



**PROPOSED PROSPECTING MINING RIGHT APPLICATION FOR
KLIPVLEY KAROO KOP 153 , WESTERN CAPE PROVINCE**

**Animal Species, Plant Species, and Terrestrial Biodiversity Impact
Assessment Report**

June 2023

Prepared for:



Prepared by:

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082 598 6500

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1. Document control

1.1 Quality and revision record

1.1.1 Quality approval

	Capacity	Name	Signature	Date
Author:	Environmental Specialist (MSc Biological Sciences, UCT 2019)	Megan Smith		27/06/2023
Reviewer 2:	Ecological Specialist (M.Sc UFS) SACNASP Reg. no	Elbi Bredenkamp		27/06/2023

This report has been prepared in accordance with Enviroworks Quality Management System.

DISCLAIMER

Even though every care is taken to ensure the accuracy of this report, environmental assessment studies are limited in scope, time, and budget. Discussions are to some extent made on reasonable and informed assumptions built on bona fide information sources, as well as deductive reasoning. Since environmental impact studies deal with dynamic natural systems additional information may come to light at a later stage during the impact assessment phase. The author does not accept responsibility for conclusions made in good faith based on own databases or on the information provided. Although the author exercised due care and diligence in rendering services and preparing documents, he accepts no liability, and the client, by receiving this document, indemnifies the author against all actions, claims, demands, losses, liabilities, costs, damages, and expenses arising from or in connection with services rendered, directly or indirectly by the authors and by the use of this document. This report should therefore be viewed and acted upon with these limitations in mind.

1.1.2 Revision record

Revision Number	Objective	Change	Date
1	Internal Review	Format, content	27/06/2023

2. Specialist details

2.1 Details of the specialist

This Impact Assessment was prepared and compiled by Megan Smith from Enviroworks. The sections below provide the details of the Specialist and explain their expertise to prepare this assessment.

Business name of Specialist:	Enviroworks
Specialist Name:	Megan Smith
EAPASA membership	2020/2855 (Candidate EAP)
SACNASP Registration	130295 (Pr.Nat.Sci) – Ecological Science
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E-mail:	Megan.smith@enviroworks.co.za

2.1.1 Expertise of the specialist

Megan Smith is an Environmental Consultant and Ecologist at Enviroworks. Her qualifications include a M.Sc. in Biological Sciences (UCT) and over three years' experience in the environmental field. Megan has completed several Fynbos plant identification courses.

2.1.2 Statement of independence – specialist

I, Megan Smith, **ID 9412140124080**, declare that I:

- am an Environmental Consultant and Ecologist at Enviroworks.
- act as an independent Environmental Consultant.
- have compiled this Botanical, Faunal and Terrestrial Biodiversity Theme Impact Assessment
- I do not have or will not have any financial interest in the undertaking of the activity other than remuneration for work as stipulated in the terms of reference.
- remuneration for services by the Proponent in relation to this proposal is not linked to approval by decision-making Authorities responsible for permitting this proposal.
- the consultancy has no interest in secondary or downstream developments as a result of the outcome of this Impact Assessment Report.
- have no and will not engage in conflicting interests in the undertaking of the Activity.
- undertake to disclose to the Client and the Competent Authority any material, information that have or may have the potential to influence the decision of the Competent Authority required in terms of the Environmental Impact Assessment Regulations 2014, as amended.
- will provide the Client and Competent Authority with access to all information at my disposal, regarding this project, whether favourable or not.

Signature:



Megan Smith

3. Introduction

3.1 Project description

Enviroworks were appointed to undertake a Plant Species, Animal Species and Terrestrial Biodiversity impact assessment for the proposed prospecting rights application for the Klipvley 153 (Portions 1,2,3 and the remainder), South Africa. The proposed extent of the area for prospecting (3635 ha) is located 40 km west of the town Lutzville, within the western Cape Province. The extent of the prospecting area has been considered for the Project Area of Influence (PAOI). Each drill site will approximately result in a disturbance area of 50 m².

