ludwigii* (Ludwig's Bustard) occurring in the area. This species is classified as Endangered (EN) both nationally and globally. While no bird SCC were recorded during the field surveys, this species and 11 other bird SCC have been confirmed to occur with the broader vicinity of the study area by the SABAP2. No suitable habitat for *Neotis ludwigii* (Ludwig's Bustard) was observed within the study area during the field survey. The surrounding areas did support more typical Karoo habitat that could support the species, however these areas are typically disturbed and in close proximity to activities of the current human land uses and would therefore only serve as transient habitat. While these species may utilise habitat in the surrounding landscape, they may pass through the study area on occasion, but are unlikely to persist in the study area for any significant length of time. These species were therefore given a **medium** likelihood of occurring in the study area and surrounds.

The on-site inspection confirmed that the site is mostly degraded and has been modified and disturbed by past and present human activities. The site supports very limited natural vegetation that serves as suitable avifaunal habitat, which is likely only used by birds as transient habitat. The site experiences regular disturbance due to the nature of the land use and proximity to the activities in the surrounding landscape (mining, solar farm, wind farms and high calibre weapons test range). Habitat connectivity with the surrounding natural areas is limited. It is the opinion of the specialist therefore that the site is of **Low** sensitivity for the Animal (Avifauna) Species Theme, and the impacts on avifauna will be minimal. This report therefore serves as a Terrestrial Animal Species Compliance Statement and a full assessment of impacts has not been undertaken. Impact management actions and monitoring recommendations for inclusion in the EMPr have been added. The project may therefore be authorised subject to the recommendations in the EMPr being adhered to.

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## ABBREVIATIONS

| | |
|---|---|
| BA | Basic Assessment |
| BESS | Battery Energy Storage System |
| CBA | Critical Biodiversity Area |
| CR | Critically Endangered |
| DEA | Department of Environmental Affairs |
| DFFE | Department of Forestry, Fisheries and the Environment |
| EA | Environmental Authorisation |
| EIA | Environmental Impact Assessment |
| EN | Endangered |
| ESA | Ecological Support Area |
| IUCN | International Union for Conservation of Nature |
| LC | Least Concern |
| NEMA | National Environmental Management Act (Act 107 of 1998) |
| NEMBA | National Environmental Management: Biodiversity Act (Act 10 of 2004) |
| NT | Near Threatened |
| ONA | Other Natural Area |
| PA | Protected Area |
| QDGC | Quarter Degree Grid Cell |
| S&EIR | Scoping and Environmental Impact Report |
| SANBI | South African National Biodiversity Institute |
| SCC | Species of Conservation Concern |
| VU | Vulnerable |

## INTRODUCTION

Eskom SOC Ltd (Eskom) proposes to install a 70 Mega Watt, 280 Mega Watt hour Battery Energy Storage System (BESS) and associated infrastructure at the Cuprum Substation in Copperton, near Prieska in the Northern Cape. AECOM SA (Pty) Ltd (AECOM) was appointed by Eskom to undertake the Environmental Impact Assessment (EIA) process, in this case a Basic Assessment (BA), required for the Application for an Environmental Authorisation (EA) for the construction of the proposed development. As part of the BA process, the National Web-Based Environmental Screening Tool developed by the Department of Forestry, Fisheries and the Environment (DFFE), previously the Department of Environmental Affairs (DEA), identified the need for an Animal Species (Avifauna) Assessment for the proposed development due to the potential occurrence of a bird species of conservation concern (SCC) on or near the site.

### PROJECT DESCRIPTION

As part of Eskom's commitment to implement clean energy projects, BESS projects totalling approximately 1440 MWh are to be installed at various locations across South Africa. In order to get maximum benefit the energy storage capacity is to be installed on the Distribution networks in close proximity to renewable energy sources. Preliminary investigations have identified the Cuprum Substation at Copperton as a high potential site for integrating BESS due to the proximity to an existing 20MW photovoltaic facility and approved wind generation facilities that are soon to integrate to the substation's downstream network. The proposed BESS will provide energy support to business ancillary services within the area, with the aim to achieve the following:

- Strengthen the electricity distribution network and address current voltage and capacity constraints;
- Integrate a greater amount of renewable energy into the electricity grid; and
- Reduce the requirement for investment in new conventional generation capacity (i.e. gas, nuclear, coal) and new distribution substations and powerlines to strengthen networks.

Generally, the BESS will be expected to charge during the low load period at night (23h00 to 04h59) and be available to provide ancillary and energy services during the day (05h00 to 22h59). The BESS shall have capability to be operated to provide capacity to meet the energy demand on the grid.

The proposed project activities include (refer to **Figure 1** for the site layout plan):

- Re-alignment of the Cuprum/Karoo 66kV and Cuprum/Kronos 11kV overhead lines along the peripheries of the Eskom property boundary to make provision for the BESS and substation expansion;
- Extension of the Cuprum Substation's fence around the substation to include the BESS area;
- Extension of the Cuprum Substation's 132kV busbar to make provision for the new transformers which will extend the substation on the south-western side;
- Placing the BESS control room within an existing building located within the Cuprum substation;
- Establishment of the BESS containers on a cleared area and connection to Eskom grid infrastructure;
- Extension of the existing road by 180m outside of the Cuprum substation; and
- Re-routing of a 170m water pipeline with a diameter of 32mm.

