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Birding Africa

Animal & Plant - Site Sensitivity Verification Report for Duyker Eiland Prospecting Rights

Compiled for: Kimberley van Zyl of Elemental Sustainability (Pty) Ltd

02 July 2022

DECLARATION OF INDEPENDENCE

In terms of Chapter 5 of the National Environmental Management Act of 1998 (Act No. 107 of 1998), as amended, and the Environmental Impact Assessment Regulations, 2014, specialists involved in Environment Assessment Processes must declare their independence and provide their contact details, relevant experience, and a curriculum vitae.

I, Jonathan F. Colville, as the appointed independent specialists, do hereby declare that we are financially and otherwise independent of the client and their EAP, and that all opinions expressed in this document are our own and based on our scientific and professional knowledge, and available information.

J. F. Colville.

Jonathan F. Colville

ABRIDGED CURRICULUM VITAE

Jonathan Colville
Qualifications: **PhD (Zoology):** University of Cape Town, 2009; **Postdoctoral Research Fellowship:** South African National Biodiversity Institute, 2009-2010.

SACNASP Registration No: 134759 (Ecological Science (Professional Natural Scientist)).

Experience: I have over fourteen years post-PhD experience in the fields of terrestrial ecology, including investigating the spatial patterns of South Africa's animal and plant diversity, with a particular focus on invertebrates. Between 2009 and 2019, I was involved with the South African National Biodiversity Institute's (SANBI) Biodiversity, Research, Assessment and Monitoring Division (BRAM) undertaking ecological research on South Africa's animal and plants. Since 2020 I have been working as a specialist faunal consultant for EIAs and conservation projects. *See copy of my CV attached as Appendix-2 to this report.

CONDITIONS PERTAINING TO THIS REPORT

The content of this report is based on my best scientific and professional knowledge, and available information. I reserve the right to modify the report in any way deemed fit should new, relevant, or previously unavailable or undisclosed information become known to me from on-going research or further work in this field, or pertaining to this investigation, and will inform Kimberley van Zyl of Elemental Sustainability (Pty) Ltd accordingly. This report must not be altered or added to without the prior written consent of myself. This also refers to electronic copies of the report, which are supplied for the purposes of inclusion as part of other reports, including main reports. Similarly, any recommendations, statements or conclusions drawn from or based on this report must refer to this report. If these form part of a main report relating to this investigation or report, this report must be included in its entirety as an appendix or separate section to the main report.

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1. INTRODUCTION

A project proposes to prospect for mineral commodities including Phosphate Ore (P), Heavy Minerals (HM), Leucoxene (Lx), Rutile (Rt), Monazite (Mz) and Zirconium Ore (Zr) over seven (7) portions of land in the Magisterial District of Malmesbury, Western Cape Province. The proposed site is approximately 2,889.38 ha in extent (of which only a small portion is anticipated to be disturbed for the placement of drill holes) (Figure 1) and situated approximately 5.5 km west of St Helena Bay and approximately 180 km north of Cape Town. The proposed activities fall over a number of farm properties on which prospecting drill holes have been earmarked.

According to the project description as supplied by Kimberley van Zyl of Elemental Sustainability (Pty) Ltd, each individual drill hole is 82 mm in diameter. Thus the combined total area to be disturbed from the drilling holes across the affected farms will be 0.73 m² for both Phase 2 and Phase 3, although drill rigs and vehicles access will cause a significantly greater footprint. Drill holes will be immediately backfilled and rehabilitated, and drilling will be limited to one month per year for a period of 3 years.

The project will entail a 1-year non-invasive geophysical survey period (Phase 1), a 3-year invasive drilling period (Phase 2 and Phase 3) and a further 1-year non-invasive resource determination period (Phase 4). Phase 2 which will continue for one year, will consist of the drilling of 49 drill holes, each between 5 and 25 metres (m) deep and approximately 82 mm in diameter. This will cover a total area of approximately 0.26 m2. Phase 3, where similar drilling will continue for a further 2 years, will consist of an additional 89 drill holes covering a total area of approximately 0.47 m2. A further 12 months (Phase 4) will consist of non-invasive prospecting in the form of data validation, geological modelling, resource estimation and pre-feasibility studies. The authorisation will be required for the duration of the prospecting right which is a total of 5 years.

The drilling method which will be used is known as air-core drilling whereby a drill machine (drill rig) with an on-board compressor is mounted on a 4x4 Toyota Landcruiser. This drilling method is similar to reverse circulation drilling however, it does not require the use of any water and thus no abstraction from groundwater sources in the area are anticipated. The drill rig that will be used is a Wallis Mantis 75 hydraulic top-drive rig, which is expected to complete the drilling of 1 drill hole in a period of less than half an hour. Once the drilling of a drill hole is completed, the site will be pegged with a steel spring wire and PVC flags before the commencement of the drilling of the subsequent drill hole. The locations of the drill holes will be surveyed using a high-accuracy differential Global Positioning System (GPS). A rig-mounted rotary splitter will be used to collect a representative sample of the drilled rock (drill core). Each metre of drill core will be logged by a geologist, placed in a sample bag, numbered, and moved to an off-

site location where it will be prepared to be sent to an accredited testing laboratory. There will be no clearing of drill pads and no topsoil will be removed. Excess sand material will be returned to the drill hole for them to be backfilled. A plastic lining will be placed beneath the drill rig in the event of any oil spillages and no sump pools will be required as no water will be used. In addition, no bulk sampling will be carried out during this prospecting programme and as far as possible, existing roads will be utilised to access the drill sites. Approximately twenty (20) workers will be employed and will be housed in an off-site location. There will not be a need for a site camp or any additional structures or infrastructure.

Kimberley van Zyl of Elemental Sustainability (Pty) Ltd utilised the National Web based Environmental Screening Tool (https://screening.environment.gov.za/screeningtool/) to generate an online site sensitivity report. The screening tool uses broader-scale ecosystem and finer-scale species level datasets provided by the South African National Biodiversity Institute (SANBI).

The Screening Tool identified the development footprint of the above project as being rated:

- **Very High** Sensitivity for Terrestrial Biodiversity
- **High** for animal species (5 bird species)
- **High** for plant species (53 plant taxa)

2. TERMS OF REFERENCE

I was appointed Kimberley van Zyl of Elemental Sustainability (Pty) Ltd on 27th May 2022 to conduct a terrestrial animal and plant site sensitivity verification study in two phases: a desktop study and a preliminary site scoping visit. As stipulated in the Government Gazette, No. 43855 (Published in Government Notice No. 1150) of 30 October 2020: "Protocol for the Specialist Assessment and Minimum Report Content Requirements for Environmental Impacts on Terrestrial Animal and Plant Species":

- Carry out a desktop study to determine if any of the animal and plant SCC have been recorded at or near the project area (drilling points) and to ascertain the habitat requirements of the SCC.
- Conduct a preliminary scoping survey of the project area (drilling points) to assess the physical and biological characteristics of the site with regards to habitat suitability and sensitivity for the animal and SCC flagged in the screen report.
- Prepare a report detailing the findings of the desktop study and site visit, with conclusions and the issuing of a Terrestrial Animal Species Compliance Statement or a recommendation that a Terrestrial Plant and/or Animal Species Specialist Assessment would be required.

In addition to these species-level assessments, broad ecological characteristics of the site were identified and described:

- Community and ecosystems:
    - Vegetation type
    - Threatened or vulnerable ecosystems
- Other ecological patterns:
    - Significant landscape features or rare or important vegetation associations, such as seasonal wetlands, alluvium, seeps, quartz patches or salt marshes in the vicinity.

- The extent of alien plant cover on the site, and whether the infestation is the result of prior soil disturbance
- The condition of the site in terms of current or previous land uses

3. Assumptions And Limitations

- It is assumed that all third-party information used (e.g. GIS data and species historical records) was correct at the time of generating this report.
- It must be noted that this site sensitivity verification focused primarily on habitat quality and sensitivity of habitats, and how this related to the known ecological requirements of flagged plant and animal SCC, and it can thus be potentially undertaken in any season.
- One day of site visit was undertaken on foot during early winter on the 5th of June 2022 on a warm and sunny day.
- Undertaking a site visit in early winter has the advantage that it is the most optimal time of the year to detect several early-winter flowering plant species of high conservation concern (e.g. *Lachenalia viridiflora* and *Pauridia longituba*).
- However, due to poor early winter rainfall this year, the project site was extremely dry and none of the early-flowering species were in flower.
- Many plant species of conservation concern associated with the project area flower in spring (August – October).
- Early winter is not optimal for detecting all the bird SCC flagged. For example, surveys for breeding pairs of Black Harrier (*Circus maurus*) should ideally be undertaken in spring (September – October).
- Early winter is not optimal for detecting invertebrate SCC. For example, surveys for insect SCC typically flagged (e.g. butterflies, grasshopper, and dung beetle species) for the west coast area that the project falls within, should ideally be undertaken in spring to summer (September – December) (see Guidelines for the Implementation of Terrestrial Fauna and Terrestrial Flora Species Protocols for Environmental Impact Assessments in South Africa" (SANBI, 2020)).
- Not all drilling sites were investigated as permission was not granted by the farm owner/manager; these included drilling points on the Remainder Farm Duyker Eiland 6 Portion 7 and Farm Schuitjes Klip 22 Portion 3. As such, these drilling points were assessed using only information gathered from the desktop study.