The existence and possible size of heavy mineral deposits in the application area were determined by the Applicant (Mineral Sands Resources) as follows:

- Data review and desk top studies will involve the following desk-top activities: data acquisition from government and private sources, and analysis of any existing/previous prospecting and drilling data, satellite (Landsat) imagery, aerial photos, and terrain data, as well as geological map interpretation. The synthesis and interpretation of such information will contribute towards providing a clearer picture of the location and characteristics of the heavy mineral deposit/s and will guide the in-field prospecting programme.
- Mapping and surface sampling: Surface mapping will be conducted by the project geologist and assistants and will take place over a period of 3 months. Such mapping will encompass GPS controlled traverses, and aerial photo mapping. Surface sampling. Where heavy mineral concentrations are noted on surface 25-liter surface samples will be collected manually with a shovel and plastic sampling bag for concentration and laboratory analysis to determine the type of minerals present and the tenor of mineralization. Each pit will be 50cm x 50cm in size and dug to a maximum depth of 1m. The final number of samples will be determined by the size of surface mineralized areas if any, 200 samples are planned for initially. Each sample locality will be backfilled and fully rehabilitated concurrently with sampling.
- Reconnaissance Drilling will involve surveying and pegging of the anticipated deposit. This sub-phase will include the following activities: Surveying of the mapped area to be prospected. A grid (average 500m x 500m) will be marked on the map, after which those positions will be marked in the field by a surveyor with labelled droppers (pegs). Shallow small diameter auger drilling will take place at these positions down to a depth of 4m. A total of 100 auger drill holes are planned initially and may be followed up with additional drilling. Access routes to the drill sites will also be located (existing roads will be used and new tracks only permitted in exceptional circumstances).
- Evaluation drilling will be conducted with the Air-core drilling method to access the deeper lying sediment package. Existing geological information in the area indicate mineralization down to 10m depth. A total of 250 Air-core holes are planned to an average depth of 30m. More drilling may be

required depending on results. Drill cutting will be sampled and analysed for heavy mineral content as described above for surface sampling.

- Analytical desk-top study. All the data collected will be analysed and compiled into a final report/model in order to determine the potential of the project and to outline possible future drill sampling programs if any.

The prospecting will be conducted in 3 phases, each one dependent on the results of the above.

- Phase 1 will involve the following desk-top activities: data acquisition from government and private sources, and analysis of any existing/previous prospecting and drilling data, satellite (Landsat) imagery, aerial photos, and terrain data, as well as geological map interpretation. The synthesis and interpretation of such information will contribute towards providing a clearer picture of the location and characteristics of the heavy mineral deposit/s, and will guide the in-field prospecting programme.
- Phase 2: Surface mapping will be conducted by the project geologist and assistants, and will take place over a period of 3 months. Such mapping will encompass GPS controlled traverses, and aerial photo mapping. Surface sampling. Where heavy mineral concentrations are noted on surface 25 liter surface samples will be collected manually with a shovel and plastic sampling bag for concentration and laboratory analysis to determine the type of minerals present and the tenor of mineralization. Each pit will be 50cm x 50cm in size and dug to a maximum depth of 1m. The final number of samples will be determined by the size of surface mineralized areas if any, 200 samples are planned for initially. Each sample locality will be backfilled and fully rehabilitated concurrently with sampling.
- Phase 3 will involve surveying and pegging of the anticipated deposit. This sub-phase will include the following activities: Surveying of the mapped area to be prospected. A grid (average 500m x 500m) will be marked on the map, after which those positions will be marked in the field by a surveyor with labelled droppers (pegs). Shallow small diameter auger drilling will take place at these positions to an average depth of 4m. A total of 100 auger drill holes are planned initially and may be followed up with additional drilling. Access routes to the drill sites will also be located (existing roads will be used and new tracks only permitted in exceptional circumstances)
- Phase 4 will be conducted with Air Core drilling method to access the deeper lying sediment package. A total of 250 Air-core holes are planned down to an average depth of 30m. More drilling may be required depending on results. Drill cutting will be sampled and analyzed for heavy mineral content as described above for surface sampling.
- Phase 5 will involve analytical desk-top study. All the data collected will be analyzed and compiled into a final report/model in order to determine the potential of the project and to outline possible future drill sampling programs if any.