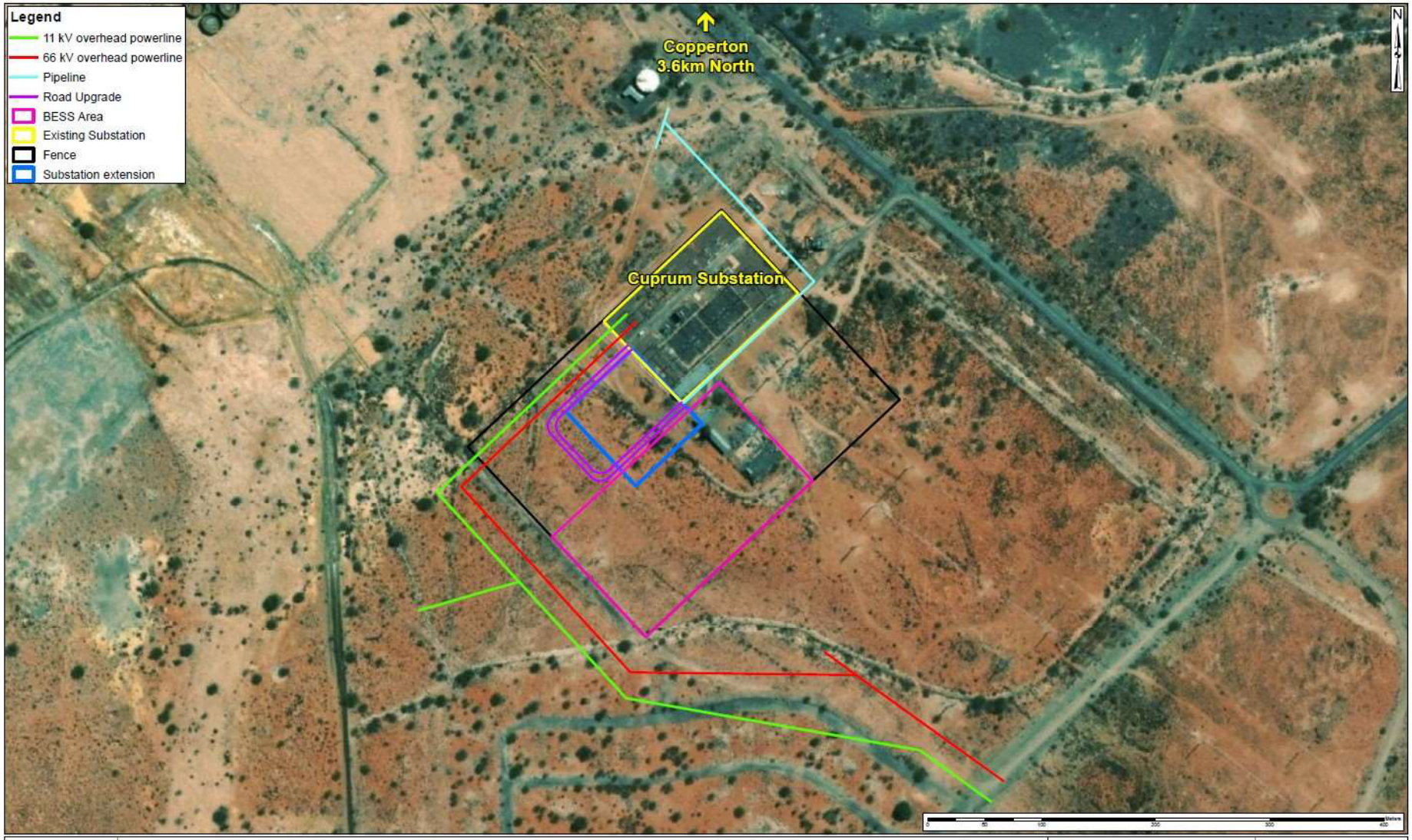


**Figure 1: Site Layout Plan (AECOM, 2021)**

## REPORTING REQUIREMENTS

A Screening Report for proposed site environmental sensitivity, as required by the EIA Regulations of 2014 (as amended in 2017) for an EA, was generated for the project on 28/01/2021 using the National Web-Based Environmental Screening Tool. The following site environmental sensitivities were identified for the proposed development:

**Table 1: Summary of site environmental sensitivities identified by the Screening Tool**

| Theme | Very High sensitivity | High sensitivity | Medium sensitivity | Low sensitivity |
|---|---|---|---|---|
| Agriculture Theme | | | | X |
| **Animal Species Theme** | | | **X** | |
| Aquatic Biodiversity Theme | X | | | |
| Civil Aviation Theme | | X | | |
| Defence Theme | | | | X |
| Palaeontology Theme | | | X | |
| Plant Species Theme | | | | X |
| Terrestrial Biodiversity Theme | X | | | |

Based on the environmental sensitivities of the proposed development footprint, the screening tool identified the need for the following specialist assessments for inclusion in the EIA report:

- Animal Species Assessment or Compliance Statement, due to the possibility of *Neotis ludwigii* (Ludwig's Bustard) occurring in the area.

The following Report comprises of an investigation of the terrestrial avifauna present on the site. The Report has been compiled in accordance with the following gazetted protocol:

- Protocol for the Specialist Assessment and Minimum Report Content Requirements for Environmental Impacts on Terrestrial Animal Species, published in GN 1150 of 30 October 2020.

In this instance, a Compliance Statement has been prepared. Refer to the results of the Desktop Analysis (p10-15) and Field Survey (p16-18), and the outcome of the analysis of Site Ecological Importance (p18-19) for details.

## TERMS OF REFERENCE

The terms of reference for the assessment were to provide the following:

- Confirmation of the site sensitivity and description of the current state of the avifaunal diversity in the study area;
- Confirm of the sensitivity of the study area for terrestrial avifaunal species;
- Indicate whether or not the proposed development will have any impact on species of conservation concern (SCC);
- Description and mapping of areas of ecological importance and sensitivity identified during the field surveys including ecological connectivity and corridors for movement;
- Photographic record of the site characteristics, including major habitats and sensitive areas;
- Depending the outcome of the site sensitivity verification, compilation of an Animal Species Compliance Statement or a full Animal Species Assessment including an assessment of potential impacts (including cumulative impacts) of the proposed development on the affected terrestrial habitats of avifaunal species to guide future decisions regarding the proposed project; and

- Where required, proposed impact management actions or any monitoring requirements for inclusion in the EMPr.

## APPROACH

The approach included a desktop assessment as well as a field survey. The methodology broadly entailed the following:

### DESKTOP ASSESSMENT

The desktop assessment entailed the following:

- Review of all relevant literature including distribution data of avifauna expected to occur on the site, as well as the conservation status of species;
- Review of available GIS layers relating to biodiversity conservation planning e.g. vegetation types, relevant provincial spatial conservation or biodiversity plan, Important Bird Areas (IBAs), Protected Areas Database etc.; and
- Review of the site using Google Earth satellite imagery.

### FIELD SURVEY

The field survey was undertaken on the 2nd of June 2021. The preliminary site investigation and the field survey were combined into one visit. During the field survey the following aspects pertaining to avifauna were assessed:

- Current land use of the site and immediate surrounds;
- Current ecological state of habitats on site;
- Presence of terrestrial avifaunal SCC, protected species, or suitable habitat for these species on the site;
- Ecological drivers, functioning and processes; and
- Significant landscape features, ecological corridors and landscape connectivity.

**Appendix A** provides further details regarding the methodology employed.

## CONDITIONS AND LIMITATIONS

The following conditions and limitations pertain to the current study:

- In order to obtain a comprehensive understanding of the dynamics of the biota on site, including species of conservation concern, studies should include sampling through the different seasons of the year, over a number of years, and extensive sampling of the area. Due to project time constraints, such long-term research was not feasible and the survey was conducted in a single field visit during winter.
- Due to project time constraints, the survey was not conducted during the peak breeding season for the SCC identified in the screening tool report.
- This Report is written following the guidelines provided by the Protocol for the Specialist Assessment and Minimum Report Content Requirements for Environmental Impacts on Terrestrial Animal Species, published in GN 1150 of 30 October 2020.
- Findings, recommendations and conclusions provided in this report are based on the authors' best scientific and professional knowledge as well as information available at the time of compilation.