4. Methodology

4.1 Desktop Study

- Ecosystem-level data was assessed using the following resources:
  - Vegetation Map of South Africa (SANBI, 2018; Skowno *et al.*, 2019).
  - Western Cape Biodiversity Spatial Plan (Pool-Stanvliet *et al.*, 2017).
  - Ecosystem Threat Status and Protection level of South Africa's ecosystems (Skowno *et al.*, 2019).
- Species-level data for the SCC was assessed using the following resources:
  - **Plants**: The Red List of South African plants (Raimondo, 2011; National Assessment: Red List of South African Plants version 2020.1. Accessed on 2022/07/02; http://redlist.sanbi.org/index.php), online data on inaturalist.org, and our own experience surveying for plants in the immediate vicinity of the project site.

- **Animals**: Distributional records from the Southern African Bird Atlas Project (SABAP2 data (http://sabap2.birdmap.africa/). Online resources, such as the IUCN Red List of Threatened Species (https://www.iucnredlist.org/) were also consulted for information on the bird SCC's geographic distributions and habitat requirements. Furthermore, Dr Callan Cohen (Director of Birding Africa) was consulted as an avifaunal specialist. Dr Cohen has a PhD from the University of Cape Town (Department of Biological Sciences) where he is a Research Associate of the FitzPatrick Institute of African Ornithology. He has co-authored two books on South African birds and contributed to five others, including the Red Data Book of Birds of South Africa, Lesotho and Swaziland. He has over 30 years of experience of field surveys. He has also done flora and biodiversity surveys in the immediate vicinity of the site before, including as a lecturer on the University of Cape Town's Conservation Biology Masters Course. Distributional records for insect SCC typically flagged by the screening tool were extracted from digitized insect databases of several South African museums (e.g., Iziko Museum of South Africa, Ditsong National Museum of Natural History, South African National Collections of Insects). Online resources, such as the IUCN Red List of Threatened Species (https://www.iucnredlist.org/) and the Orthoptera Species File Online (http://orthoptera.speciesfile.org/HomePage/Orthoptera/HomePage.aspx) were also consulted.

- Published information on all plant and animal SCC was also investigated to further assess their distribution range, ecology, habitat, and any life history requirements.

4.2 FIELD SITE VISIT

- The project areas (Figure 1) were surveyed on the 5th of June 2022 to assess habitat quality, in terms of the type and amount of natural vegetation remaining. The extent of disturbance that the project area has experienced, in terms of changes to its vegetation and physical properties (e.g. soil) was also considered.
- Season: Autumn/Early winter.
- Duration: ~6 hrs.
- Areas at and around selected points were investigated across the project area and photographed.
- At, or near each photograph site the surrounding habitat was characterised, photographs were taken of the surrounding area, and the likelihood of any of the SCC being present was assessed.
- Seasonal Relevance:
    - For the plant SCC, early-winter and spring (August – October) are the optimal times for undertaking surveys.
    - Surveys for breeding pairs of Black Harrier should ideally be undertaken in spring (September – October). African Marsh Harrier (*Circus ranivorus*) can be surveyed throughout the year. None of the two harriers are migratory, although they can show seasonal movements. Southern Black Korhaan (*Afrotis afra*), Secretarybird (*Sagittarius serpentarius*) and Lanner Falcon (*Falco biarmicus*) can be surveyed throughout the year.
    - For insect SCC typically flagged for the west coast area that the project falls within, spring to summer (September – December) is the optimal time (see Guidelines for the

Implementation of Terrestrial Fauna and Terrestrial Flora Species Protocols for Environmental Impact Assessments in South Africa" (SANBI, 2020)).

- It must be noted that this site sensitivity verification focussed on surveying the state of the habitat quality at the project area and its connectivity to surrounding natural vegetation, as the project site sits in an area of high agricultural activity and falls outside of any protective area. Seasonality need only be considered for surveys of SCC species should the required habitat be present.

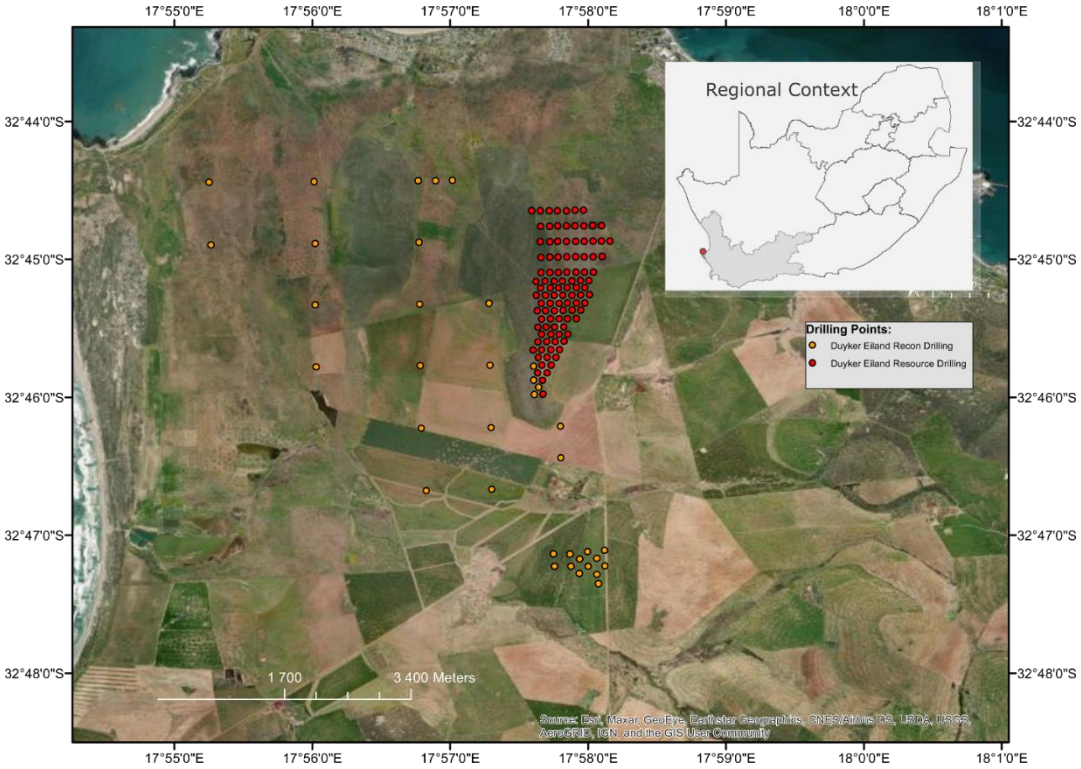

Figure 1. The project area showing the proposed drilling points for the Duyker Eiland Prospecting Rights, Western Cape Province, West Coast District, Saldanha Bay Local Municipalities situated between the towns of Paternoster (west) and St. Helenabaai (east).

5. RESULTS

5.1. DESKTOP STUDY

The area of the proposed drilling points falls within the West Coast Biosphere Reserve (http://www.capebiosphere.co.za/).

The drilling points fall across:

- Three main vegetation types (Figure 2):
  - Saldanha Granite Strandveld: Critically Endangered; ~29% of natural area remaining; Poorly Protected.
  - Saldanha Flats Strandveld: Endangered; ~38% of natural area remaining; Poorly Protected.