3.3 Objective

Various environmental legislation in South Africa makes provision for the protection of our natural resources and the functionality of ecological systems to ensure sustainability. Such acts include the National Environmental

Management: Biodiversity Act (Act 10 of 2004), National Forests Act (Act 84 of 1998), Conservation of Agricultural Resources Act (Act 43 of 1983), National Water Act (Act 36 of 1998), framework legislation such as the NEMA and protocols such as the PROCEDURES FOR THE ASSESSMENT AND MINIMUM CRITERIA FOR REPORTING ON IDENTIFIED ENVIRONMENTAL THEMES IN TERMS OF SECTIONS 24(5)(a) AND (h) AND 44 OF THE NATIONAL ENVIRONMENTAL MANAGEMENT ACT, 1998, WHEN APPLYING FOR ENVIRONMENTAL AUTHORISATION (GN No. 43110 of 20 March 2020).

The various components of ecological systems are all interrelated and it is therefore important that specialist studies of all such components be conducted prior to the commencement of any proposed project development. Only once the potential impacts and outcomes of proposed developments on the ecological systems of an area are understood, can informed decisions be made regarding the viability of projects to address and achieve the environmental and socio-economic needs of an area.

The proposed development could have potential impacts on the vegetation, fauna and the surrounding environment. Vegetation will be displaced since the new development footprint will transform much of the surface area. To evaluate the level of acceptability of the impact on the natural environment a Plant Species, Animal Species, and Terrestrial Biodiversity Themes Impact Assessment was conducted. This was required to determine the potential presence of ecologically significant habitats and plant- and animal species of conservation concern within the proposed project footprint. Proposed mitigation and management measures must also be recommended to attempt to reduce/alleviate the identified potential impacts.

This Impact Assessment included a vegetation and habitat survey to:

- Identify and list significant species encountered on the proposed project footprint and direct surrounds and list any protected and/or Red Data Listed species.
- Determine and discuss the condition and extent of degradation and/or transformation of the vegetation on the proposed project footprint.
- Verify the site conditions as described by Low (2014) and Becker (2019).
- Determine any potential habitats for any protected or threatened faunal species.
- Determine and discuss the ecological sensitivity and significance of the proposed project area.
- Identify, evaluate and rate the potential impacts of the proposed project on the natural environment.
- Provide recommendations on mitigation and management measures to attempt to reduce/alleviate these identified potential impacts.

3.4 Minimum Requirements – Screening Tool

The National Web based Environmental Screening Tool (<https://screening.environment.gov.za/screeningtool/>) is a geographically based web-enabled application which allows a proponent intending to submit an application for Environmental Authorisation in terms of the Environmental Impact Assessment (EIA) Regulations 2014, as amended to screen their proposed site for any environmental sensitivity.

The Screening Tool also provides site specific EIA process and review information, for example, the Screening Tool may identify if an industrial development zone, minimum information requirement, Environmental Management Framework or bio-regional plan applies to a specific area.

Further to this, the Screening Tool identifies related exclusions and/ or specific requirements including specialist studies applicable to the proposed site and/or development, based on the national sector classification and the environmental sensitivity of the site.

Finally, the Screening Tool allows for the generating of a Screening Report referred to in Regulation 16(1)(v) of the EIA Regulations 2014, as amended whereby a Screening Report is required to accompany any application for Environmental Authorisation and as such the tool has been developed in a manner that is user friendly and no specific software or specialised GIS skills are required to operate this system.

PROCEDURES FOR THE ASSESSMENT AND MINIMUM CRITERIA FOR REPORTING ON IDENTIFIED ENVIRONMENTAL THEMES IN TERMS OF SECTIONS 24(5)(a) AND (h) AND 44 OF THE NATIONAL ENVIRONMENTAL MANAGEMENT ACT, 1998, WHEN APPLYING FOR ENVIRONMENTAL AUTHORISATION have been gazetted (GN. R 320 of 20 March 2020). In terms of sections 24(5)(a), (h) and 44 of the NEMA, these procedures prescribe general requirements for undertaking site sensitivity verification and for protocols for the assessment and minimum report content requirements of environmental impacts for environmental themes for activities requiring Environmental Authorisation, as contained in the Schedule therein. When the requirements of a protocol apply, the requirements of Appendix 6 of the EIA Regulations 2014, as amended, promulgated under sections 24(5) and 44 of NEMA, are replaced by these requirements.

According to the report generated by the National Screening Tool the following three themes and their protocols will be applicable this study:

- *Terrestrial Biodiversity Theme*

PROTOCOL FOR THE SPECIALIST ASSESSMENT AND MINIMUM REPORTING CONTENT REQUIREMENTS FOR ENVIRONMENTAL IMPACTS ON TERRESTRIAL BIODIVERSITY (GN 320, 2020)

- *Plant Species Theme*

PROTOCOL FOR THE SPECIALIST ASSESSMENT AND MINIMUM REPORT CONTENT REQUIREMENTS FOR ENVIRONMENTAL IMPACTS ON TERRESTRIAL PLANT SPECIES (GN 1150, 2020).