# DESKTOP ASSESSMENT

The desktop assessment included a description of the study area, and review of available GIS layers relating to biodiversity conservation planning, as well as online resources regarding distribution data of avifauna expected to occur in the study area, including current conservation status of species.

## STUDY AREA

### LOCATION

The study area is located near the settlement of Copperton approximately 53km south west of the town of Prieska within Siyathemba Local Municipality, in Pixley Ka Seme District, Northern Cape Province, and occurs within Portion 5 and Portion 25 of the Remaining Extent of the Farm Vogelstruisbult 104. The study area falls within Quarter Degree Grid Cell (QDGC) 2922CD, and lies between 29°57'26.7" and 29°57'41.5" south and 22°17'53.6" and 22°18'11.6" east (**Figure 2**).The site is situated adjacent to Eskom's existing Cuprum Substation, and the extent of the project area is approximately 13ha. The site is flat and occurs at an altitude of 1082m above mean sea level (a.m.s.l).

### CLIMATE

The region is arid with rainfall occurring in late summer/early autumn (major peak) and typically varies from year to year. Mean Annual Precipitation (MAP) ranges from about 100 to 200mm for the region. Mean maximum and minimum monthly temperatures for Copperton are 33°C and 7°C for January and July respectively. The area is known to be windy, where whirl winds and dust devils are common on hot summer days. Frost occurs in winter (Mucina and Rutherford, 2006; worldweatheronline, 2021).

### SURROUNDING LAND USES

The study area incorporates an existing Eskom substation and associated infrastructure, the immediate surrounds comprising bare ground, sparse vegetation and trees, and gravel roads. Powerline servitudes extend from the substation for a short distance to the south-east and then turn in a north-easterly direction across the landscape towards Prieska. The Eskom substation is situated within the old copper mining area of Copperton and is surrounded by mining infrastructure, open pits, stock piles, railway lines and roads. A solar farm is situated approximately 1.4km to the south-east of the site and the Garob Wind Farm, which is currently being installed, approximately 6.5km to the east. A tailings dam and two additional solar farms occur to the south of the site, approximately 3km and 8km respectively. The Alkantpan Test Range (for high calibre weapons) occurs approximately 5 km to the west of the study area (**Figure 3**).