    - Saldanha Limestone Strandveld: Critically Endangered; ~50% of natural area remaining; Moderately Protected.
- Critical Biodiversity Areas (CBA1 & CBA2), essentially associated with the Saldanha Limestone Strandveld vegetation and areas adjacent to these (Figure 3 & 4).
- Several drilling points fall near or on Ecological Areas of Support (ESA1 & ESA2) (Figure 5 & 6). These play an important role in supporting the functioning of CBAs and the aim is to maintain them in a functional, or near-natural state.
- One south-western drilling point falls close (~220m) to an Other Natural Area (ONA) (Figure 7); these areas retain most of their natural character and the objective is minimise habitat and species loss of these ONAs as they perform biodiversity and ecological infrastructure functions
- The drilling points fall across two classes of threatened ecosystems:
    - Critically Endangered and Endangered (Figure 8).
    - Although the area is considered of very high sensitivity for terrestrial biodiversity, no parts fall within a formally protected area.
- Notable landscape features include the limestone ridges known to have plant species of high conservation importance (Mucina and Rutherford, 2006).

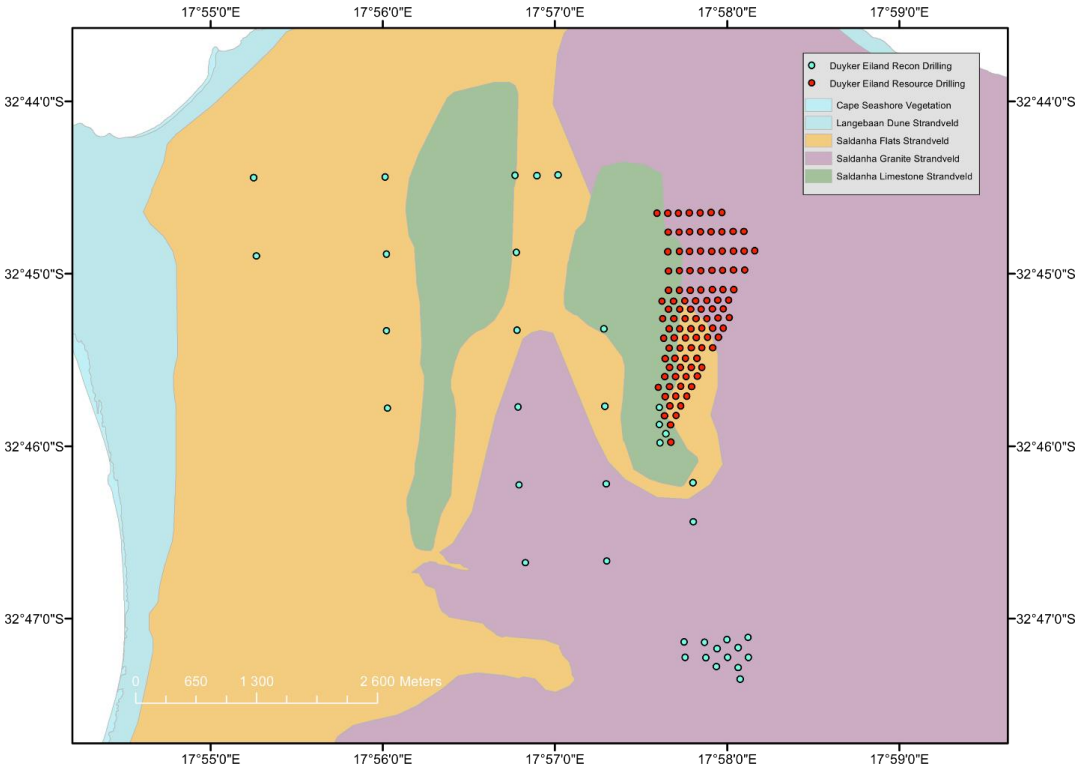

Figure 2. The three vegetation types that the drilling points fall across.

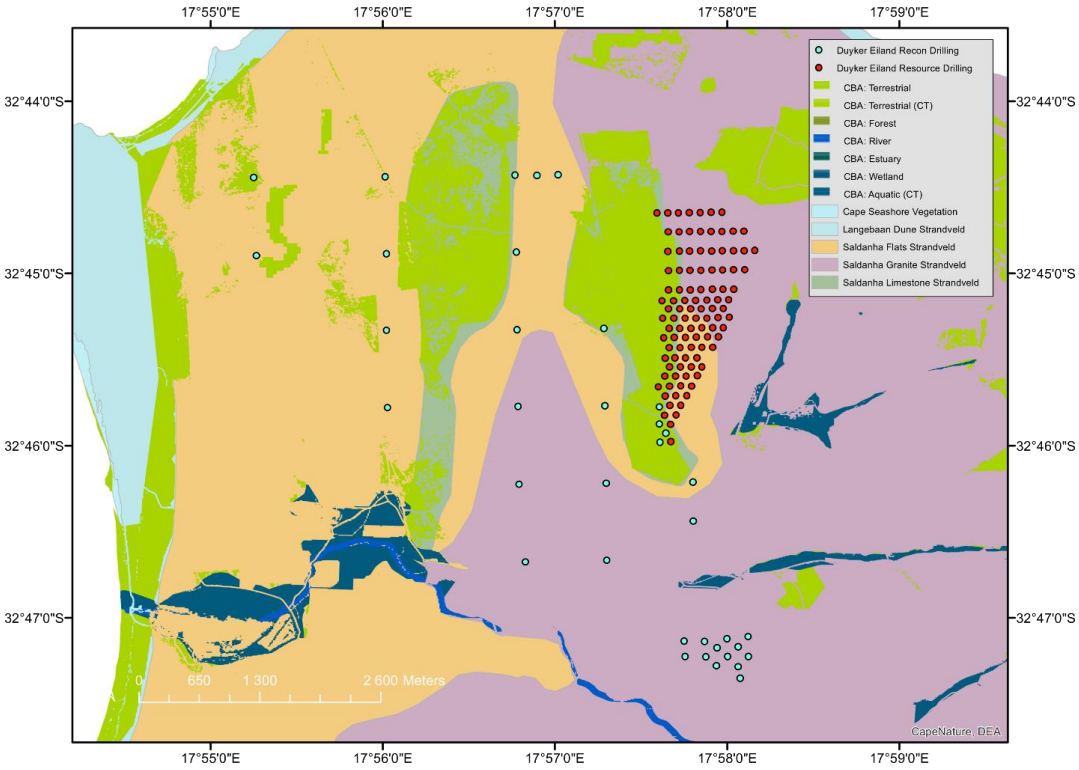

Figure 3. Critical Biodiversity Areas (CBA1) of the Western Cape Biodiversity Spatial Plan that the drilling points fall close to, or across.

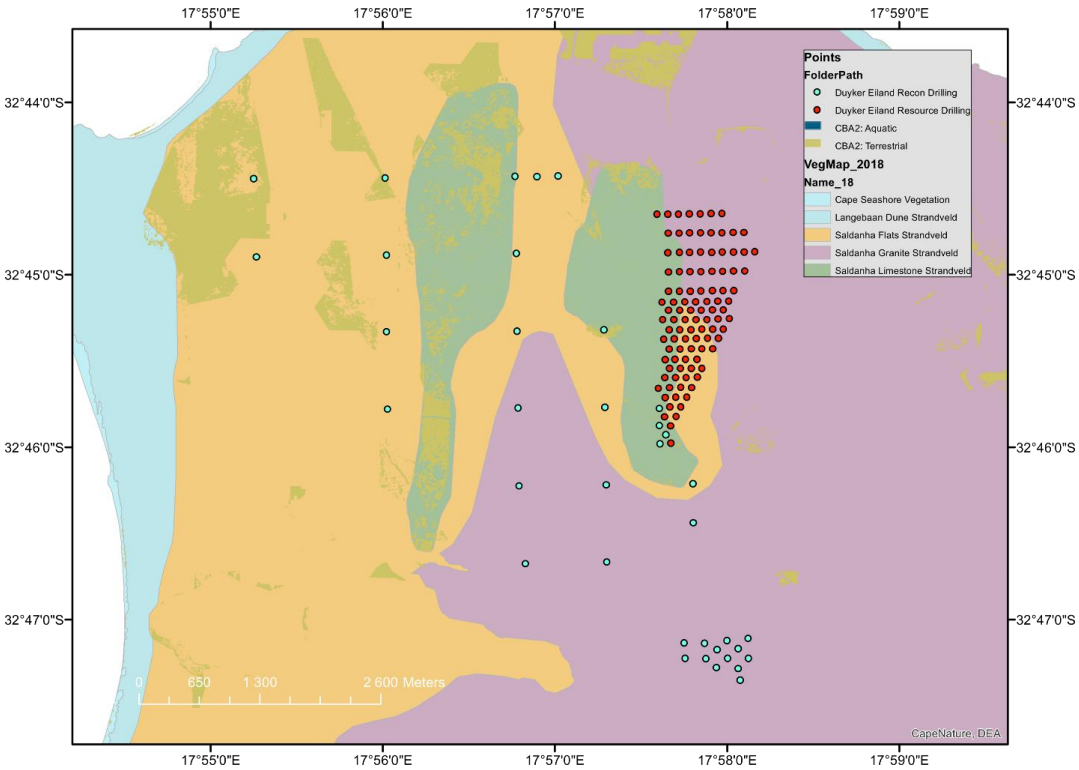

Figure 4. Critical Biodiversity Areas (CBA2) of the Western Cape Biodiversity Spatial Plan that the drilling points fall close to, or across.