- *Animal Species Theme*

PROTOCOL FOR THE SPECIALIST ASSESSMENT AND MINIMUM REPORT CONTENT REQUIREMENTS FOR ENVIRONMENTAL IMPACTS ON TERRESTRIAL ANIMAL SPECIES (GN 1150, 2020).

3.4.1 Terrestrial Biodiversity Theme Results

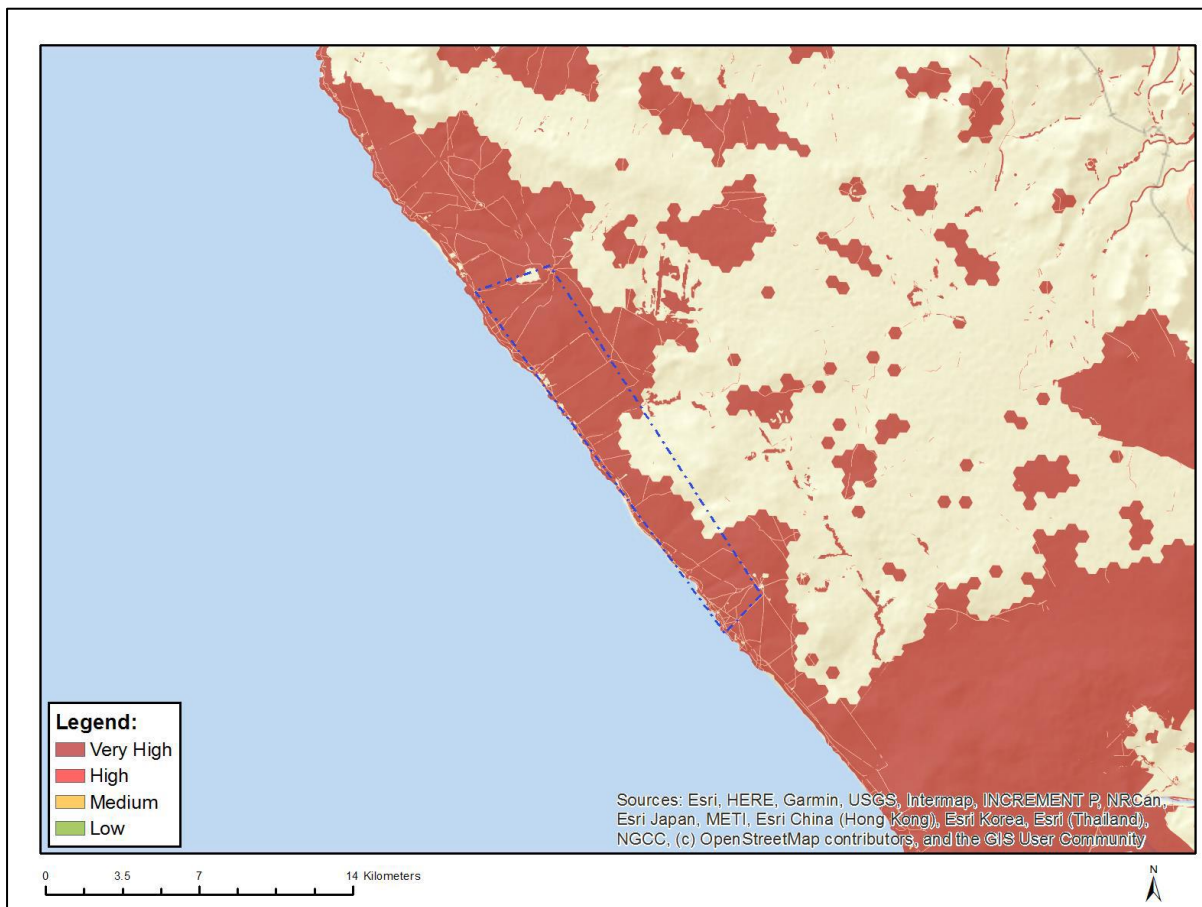


Figure 1 Terrestrial Biodiversity Theme based on the results from the National Screening Tool Report

Based on the initial Site Sensitivity Verification (Section 6.5) undertaken by the specialist on **29 May 2023**, the Terrestrial Biodiversity Theme sensitivity was confirmed to be of “Very High” as identified by the screening tool in Figure 4. The protocols further specify that the content of the assessment and minimum report content requirements on terrestrial biodiversity. The requirements are listed in the table below. The relevant section of this report is linked to each of the protocol’s minimum requirements.