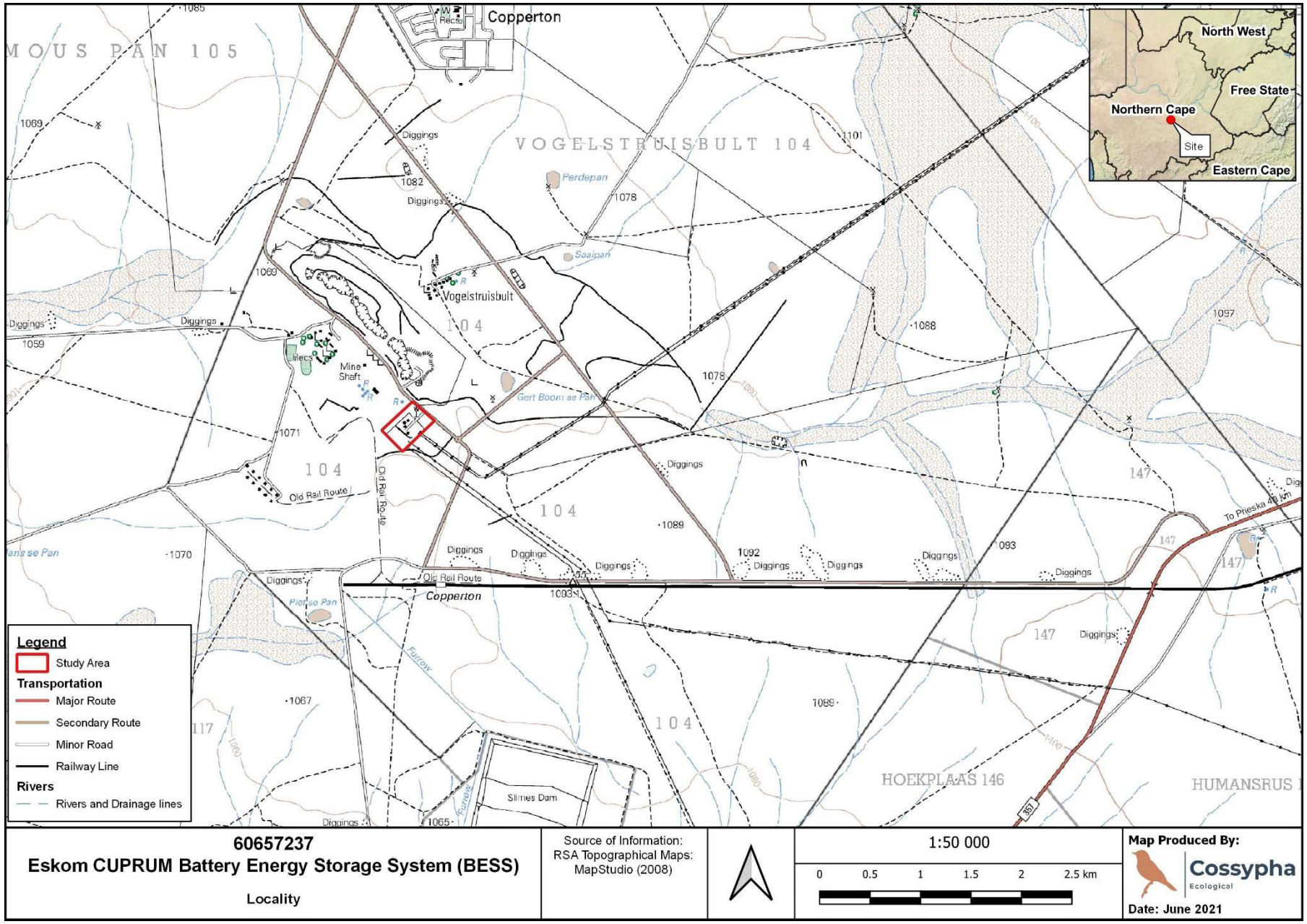


**Figure 2: Locality of the study area**

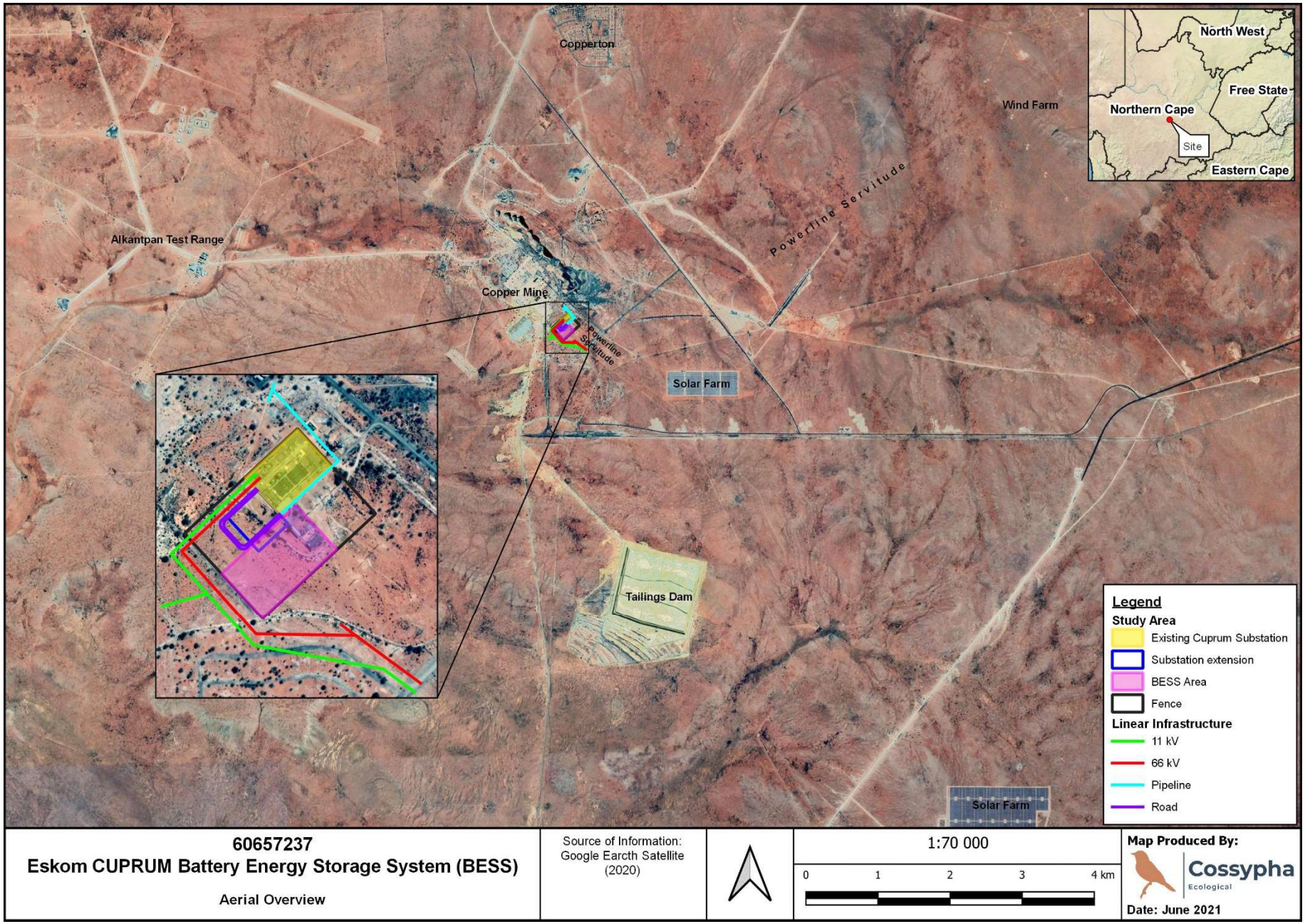


**Figure 3: Aerial overview of the study area and surrounds**

## REGIONAL BIODIVERSITY SETTING

The study area is located within the Bushmanland Bioregion, which forms part of the Nama Karoo Biome (Rutherford and Westfall, 1994). The site falls within the original extent of the Bushmanland Basin Shrubland (NKb 6) vegetation type, close to the border with Bushmanland Arid Grassland (NKb 3). Both vegetation types were classified as Least Threatened by Mucina and Rutherford (2006) due to the low level of transformation. According to the National List of Threatened Terrestrial Ecosystems (DEA, 2011), as well as the latest ecosystem threat assessments conducted for the 2018 National Biodiversity Assessment (NBA) (Skownow *et al*., 2019), the site does not fall within in any Ecosystem listed in terms of Section 52 of NEMBA (DEA, 2011).

The identification of Critical Biodiversity Areas (CBAs) for the Northern Cape (Holness and Oosthuysen, 2016) was undertaken using a Systematic Conservation Planning approach (Margules and Pressey, 2000; Ardron *et al*., 2010). Opportunities and constraints for effective conservation were collated using available data on the condition of both terrestrial and inland aquatic biodiversity features (incorporating both pattern and process), and current Protected Areas and Conservation Areas (Holness and Oosthuysen, 2016). To ensure that the representation of biodiversity features was achieved in a spatially efficient manner and which avoided incompatible land uses and activities where possible, Marxan analysis (Game and Grantham, 2008) was used. The categories included in the Northern Cape CBA Map are Protected Area (PA), Critical Biodiversity Area One (CBA 1), Critical Biodiversity Area Two (CBA 2), Ecological Support Area (ESA), and Other Natural Area (ONA). ONA are identified as natural and/or near natural environmental areas (i.e. not 100% modified) but not identified as an optimal area for the conservation of biodiversity. The site does not occur within any CBA or ESA, and borders an area classified as ONA, with a few isolated patches of ONA falling within the site. The re-alignment of the two powerlines will take place within areas marked as ONA (**Figure 4**).

The site does not occur within or near any PA's. The nearest PA is the Prieskakoppie Nature Reserve, 54km to the northeast, and the Platberg Karoo Conservancy Important Bird Area (IBA) lies 148.5km to the southeast.

## DISTRIBUTION OF AVIFAUNAL SCC

Approximately 215 bird species are expected to occur in QDGC 2922CD (SA Birding, 2011). While this total is low in comparison to other parts of the country, such as the diverse east coast, a high level of endemism exists in the region. Of the total, approximately 62 species are endemic to southern Africa and of those around 42 species are associated with arid Karoo habitat. Only 21 bird species occurring in the QDGC are of conservation concern either nationally (Taylor *et al*., 2015) or globally (International Union for Conservation of Nature (IUCN) Red List of Threatened Species, 2021).

According to the Southern African Bird Atlas Project (SABAP2) data, 98 species have been recorded in the pentad[1] in which the site falls (pentad 2955_2215), five of which are SCC. SABAP2, which has been collecting data since 2007 and includes the previous SABAP1 data (1987-1991), aims to map the distribution and relative abundance of birds in southern Africa. SABAP2 data is recorded per pentad and reporting rates are expressed as a percentage of the number of times a species was seen in a pentad divided by the number of times the pentad was surveyed.

**Table 2** lists the avifaunal SCC that have been recorded within the QDGC, and includes threat status, likelihood of occurring in the study area, and SABAP2 reporting rate for pentad 2955_2215. Species that have been recorded in the neighbouring pentads are indicated by an asterisk.