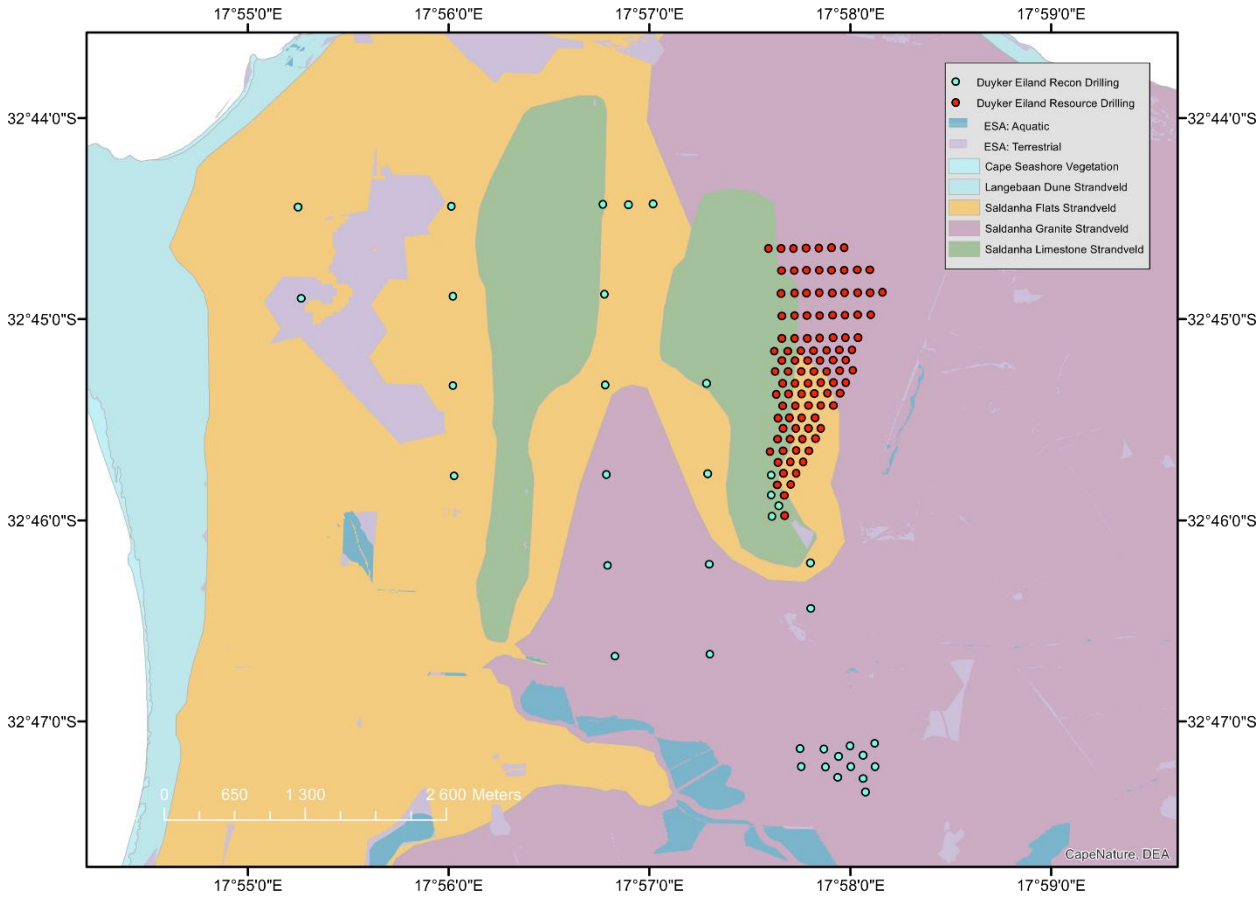

Figure 5. Ecological Support Area 1 (ESA1) of the Western Cape Biodiversity Spatial Plan that the drilling points fall close to, or across.

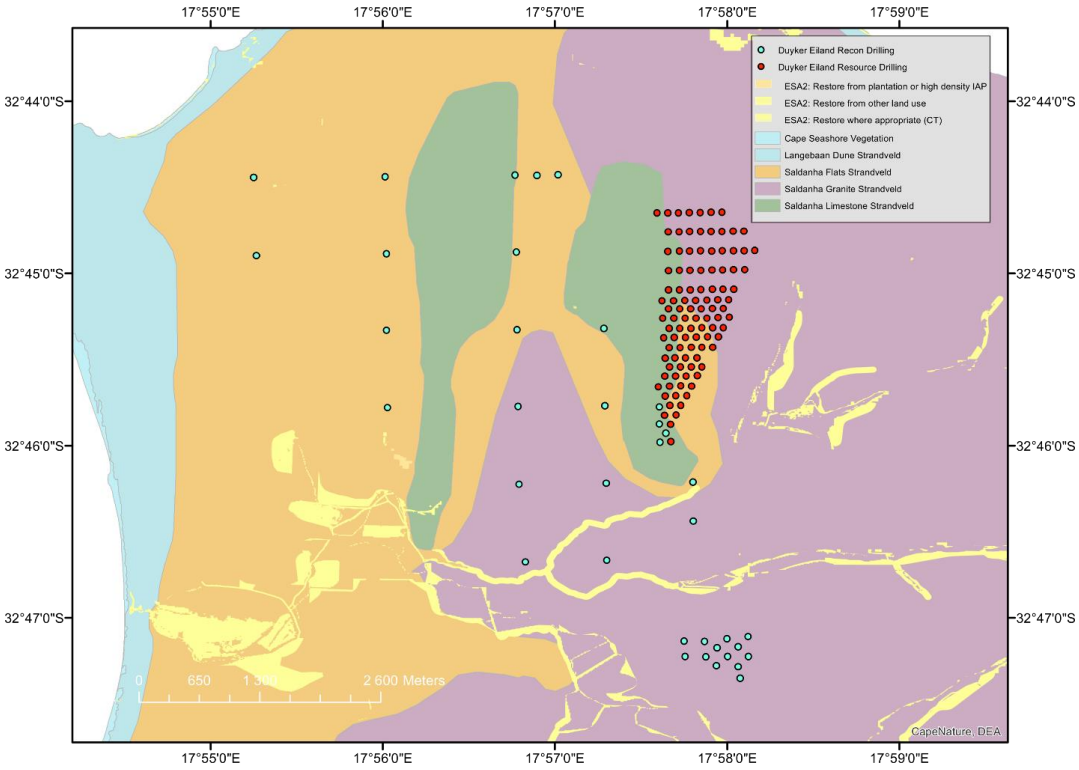

Figure 6. Ecological Support Area 2 (ESA2) of the Western Cape Biodiversity Spatial Plan that the drilling points fall close to, or across.