Table 1 Content cross-reference checklist for specialist assessment and minimum report content requirements for Terrestrial Biodiversity Impact Assessment Report as per GN R 320, with corresponding section names in the report.

Requirement	Section of this report
Contact details of the specialist, their SACNASP registration number, their field of expertise and a curriculum vitae;	Details of the specialist and review specialist
A signed statement of independence by the specialist;	Statement of independence - specialist
A statement on the duration, date and season of the site inspection and the relevance of the season to the outcome of the assessment;	Date and season of site visit
A description of the methodology used to undertake the site verification and impact assessment and site inspection, including equipment and modelling used, where relevant;	Methodology

Requirement	Section of this report
A description of the assumptions made and any uncertainties or gaps in knowledge or data as well as a statement of the timing and intensity of site inspection observations;	Assumptions, uncertainties, and gaps in knowledge
A location of the areas not suitable for development, which are to be avoided during construction and operation (where relevant);	Present Ecological State and Ecological Importance and sensitivity (EIS); Recommendations
Additional environmental impacts expected from the proposed development;	Overall Impact Assessment
Any direct, indirect and cumulative impacts of the proposed development;	Cumulative Impacts
The degree to which impacts, and risks can be mitigated;	Risk ratings and potential impacts
The degree to which the impacts and risks can be reversed;	Risk ratings and potential impacts
The degree to which the impacts and risks can cause loss of irreplaceable resources;	Risk ratings and potential impacts
Proposed impact management actions and impact management outcomes proposed by the specialist for inclusion in the Environmental Management Programme (EMPr);	Risk ratings and potential impacts, Overall Impact Assessment, Recommendations
A motivation must be provided if there were development footprints identified that were identified as having a "low" terrestrial biodiversity sensitivity and that were not considered appropriate;	Site verification and site condition
A substantiated statement, based on the findings of the specialist assessment, regarding the acceptability, or not, of the proposed development, if it should receive approval or not; and,	Conclusion
Any conditions to which this statement is subjected.	Recommendations; Conclusion