[1] 5 minute x 5 minute coordinate spatial grid reference. One QDGC comprises of 9 pentads.

**Table 2: Avifaunal SCC likely to occur within QDGC 2922CD, including Reporting Rate (RR) for the site's pentad 2955_2215. Birds with an asterisk have been recorded in adjacent pentads. Birds listed in green are endemic to southern Africa, while those in blue are non-breeding migrants to the region**

| Family | Common Name | Scientific Name | Threat Status (RSA/IUCN) | SABAP2 RR% | Likelihood of Occurring on site |
|---|---|---|---|---|---|
| Otididae | Ludwig's Bustard* | *Neotis ludwigii* | EN/EN | | Medium |
| Accipitridae | Black Harrier* | *Circus maurus* | EN/VU | | Medium |
| Accipitridae | Martial Eagle* | *Polemaetus bellicosus* | EN/VU | | Medium |
| Sagittariidae | Secretarybird* | *Sagittarius serpentarius* | VU/VU | | Medium |
| Glareolidae | Burchell's Courser* | *Cursorius rufus* | VU/LC | | Medium |
| Accipitridae | Verreaux's Eagle* | *Aquila verreauxii* | VU/LC | 10 | Medium |
| Falconidae | Lanner Falcon* | *Falco biarmicus* | VU/LC | | Medium |
| Otididae | Kori Bustard* | *Ardeotis kori* | NT/NT | 10 | Medium |
| Alaudidae | Sclater's Lark* | *Spizocorys sclateri* | NT/NT | 10 | Medium |
| Coraciidae | European Roller | *Coracias garrulus* | NT/NT | | Medium |
| Otididae | Karoo Korhaan* | *Eupodotis vigorsii* | NT/LC | 70 | Medium |
| Glareolidae | Double-banded Courser* | *Rhinoptilus africanus* | NT/LC | 20 | Medium |
| Alaudidae | Red Lark* | *Calendulauda burra* | VU/VU | | Low |
| Rostratulidae | Greater Painted-snipe | *Rostratula benghalensis* | VU/LC | | Low |
| Ciconiidae | Black Stork | *Ciconia nigra* | VU/LC | | Low |
| Gruidae | Blue Crane | *Anthropoides paradiseus* | NT/VU | | Low |
| Anatidae | Maccoa Duck | *Oxyura maccoa* | NT/NT | | Low |
| Charadriidae | Chestnut-banded Plover | *Charadrius pallidus* | NT/NT | | Low |
| Phoenicopteridae | Lesser Flamingo | *Phoeniconaias minor* | NT/NT | | Low |
| Phoenicopteridae | Greater Flamingo | *Phoenicopterus roseus* | NT/LC | | Low |
| Ciconiidae | Abdim's Stork | *Ciconia abdimii* | NT/LC | | Low |

EN = Endangered; VU = Vulnerable; NT – Near Threatened

The National Web-Based Environmental Screening Tool identified the possibility of *Neotis ludwigii* (Ludwig's Bustard) occurring in the area. This species (highlighted in **Table 2**) is classified as Endangered (EN) both nationally and globally, as the population has recently undergone a rapid decline due to collisions with power lines, and is a trend which is set to continue as the power grid in southern Africa expands (BirdLife International, 2021).

This species and certain others occurring in the region were given a medium likelihood of occurring in the study area and surrounds (**Table 2**). The justification for this is based on the disturbed nature of the study area as well as the existence of suitable habitat in the broader landscape. The occurrence in the vicinity of the study area (i.e. in the adjacent pentads as well as the site's pentad) of 12 of these species, including *Neotis ludwigii* (Ludwig's Bustard), has been confirmed by SABAP2 (those marked with an asterisk in **Table 2**). While these species may utilise habitat in the surrounding landscape, they may pass through the study area on occasion, but are unlikely to persist in the study area for any significant length of time. Some of these species are also wide-ranging, such as *Polemaetus bellicosus* (Martial Eagle) and may come within the study area at times. Their presence on the site is therefore unlikely but cannot be ruled out.