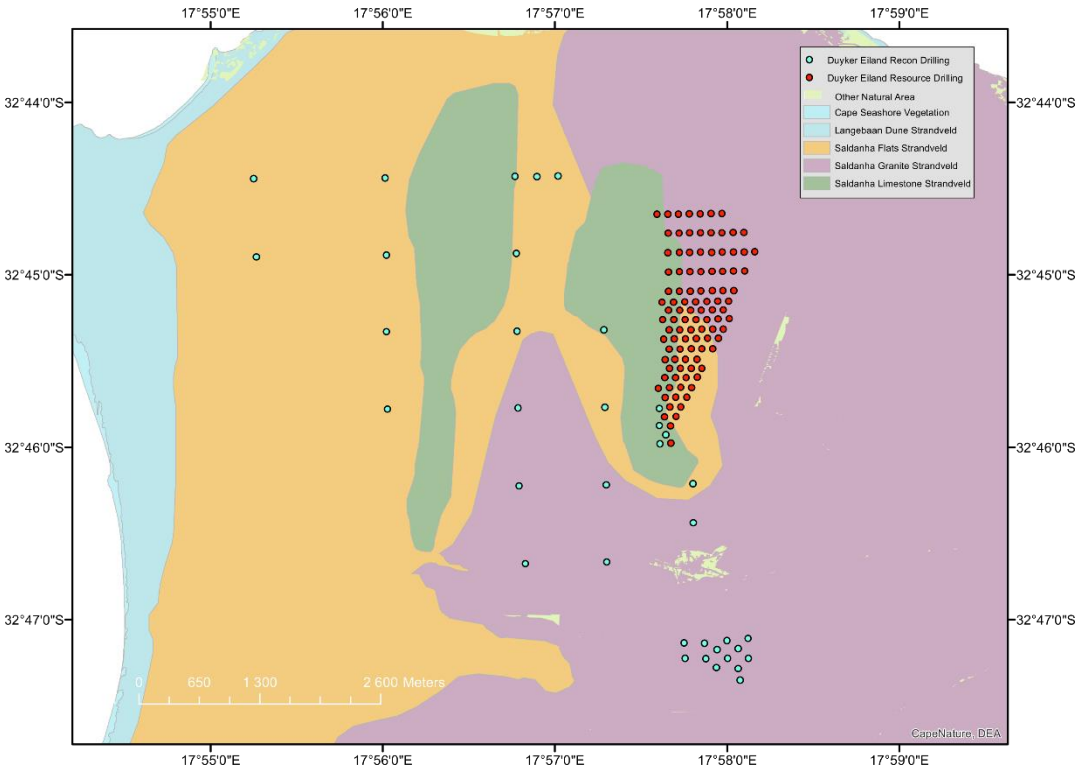

Figure 7. Other Natural Areas (ONA) of the Western Cape Biodiversity Spatial Plan that the drilling points fall close to, or across.

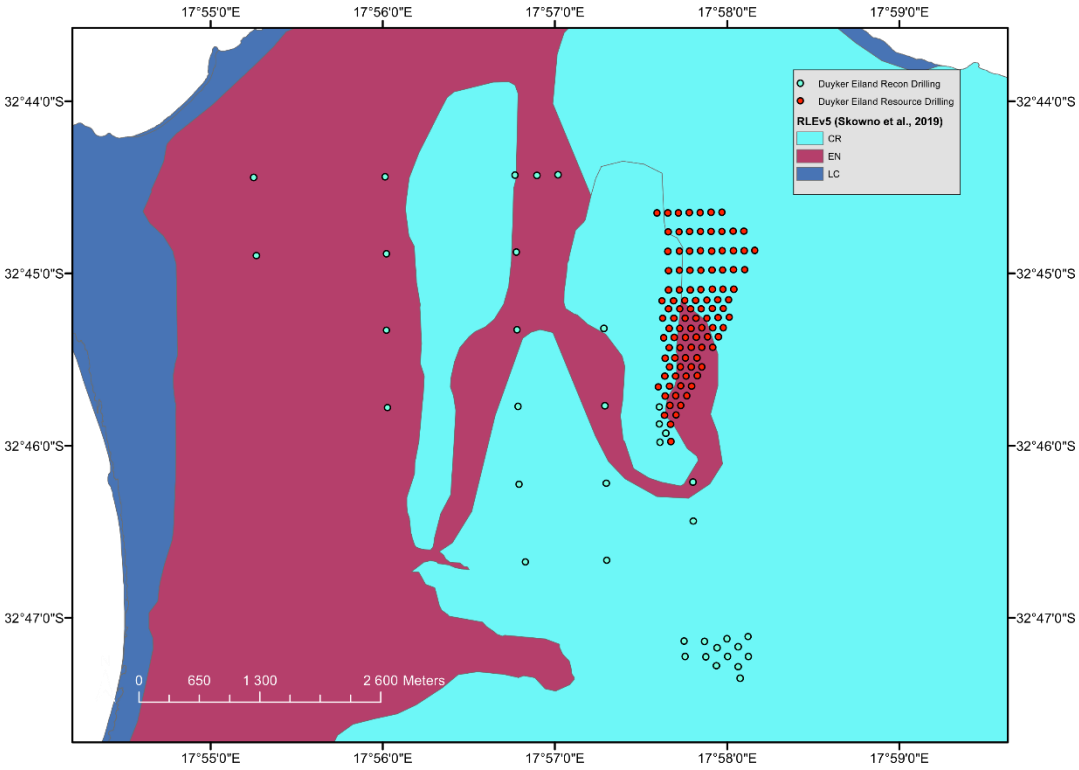

Figure 8. Terrestrial Ecosystem Threat Status as calculated by the 2018 National Biodiversity Assessment (Skowno *et al.*, 2019) that the drilling points fall close to, or across.

4.2.1 SPECIES OF CONSERVATION CONCERN (SCC)

Plant SCC:

- Fifty-three plant SCC were flagged for the project area (Appendix 1), spread across the different vegetation types:
    - 15 Endangered (36%)
    - 26 Vulnerable (63%)
    - 12 Sensitive Species [further information pending from SANBI].

Bird SCC:

Circus maurus (Temminck 1828) Black Harrier

- This species of harrier is endemic to southern Africa and has an IUCN Red List Category and Criteria of Endangered C2a(ii) (BirdLife International, 2017; Taylor *et al.*, 2015)
- This species occurs widely in South Africa but fewer than 1000 birds are thought to occur, and habitat transformation is a major threat (Taylor *et al.* 2015).
- This species breeds on the ground in low, shrubby vegetation in spring, mainly in the Western Cape, before undertaking complex and variable post breeding movements that can take birds to the Drakensberg (Taylor *et al.* 2015).
- Prey is mainly rodents and birds.
- The habitat at the site is extremely suitable for both foraging and breeding for this species, with the exception of the highly transformed agricultural areas.

Circus ranivorus (Daudin 1800) African Marsh Harrier

- This species of harrier is endemic to Africa and has an IUCN Red List Category and Criteria of Least Concern (BirdLife International, 2016; Taylor et al., 2015).
- This species is associated with aquatic habitats and often nests in extensive marshes (Taylor et al. 2015). Prey included rodents, as well as birds and amphibians.
- The lack of wetlands at this site, or nearby, mean that this species is not likely to utilise the site. There is a chance that it might pass through briefly when moving between wetlands.

Afrotis afra (Linnaeus, 1758) Southern Black Korhaan

- This species of bustard is endemic to South Africa and has an IUCN Red List Category and Criteria of Least Concern (BirdLife International (2016); but a South African Regional Status as Vulnerable (Taylor *et al.*, 2015).
- It occurs mainly in Strandveld and Renosterveld of the West Coast and just inland, and is able to utilise degraded habitats in some settings (Taylor *et al.*, 2015)
- It is recorded from the immediate vicinity of the site.

Falco biarmicus (Temminck, 1825) Lanner Falcon

- This species has an IUCN Red List Category and Criteria of Least Concern (BirdLife International, 2016; Taylor et al., 2015).
- This species occurs widely in South Africa but is commonly encountered in the vicinity of the site where it is able to hunt over a mosaic of natural vegetation and agricultural lands.

Sagittarius serpentarius (J. F. Miller, 1779) Secretarybird

- This species of harrier is endemic to Africa and has an IUCN Red List Category and Criteria of Least Concern (BirdLife International, 2016; Taylor et al., 2015).
- It is associated with large, open habitats where it hunts reptiles, but it requires trees to breed (Taylor *et al.*, 2015).
- It has been observed and has even nested in the vicinity of the site (C. Cohen, per. obs.).

Anthropoides paradiseus (Lichtenstein, 1793) Blue Crane

- This species of crane is endemic to South Africa and has an IUCN Red List Category and Criteria of Vulnerable (BirdLife International, 2016; Taylor et al., 2015).
- It is associated with open habitats, and along the West Coast, often in association with agricultural areas (Taylor *et al.*, 2015). It has local movements and is more common in the area in summer.
- It is ground-nesting, and breeds from October-February, when it is sensitive to disturbance (Hockey *et al.*, 2005).
- It was not detected by the screening tool but is known to occur in the area.

Invertebrate SCC:

- Two insect SCC not flagged by the screening tool but considered of importance and likely occurrence at the project site are mentioned.

Pachysoma aesculapius (Olivier, 1789) (Dung Beetle)

- Although not flagged by the screening tool, there is a high possibility that this species of flightless dung beetle could occur across the project area.
- It is endemic to South Africa and restricted to the south-western parts of the Western Cape Province (Harrison *et al.*, 2003).
- It has an IUCN Red List Category and Criteria of Vulnerable B1ab (ii,iii)+2ab(ii,iii).
- It is "restricted to the firm deep sand of coastal hummocks, riverbanks, and vegetated dunes of the south-western Cape, extending from Cape Town northwards to the mouth of the Olifants River (Davis, 2013; Harrison et al., 2003).
- It is a large-sized, day-active, flightless dung beetle that collects dry dung and other organic material, such as twigs, which it carries to a permanent burrow (Davis, 2013; Harrison et al., 2003).
- Owing to its flightlessness, and that it appears to occur at very low population densities, the species is thought to be highly susceptible to disturbance from agriculture (Davis, 2013; Harrison et al., 2003).
- A historical record for this species is known approximately 20kms eastwards for a specimen collected in Langebaan Dune Strandveld vegetation, and a record approximately 30kms eastwards for a specimen collected in Saldanha Flats Strandveld, the vegetation type known from the project area.

Bullacris obliqua (Thunberg 1810) Bladder grasshopper

- Although not flagged by the screening tool, there is a high possibility that this species of flightless dung beetle could occur across the project area.
- This species of bladder grasshopper is endemic to South Africa and has an IUCN Red List Category and Criteria of Vulnerable Vulnerable B2ab(iii,iv,v) (Couldridge and Bazelet, 2018).
- Bladder grasshoppers belong to the family Pneumoridae with almost all species endemic to South Africa (Dirsh, 1965). The family represents an important biodiversity component of South Africa's regional insect diversity and is therefore of high conservation importance (Colville *et al.*, 2014).
- It has an estimated extent of occurrence 33542km^2 and its estimated geographic range overlaps the project area (Couldridge and Bazelet, 2018).
- The species has a relatively wide distribution, although patchy, across the Fynbos and Succulent Karoo Biomes.
- The only known host plant for this species is *Eriocephalus africanus*.
- A historical record for this species is known approximately 20kms southwards for a specimen collected in in Saldanha Flats Strandveld, the vegetation type known from the project area.

5.2 FIELD SITE VISIT

- The weather was warm and sunny, ideal for flowers to be open and for certain fauna to be active.
- The drilling points were investigated, and representative photographs were chosen from selected drilling points (Figures 9 - 23) to provide examples of habitats and fauna encountered as well as sites which we assessed as High, Medium and Low Sensitivity.
- Habitat characteristics and likelihood of any of the SCC being found around each site is provided below.

- Overview of locations of these photographs. Note that photos towards the edge of the project area are taken looking into the project area, and thus the areas represented are far more than simply the footprint of the photographer. Most but not all sites visited were photographed.

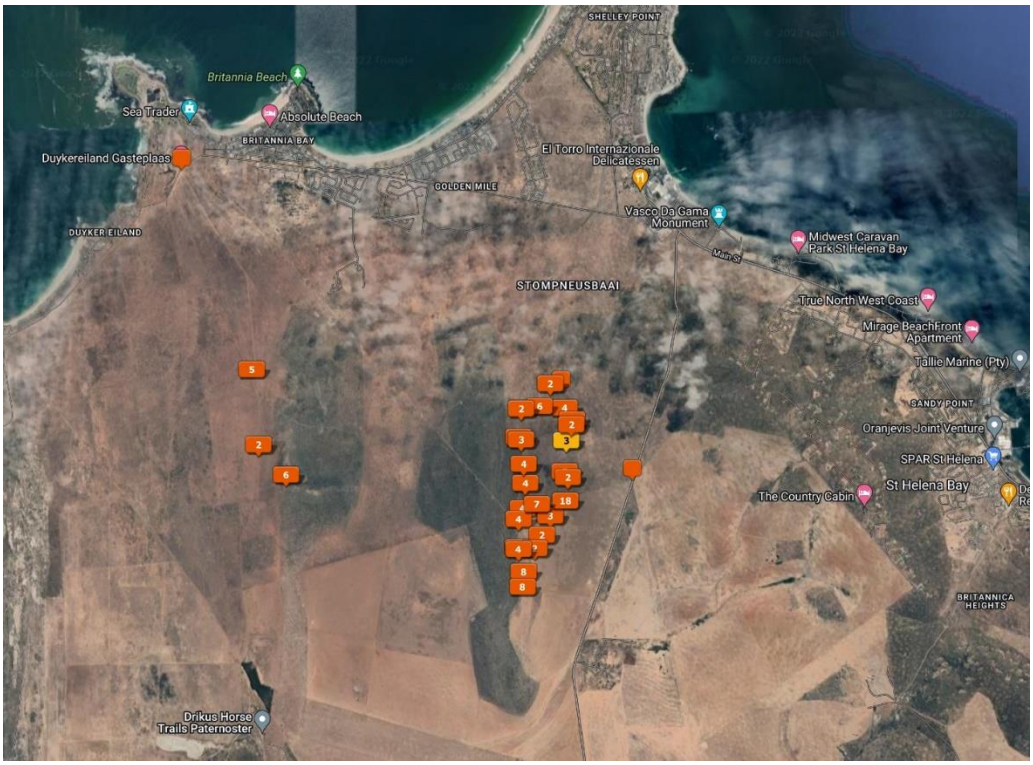

Figure 9. Site overview with photo locations shown.

Figure 10. Medium Sensitivity example in degraded Saldanha Granite Strandveld. Mound of Cape Dune Molerat visible. (GPS 32°45'5.2" S 17°58'2.41" E).

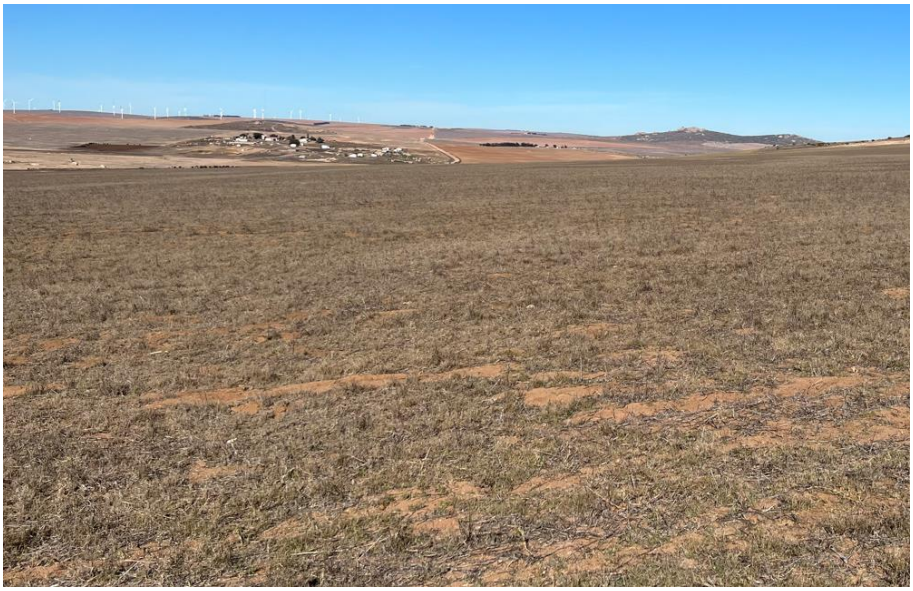

Figure 11. Low Sensitivity example. Complete agricultural transformation (GPS 32°45'5.3" S 17°58'2.38" E).

Figure 12. Intersection of Low Sensitivity on the left, Medium Sensitivity on the right, and High Sensitivity on the ridge in the background (GPS 32°45'5.3" S 17°58'2.38" E).

Figure 13. Medium Sensitivity example in degraded Saldanha Granite Strandveld. Mounds of Cape Dune Molerat visible (GPS 32°44'52.02" S 17°57'59.25" E).

Figure 14. Medium Sensitivity example. *Oxalis flava* and mounds of Cape Dune Molerat visible in Saldanha Granite Strandveld (GPS 32°44'38.96" S 17°57'58.22" E).

Figure 15. Cape Long-billed Lark. Not a SCC but South African West Coast endemic, characteristic of the area. In a plot characterised as Medium Sensitivity (GPS 32°44'39" S 17°57'58.2" E).

Figure 16. Southern Black Korhaan, one of the flagged bird SCC, was present in the degraded shrublands of Saldanha Granite Strandveld (GPS 32°44'39" S 17°57'58.2” E).

Figure 17. High Sensitivity example. Untransformed Saldanha Limestone Strandveld (GPS 32°44'47.75" S 17°57'41.32" E).

Figure 18. High Sensitivity example. Untransformed Saldanha Limestone Strandveld with *Euclea racemosa* visible as one of the taller bushes (GPS 32°44'47.64" S 17°57'41.26" E).