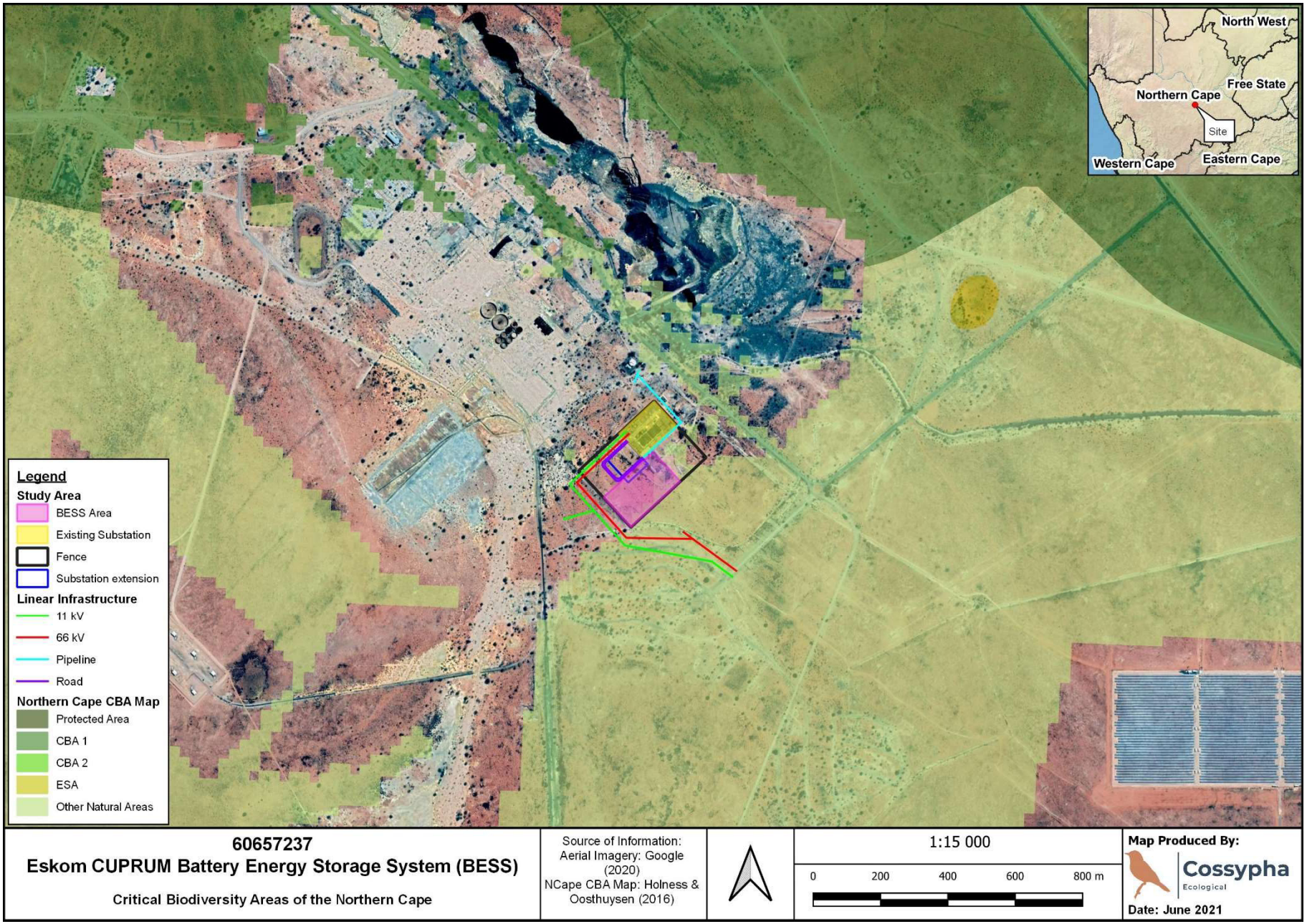


**Figure 4: The study area in relation to the Critical Biodiversity Areas of the Northern Cape**

## FIELD SURVEY RESULTS

The field survey aimed to confirm the current land use of the site and immediate surrounds, and assess the ecological state of habitats on site pertaining to avifauna (including any bird sightings).

### SITE DESCRIPTION

The study area incorporates the Eskom Cuprum Substation and its associated infrastructure as well as the immediate surroundings. The areas adjacent to and surrounding the study area include powerline servitudes, mining infrastructure, open pits, stock piles, railway lines and gravel roads. The area immediately adjacent to the substation on the south-western side, where the substation is proposed to be extended, is devoid of vegetation and highly disturbed. A small amount of natural vegetation exists on the site of the proposed BESS and immediate surrounds, to the extent of the powerline re-alignment. This portion of the site comprises bare patches of gravelly sandy soil, sparsely covered with grasses and scrubby vegetation. A number of alien plants species are present including the invasive *Prosopis glandulosa* var. *torreyana* (Honey Mesquite). According to the Terrestrial Biodiversity Assessment (Sativa, 2021), most of the study area comprises transformed or degraded shrubland.

**Photo 1: The Cuprum Substation with area proposed for extension in the foreground**

**Photo 2: Site proposed for the placement of the BESS comprising degraded shrubland with alien plant species present**

**Photo 3: Disturbed vegetation around the area of the power line re-alignment**

## AVIFAUNAL OCCURRENCE IN THE STUDY AREA

The National Web-Based Environmental Screening Tool identified site environmental sensitivity of **Medium** for the Animal Species theme, due to the possibility of *Neotis ludwigii* (Ludwig's Bustard) occurring in the area. Although medium sensitivity, as evaluated by the Screening Tool, does not indicate the actual known presence of SCC within the proposed development footprint but rather, predicted modelled habitat for that species, specialists should conduct verification surveys through comprehensive fieldwork if the Initial Site Sensitivity Verification indicates the presence of suitable habitat (SANBI, 2020). While no suitable habitat for *Neotis ludwigii* (Ludwig's Bustard) was observed within the study area during the field survey, the surrounding areas did support more typical Karoo habitat that could support the species, although disturbed and in close proximity to activities of the current human land uses. Bird species occurrence and habitat was therefore assessed in the study area and surrounds.

**Photo 4: Disturbed but more natural vegetation in the surrounding areas**

According to the Protocol for Terrestrial Animal Species[2], "*Where the nature of the activity is not expected to have an impact on species of conservation concern (SCC) beyond the boundary of the preferred site, the study area means the proposed development footprint within the preferred site*". In this instance the study area is defined as the proposed development footprint as the nature of the activity is not expected to have an impact on SCC beyond the boundary of the preferred site.

During the field survey, only 20 bird species were observed in and around the study area, including 13 species which are endemic to southern Africa. The majority were recorded outside the study area in the surrounding locale. Most species observed were habitat generalists or associated with arid Karoo habitats, and included predominantly smaller passerines and a few medium sized non-passerine species. Two raptor species were recorded and few ground dwelling birds were encountered. Bird species recorded during the field survey are listed in **Table 3** along with their national (Taylor *et al*., 2015) and global (IUCN, 2021) conservation status. No bird species of conservation concern were recorded during the field surveys. The bird inventory revealed few species in the study area partly due to the timing of the field survey (conducted outside of the peak season), and due to the disturbed nature of the study area and surrounding land uses.

**Table 3: Birds recorded in the study area and surrounds during the field survey. Birds listed in green are endemic to southern Africa**

| Scientific Name | Common Name | Conservation Status | |
|---|---|---|---|
| | | National | Global (IUCN) |
| *Tricholaema leucomelas* | Acacia Pied Barbet | LC; En | LC |
| *Streptopelia capicola* | Cape Turtle-Dove | LC | LC |
| *Afrotis afraoides* | Northern Black Korhaan | LC; En | LC |
| *Burhinus capensis* | Spotted Thick-knee | LC | LC |
| *Melierax canorus* | Southern Pale Chanting Goshawk | LC; En | LC |
| *Falco rupicolus* | Rock Kestrel | LC | LC |
| *Lanius collaris* | Common Fiscal | LC | LC |
| *Corvus albus* | Pied Crow | LC | LC |
| *Telophorus zeylonus* | Bokmakierie | LC; En | LC |
| *Batis pririt* | Pririt Batis | LC; En | LC |
| *Cercomela familiaris* | Familiar Chat | LC | LC |
| *Prinia flavicans* | Black-chested Prinia | LC; En | LC |
| *Malcorus pectoralis* | Rufous-eared Warbler | LC; En | LC |
| *Sylvia subcaerulea* | Chestnut-vented Tit-Babbler | LC; En | LC |
| *Calendulauda africanoides* | Fawn-coloured Lark | LC; En | LC |
| *Calendulauda sabota* | Sabota Lark | LC; En | LC |
| *Eremopterix verticalis* | Grey-backed Sparrowlark | LC; En | LC |
| *Plocepasser mahali* | White-browed Sparrow-Weaver | LC | LC |
| *Philetairus socius* | Sociable Weaver | LC; En | LC |
| *Emberiza impetuani* | Lark-like Bunting | LC; En | LC |

LC = Least Concern; En = Endemic

## SITE ECOLOGICAL IMPORTANCE AND SENSITIVITY FOR AVIFAUNA

The on-site inspection confirmed that the site is mostly degraded and has been modified and disturbed by past and present human activities. The site supports very limited natural vegetation that serves as suitable avifaunal habitat and it is highly unlikely that the study area will be utilised by breeding birds, especially those of

[2] Protocol for the Specialist Assessment and Minimum Report Content Requirements for Environmental Impacts on Terrestrial Animal Species, published in GN 1150 of 30 October 2020.

conservation concern. While natural vegetation does occur within the study area, it is sparse and would likely only be used by birds as transient habitat.