Figure 19. High Sensitivity example. Untransformed Saldanha Limestone Strandveld (GPS 32°44'51.82" S 17°57'42.57" E).

Figure 20. Fenceline contrast. Low Sensitivity on the right, Medium Sensitivity on the left (although very degraded near the fence) (GPS 32°45'8.43" S 17°57'48.49" E).

Figure 21. Low Sensitivity example. Complete agricultural transformation (GPS 32°45'21.48" S 17°57'50.13" E). Blue Crane was seen at this site.

Figure 22. Medium Sensitivity example of Saldanha Flats Strandveld (GPS 32°44'26.33" S 17°56'1.35" E).

Figure 23. A juvenile Lanner Falcon, a flagged bird SCC, present near the previous site.

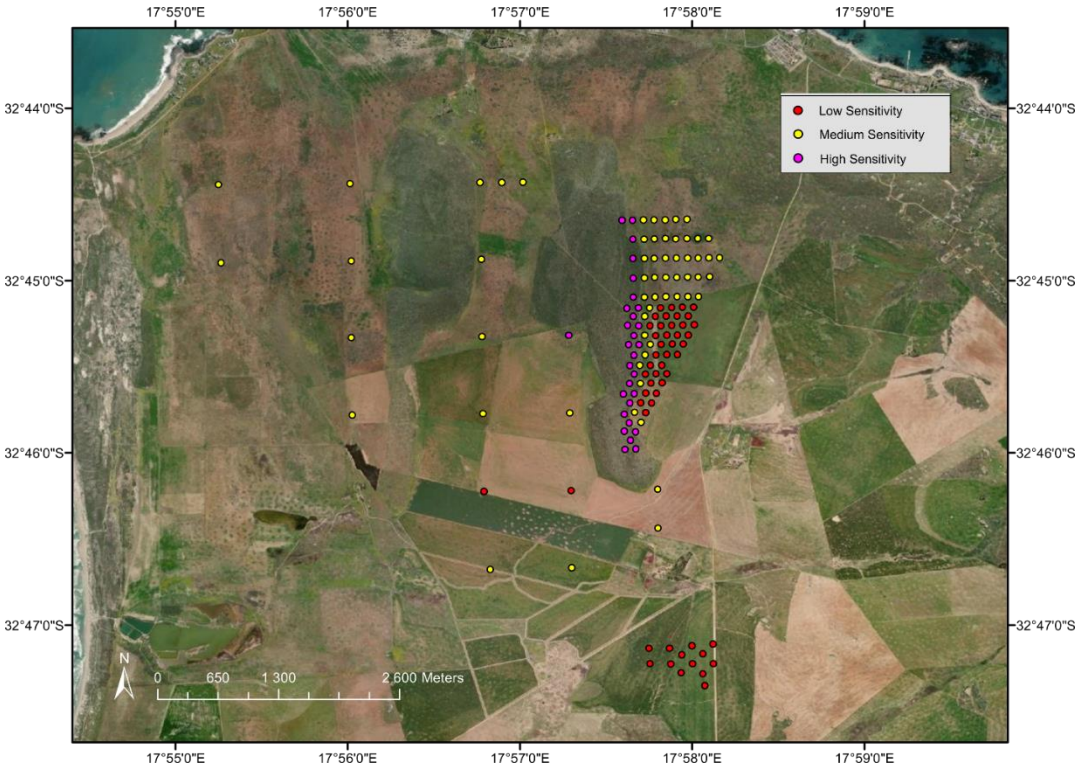

Figure 24. Classed sensitivity of drilling points based on ecological evidence and a site survey. [Note: drilling points on the Remainder Farm Duyker Eiland 6 Portion 7 and Farm Schuitjes Klip 22 Portion 3 were not surveyed during the site visit due to no permission to access these areas].

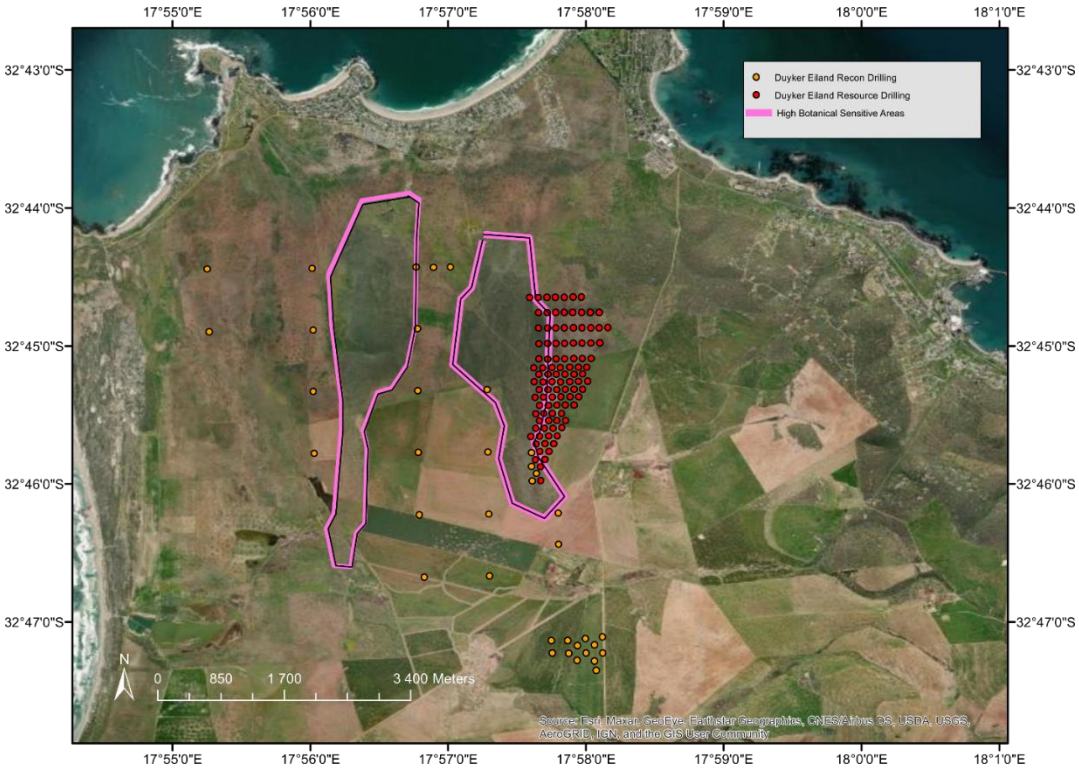

Figure 25. High botanical sensitive areas associate with Saldanha Limestone Strandveld.

6. CONCLUSIONS & RECOMMENDATIONS

- This site sensitivity verification report is applicable to the project area shown in Figure 1, and as described in the documentation provided to us by Kimberley van Zyl of Elemental Sustainability (Pty) Ltd.
- Based on the available information on broader-level ecosystem data and SCCs' distributions, their known habitat preferences, the disturbed habitat of sections of the project area, and the relatively small overall footprint of the individual drilling points, it is considered that the project will range from **High, Medium** to **Low sensitivity**. The proposed drilling could have a negative impact on areas of high and medium sensitivity, and low to no impact on areas of low sensitivity.
- Individual drilling points have been classed as **High, Medium** to **Low sensitivity** (Figure 24) based on the different types of information extracted from the desktop study and site visit.
- **High sensitive drilling points:**
    - These are associated with areas of Saldanha Limestone Strandveld, a vegetation type with high numbers of endemic plant species that grows on exposed limestones.
    - The site visit also confirmed that the area of these drilling points is either undisturbed natural vegetation, or partly disturbed.
    - Because of the high conservation and ecological importance (classed as a CBA1), high threat status (Critically Endangered) and poorly protected status, these areas should be considered as no-go areas for drilling.
- **Medium sensitive drilling points:**
    - These are associated with edge areas of Saldanha Limestone Strandveld, but mostly fall within Saldanha Flats Strandveld (Endangered) and Saldanha Granite Strandveld (Critically Endangered).
    - These points are also associated with priority biodiversity areas, such as ecological support areas (ESA) and other natural areas (ONA) of ecological importance where the aim is to minimise impact on ecological infrastructure functioning.
    - The areas of these points are also potentially associated with faunal SCC, such as the Black Harrier (breeding sites), Southern Black Korhaan (recorded during the site visit (Figure 16)), and flightless dung beetles.
    - The site visit determined that the area of these drilling points generally has some level of previous disturbance, mostly associated with current and past land cultivation (e.g. Figures 12,20,22).
    - Because of the conservation and ecological importance, high threat status (Critically Endangered and Endangered) and moderate to poorly protected status, the potential for both plant and animal SCC to occur, these areas would require further surveying to confirm their sensitivity and the potential impacts of drilling.
- **Low sensitive drilling points:**
    - These are associated with heavily degraded and disturbed areas of Saldanha Flats Strandveld (Endangered) and Saldanha Granite Strandveld (Critically Endangered).
    - These areas of these points would mostly likely have no remaining association with plant SCC.
    - Some faunal SCC will utilise the areas, such as Blue Crane (observed on the site), Lanner Falcon and Secretarybird, but the small size of the drilling points in relation to the size of the area is likely to cause only slight disturbance to these species, although, as the Blue Crane is ground-nesting and sensitive to disturbance when breeding, no drilling should be undertaken during its summer breeding season from October - February.
    - The site visit determined that the area of these drilling points have high levels of disturbance and degradation of habitat, mostly high disturbance associated with current and past land cultivation (e.g. Figures 11,12,20,21).

    - The planned drilling activities at these points should have little to no impact.
- **Recommendations:**
    - All areas of intact Saldanha Limestone Strandveld (Figure 25) be excluded for consideration as potential drilling points. These are only marginal to the proposed drilling area.
    - Critically, spring, and early summer surveys to be undertaken for plant and animal SCC for all high and medium sensitivity drilling points. Several medium drilling points will most likely be re-classed as low sensitivity. However, it is important to determine the area around which drilling points may be associated with several spring flowering SCC plants listed as Endangered (see Appendix 1), for bird SCC (e.g. breeding sites for the Black Harrier or Southern Black Korhaan), and insect SCC (e.g. flightless dung beetle) before being able to comment further on changes in sensitivity.
    - Arranging access for specialists for site surveys to occur at all proposed drilling points across the different farms.

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APPENDIX – 1

Table of Red List Status and Criteria of SCC plant taxa. [National Assessment: Red List of South African Plants version 2020.1. Accessed on 2022/07/02; http://redlist.sanbi.org/index.php].

Sensitivity	**Taxa**	Status and Criteria
Medium	*Antimima limbata*	Endangered B1ab(ii,iii,v)
Medium	*Aspalathus stricticlada*	Endangered B1ab(i,ii,iii,iv,v)
Medium	*Cephalophyllum rostellum*	Endangered B1ab(ii,iv,v)+2ab(ii,iv,v)
Medium	*Echiostachys spicatus*	Endangered B1ab(ii,iii,iv,v)
Medium	*Empodium veratrifolium*	Endangered B1ab(ii,iii,iv,v)
Medium	*Hermannia procumbens subsp. myrrhifolia*	Endangered B1ab(ii,iii,iv,v)
Medium	*Indigofera platypoda*	Endangered B1ab(ii,iii)+2ab(ii,iii)
High	*Manulea augei*	Endangered B1ab(ii,iii,iv,v)+2ab(ii,iii,iv,v)
Medium	*Manulea augei*	Endangered B1ab(ii,iii,iv,v)+2ab(ii,iii,iv,v)
Medium	*Pauridia longituba*	Endangered B1ab(i,ii,iii,iv,v)
Medium	*Phylica greyii*	Endangered B1ab(ii,iii,iv,v)+2ab(ii,iii,iv,v); C2a(i)
Medium	*Romulea barkerae*	Endangered B1ab(i,ii,iii,iv,v)+2ab(ii,iii,iv,v)
Medium	*Romulea saldanhensis*	Endangered B1ab(i,ii,iii,iv,v)
Medium	*Ruschia cupulata*	Endangered B1ab(i,ii,iii,iv,v)+2ab(i,ii,iii,iv,v)
Medium	*Wiborgia fusca subsp. macrocarpa*	Endangered B1ab(ii,iii,iv,v)+2ab(ii,iii,iv,v)
Medium	*Adenogramma teretifolia*	Vulnerable B1ab(iii)
Medium	*Antimima aristulata*	Vulnerable B1ab(ii,iii,iv,v)
Medium	*Argyrolobium velutinum*	Vulnerable A2c
Medium	*Aspalathus lotoides subsp. lagopus*	Vulnerable B1ab(ii,iii)
Medium	*Cotula pusilla*	Vulnerable B2ab(i,ii,iii,iv,v)
Medium	*Ferraria densepunctulata*	Vulnerable C2a(i)
Medium	*Geissorhiza lewisiae*	Vulnerable B1ab(i,ii,iii,iv,v)+2ab(i,ii,iii,iv,v)
Medium	*Helichrysum bachmannii*	Vulnerable B1ab(iii,iv,v)+2ab(iii,iv,v)
Medium	*Helichrysum dunense*	Vulnerable B1ab(ii,iii,v)
Medium	*Ixia purpureorosea*	Vulnerable B1ab(ii,iii,iv,v)+2ab(ii,iii,iv,v); C2a(i)
Medium	*Lampranthus aureus*	Vulnerable B1ab(iii,v); C2a(i)
Medium	*Leucospermum rodolentum*	Vulnerable A2c

Medium	*Limonium acuminatum*	Vulnerable A2c; B1ab(iii,iv,v)+2ab(iii,iv,v); C1
Medium	*Muraltia harveyana*	Vulnerable B1ab(ii,iii,v)+2ab(ii,iii,v)
Medium	*Muraltia obovata*	Vulnerable C2a(i)
Medium	*Oscularia vredenburgensis*	Vulnerable A2abc; B1ab(ii,iii,v)+2ab(ii,iii,v)
Medium	*Osteospermum calcicola*	Vulnerable B1ab(ii,iii,iv,v)+2ab(ii,iii,iv,v)
Medium	*Otholobium venustum*	Vulnerable B1ab(ii,iii,v)+2ab(ii,iii,v)
Medium	*Oxalis burtoniae*	Vulnerable C1+2a(i)
Medium	*Oxalis suavis*	Vulnerable B1ab(ii,iii,iv,v)+2ab(ii,iii,iv,v)
Medium	*Pauridia linearis*	Vulnerable B1ab(ii,iii,iv,v)+2ab(ii,iii,iv,v)
Medium	*Phylica stenopetala var. stenopetala*	Vulnerable B1ab(ii,iii,v)
Medium	*Podalyria sericea*	Vulnerable C2a(i)
Medium	*Ruschia langebaanensis*	Vulnerable B1ab(i,ii,iii,iv,v)+2ab(i,ii,iii,iv,v)
Medium	*Sparaxis parviflora*	Vulnerable B1ab(i,ii,iii,iv,v)+2ab(i,ii,iii,iv,v)
Medium	*Steirodiscus tagetes*	Vulnerable B1ab(ii,iii,iv,v)

APPENDIX – 2

CURRICULUM VITAE – JONATHAN F. COLVILLE

EDUCATION

PhD (Zoology): University of Cape Town, 2009. Thesis title: "*Understanding the evolutionary radiation of the megadiverse monkey beetle fauna (Scarabaeidae: Hopliini) of South Africa*".

Postdoctoral research fellowship: South African National Biodiversity Institute, 2009-2010.

PRIOR EMPLOYMENT

National Research Foundation Research Career Advancement Fellow: South African National Biodiversity Institute (2014-2019).

Researcher, South African National Biodiversity Institute, GEF/UNEP/FAO Global Pollination Project – South Africa (2010-2014).

PUBLICATIONS

Books edited:

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- **Colville, J.F.** & Picker, M.D. (2005). *Scoping Phase II: The impact of development of Worcester on the insect and scorpion fauna*. Environmental impact report for Chand Environmental Consultants, Cape Town.
- **Colville, J.F.** (2001) *Scoping and faunal assessment for proposed housing development, Skapenberg, Somerset West*. Prepared for Design consultants CNdV Africa.

MEMBERSHIPS/RESEARCH ASSOCIATE

- Membership of Entomological Society of Southern Africa (2007-current).
- Membership of Lepidopterists Society of Southern Africa (2014-current).
- Honorary Research Associate (HRA), Statistics in Ecology, Environment and Conservation (SEEC), Department of Statistical Sciences, UCT (2014-current).
- SACNASP registration for Ecological Science (Professional Natural Scientist) (member#: 134759).

PROFESSIONAL SERVICES

- Editorial board *African Entomology* (2010-current).
- Editorial board *Metamorphosis* (2017-current).
- Editorial board *PeerJ* (2019-current).
- CAPE Invasive Alien Animal (IAA) Working Group (2016-2018).