The site does not contribute to any significant ecological processes nor does it retain important ecological functioning. Overall the site is considered to be of low sensitivity in terms of avifaunal habitat, with a portion in the southern corner of the site showing slightly less disturbance and fewer alien plant species, considered medium-low (**Figure 5**).

The site experiences regular disturbance due to the nature of the land use and proximity to the activities in the surrounding landscape (mining, solar farms, wind farms, and high calibre weapons test range). The site is surrounded by human land use activities and is therefore relatively isolated. Habitat connectivity with the surrounding natural areas is limited. It is the opinion of the specialist therefore that the site is of **Low** sensitivity for the Animal (Avifauna) Species Theme, and that a Compliance Statement is sufficient for this application.

According to the Protocol for Terrestrial Animal Species, "*An applicant intending to undertake an activity identified in the scope of this protocol on a site identified by the screening tool as being of "medium sensitivity" for terrestrial animal species must submit either a* ***Terrestrial Animal Species Specialist Assessment Report*** *or a* ***Terrestrial Animal Species Compliance Statement****, depending on the outcome of a site inspection undertaken in accordance with paragraph 4*." Paragraph 4 states that, "*where no SCC are found on site during the site inspection or the presence is confirmed to be unlikely, a* ***Terrestrial Animal Species Compliance Statement*** *must be submitted*."

This report therefore serves as a Terrestrial Animal Species Compliance Statement and a full assessment of impacts has not been undertaken. Impact management actions and monitoring recommendations for inclusion in the EMPr have been added in the following section.

**Photo Plate 5: Disturbed nature of the study area and surrounds**

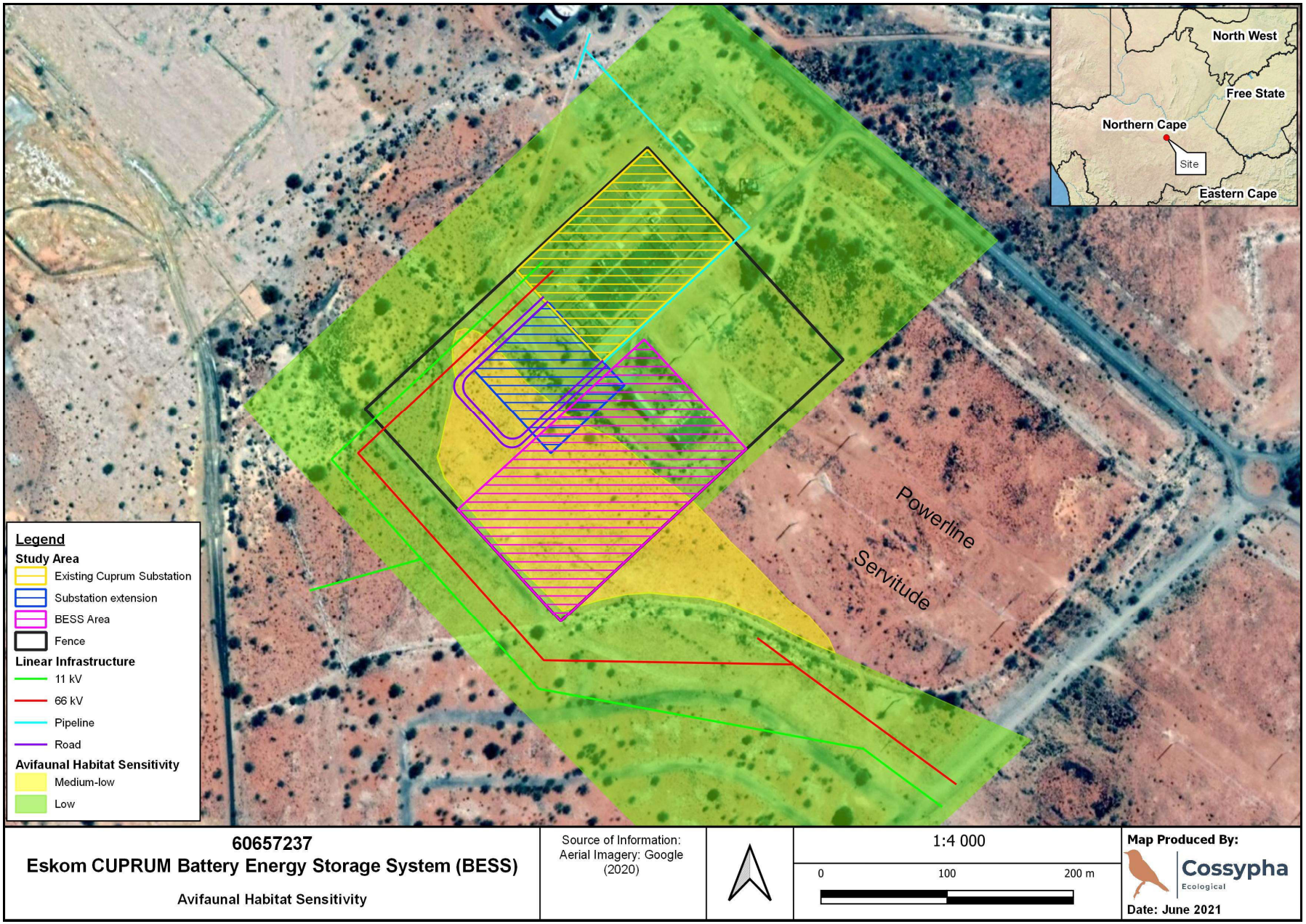


**Figure 5: Avifaunal habitat sensitivity within the study area**

# RECOMMENDATIONS

## IMPACT MANAGEMENT

The study are displays low sensitivity from an avifaunal perspective. The vegetation that will be cleared for the installation of the BESS, construction road, fence, substation extension, water pipeline, and powerline re-alignment does not represent important habitat for avifauna, and the impact will be minimal. The following recommendations are however important to help keep impacts to a minimum and should be included in the Environmental Management Programme (EMPr):

1. An experienced, independent Environmental Control Officer (ECO) must be appointed to oversee construction activities and compliance with the EMPr.
2. If possible, construction should commence in the dry winter period when birds are least active.
3. All construction activities must remain within the construction footprint. Construction camps, stockpiles, and temporary storage areas must remain within the study area and within the substation property. No natural vegetation in the surrounding areas must be cleared.
4. During construction, if any active bird nests are encountered, the area must be cordoned off and the relevant specialist consulted on how to proceed.
5. During construction no wild bird or animal may under any circumstance be hunted, handled, removed or be interfered with by construction workers or by maintenance staff during operations.
6. During the powerline re-alignment, only pole structures that are approved as “bird friendly” by Eskom’s ENVIROTECH Forum should be used for the new pole positions (refer to Photo 6 as an example).
7. If possible, any pole structures in the vicinity that are not “bird friendly” must be replaced. If this is not possible during the construction phase, then Eskom must endeavour to replace these as soon as possible.
8. Powerlines in the vicinity of the substation must be monitored on a regular basis for bird mortalities by electrocution or collision with the lines.

**Photo 6: Example of bird friendly pole structures for 66kV (left) and non-bird friendly pole structures for 11kV (right)**

## IMPACT STATEMENT

It is the opinion of the Specialist that the impacts on avifauna will be minimal and that the project may be authorised subject to the recommendations in the EMPr being adhered to.

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# APPENDICES

## APPENDIX A: METHODOLOGY

Methodology involved a desktop analysis and a field visit. The preliminary site investigation and the field survey were combined into one visit. The field investigation was undertaken on the 2nd of June 2021 when avifaunal elements within the study area were observed from 12h00 to 16h30. A single daytime survey was conducted by moving slowly through the site and immediate surrounds to observe changes in land cover and habitat, as well as record avifauna present on site. Landscape features that were considered of high ecological importance were noted. A total (cumulative) distance of approximately 3.5km was covered during the survey.

### AVIFAUNA

A comprehensive list of bird species occurring in the area was compiled using electronic databases within Roberts VII Multimedia Birds of Southern Africa (SA Birding, 2011) where distribution maps have been interpreted and updated from the Atlas of Southern African Birds (Harrison *et al*., 1997), and supplemented with current Southern African Bird Atlas Project 2 (SABAP2, 2021) data. Species of conservation concern (SCC) that could potentially occur on site were noted and their habitat requirements were determined by consulting the relevant literature. Bird names follow Hockey *et al*. (2005) while conservation status follows Taylor *et al*. (2015).

The following online databases were also searched for avifaunal SCC potentially occurring in the study area:

- Co-ordinated Wetland Counts;
- Co-ordinated Avifaunal Road Counts;
- Birds in Reserves Project; and
- iNaturalist.

The likelihood of bird species occurrence was determined using geographical distribution and the presence of suitable habitat on site (**Table 4**). High likelihood of occurrence pertains to species whose known distribution overlaps the study site and suitable habitat occurs in the study area. Medium likelihood of occurrence refers to species that have a distribution that is marginal to the study site or its known habitat occurs within the surroundings of the study area. The Medium likelihood of occurrence definition was extended to include areas where the level of degradation or disturbance in the surrounding landscape renders the species unlikely to utilise the site. Low likelihood of occurrence indicates that while the species may occur within the QDGC, its distribution range may or may not fall within the geographic locality of the study site and/or no suitable habitat for the species exists on site.

**Table 4: Criteria used for determining likelihood of occurrence of species in the study area**

| Likelihood of Occurrence | Criteria |
|---|---|
| **High** | • Species distribution overlaps the study area; and<br>• Study site supports suitable habitat for the species |
| **Medium** | • Species distribution overlaps or is marginal to the study area; or<br>• General area supports suitable habitat for the species; or<br>• Suitable habitat in the study area is degraded |
| **Low** | • Species distribution overlaps or is marginal to the study area; and<br>• Study site supports no suitable habitat for the species |

Bird species were detected by sight, call, and field evidence such as nests, feathers, spoor, and droppings by moving slowly through all perceived habitats on the site. Species were verified using Chittenden (2007) as well as Roberts VII Multimedia Birds of Southern Africa (SA Birding, 2011). Habitats for bird species, especially those of conservation concern, were noted.

## APPENDIX B: ABRIDGED CV OF THE SPECIALIST

| | | |
|---|---|---|
| Name and Surname | : | Robyn Phillips |
| Date of Birth | : | 28 08 1975 |
| Company Name | : | Cossypha Ecological |
| Field of Expertise | : | Terrestrial Ecologist and Avifaunal Specialist |
| SACNASP Registration | : | *Pr.Sci.Nat.* 400401/12 (Zoological and Ecological Sciences) |
| Highest Qualification | : | MSc (Zoology) *cum laude* |
| Years of Experience | : | 20 |
| Contact Number | : | 084 695 1648 |
| Email | : | robyn@cossypha.co.za |

The first half of my professional career was spent working in ecological research at the University of KwaZulu-Natal. Since starting in consulting in 2011, I have been involved in many projects requiring biodiversity surveys and ecological assessments as part of the legislated requirements for the Environmental Impact Assessment (EIA) process. These studies Include field assessment of habitat, species occurrence (especially those of conservation concern), assessment of ecological importance and sensitivity of floral and faunal communities and habitat, as well as assessment of impacts. Tasks also include making recommendations and prescribing mitigation measures after applying the mitigation hierarchy, aimed at minimising impacts.

Following is a selection of similar projects undertaken:

- Avifaunal Impact Assessment for the Waterkloof Solar IPP Programme, North West (DBSA / Royal Bafokeng Platinum) – 2020 to 2021.
- Terrestrial Biodiversity Assessment (including flora and fauna) for the Proposed Establishment of the Mabopane Ext. 13 Township, City of Tshwane, Gauteng (GIBB Environmental) – 2020 to 2021.
- Terrestrial Biodiversity Assessment (including flora and fauna) for the KwaZulu-Natal Automotive Supplier Park (ASP) and Township Establishment, Illovo South, Durban, KwaZulu-Natal (Dube TradePort) – 2018 to 2021.
- Faunal and Avifaunal Assessment for the Pelican Park Phase 2 Housing Development, False Bay, City of Cape Town, Western Cape (City of Cape Town) – 2018 to 2020.
- Specialist Avifaunal Assessments for Various Eskom Powerlines, Limpopo Province, (Trans-Africa Projects (TAP)) – 2017 to 2019.
- Avifaunal Assessment for the Ngqeleni Rural Electrification Project, Eastern Cape (Eskom) – 2016.
- Terrestrial Biodiversity Assessment (flora and fauna) for the Askham solar farm, Northern Cape (Komani San) 2018 – 2019.
- Avifaunal Assessment for the Teebus Hydroscheme: Bulhoek Powerline, Eastern Cape (Eskom) – 2016 to 2017
- Avifaunal Assessment for the Westgate and Randfontein Powerlines, Gauteng (Eskom) – 2017.
- Strategic Environmental Assessments of the Polokwane, Tzaneen, and Nelspruit-Kanyamazane Eskom Field Service Areas Networks, Limpopo and Mpumalanga (Eskom) 2011.