3.4.2 Plant Species Theme Results

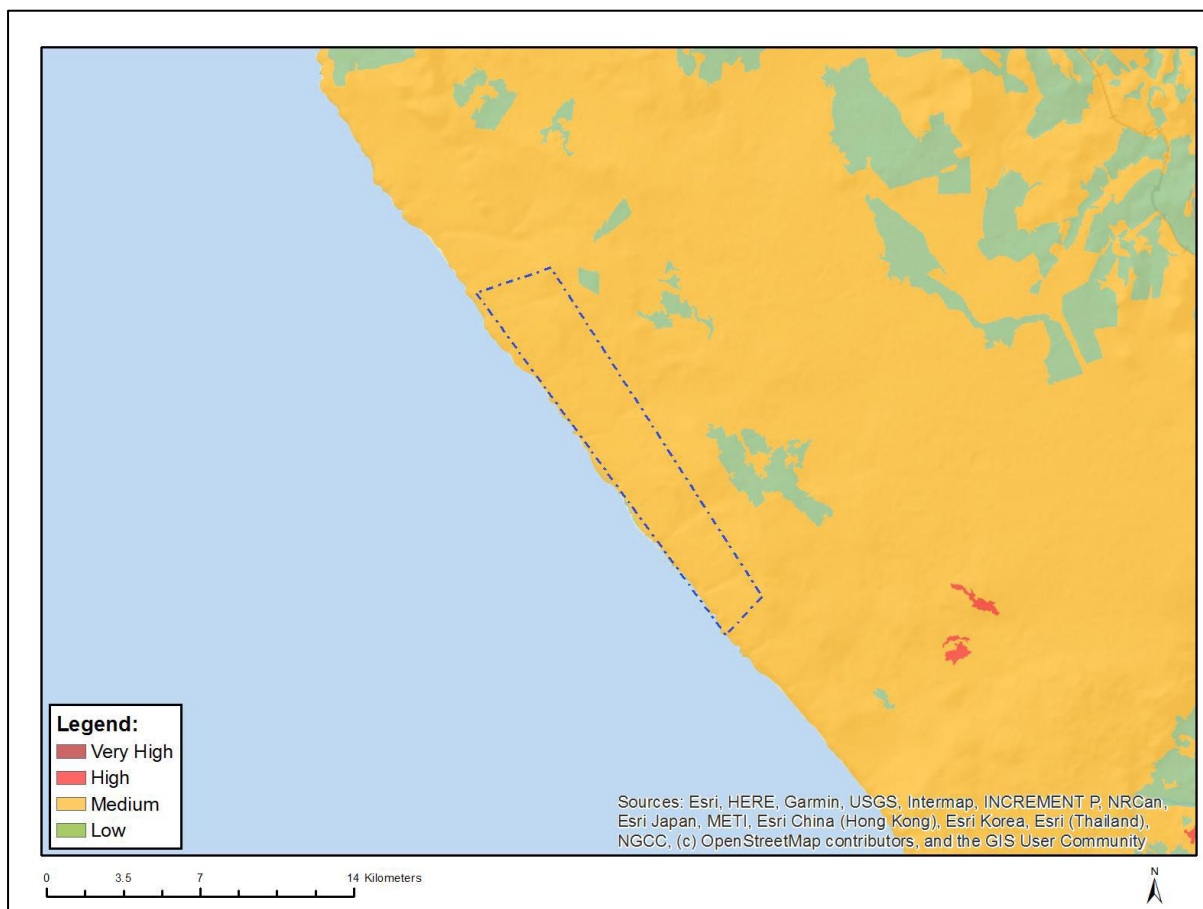


Figure 2 Plant Species Theme based on the results from the National Screening Tool Report

Based on the initial Site Sensitivity Verification (Section 6.5) undertaken by the specialist on **29 May 2023**, the Plant Species Theme sensitivity was confirmed to be of “High” sensitivity as identified by the screening tool in Figure 5. The protocols further specify that the content of the assessment and minimum report content requirements on the Plant Species Theme. The requirements are listed in the table below. The relevant section of this report is linked to each of the protocol’s minimum requirements.

Table 2 Content cross-reference checklist for specialist assessment and minimum report content requirements for Plant Species Theme Impact Assessment Report as per GN R 1150, with corresponding section names in the report.

Requirement	Section of this report
Contact details and relevant experience as well as the SACNASP registration number of the specialist preparing the assessment including a curriculum vitae;	Details of the specialist and review specialist
A signed statement of independence by the specialist;	Statement of independence - specialist
A statement on the duration, date and season of the site inspection and the relevance of the season to the outcome of the assessment;	Date and season of site visit
A description of the methodology used to undertake the site verification and impact assessment and site inspection, including equipment and modelling used, where relevant;	Methodology

Requirement	Section of this report
A description of the assumptions made and any uncertainties or gaps in knowledge or data as well as a statement of the timing and intensity of site inspection observations;	Assumptions, uncertainties, and gaps in knowledge
A description of the mean density of observations/number of samples sites per unit area of site inspection observations;	Methodology
Details of all SCC found or suspected to occur on site, ensuring sensitive species are appropriately reported;	Species of Conservation Concern
The online database name, hyperlink and record accession numbers for disseminated evidence of SCC found within the study area;	N/A
The location of areas not suitable for development and to be avoided during construction where relevant;	N/A
A discussion on the cumulative impacts;	Cumulative Impacts
Impact management actions and impact management outcomes proposed by the specialist for inclusion in the Environmental Management Programme (EMPr);	Risk ratings and potential impacts
A reasoned opinion, based on the findings of the specialist assessment, regarding the acceptability or not, of the development related to the specific theme considered, and if the development should receive approval or not, related to the specific theme being considered, and any conditions to which the opinion is subjected if relevant; and	Recommendation; Conclusion
A motivation must be provided if there were development footprints identified that were identified as having a "low" terrestrial plant species theme sensitivity and that were not considered appropriate.	Site Verification and Site Condition

During the site verification the proposed development was surveyed, and all species encountered were recorded to detect any Species of Conservation Concern (SCC) (See Section 6.4.4).

3.4.3 Animal Species Theme Results

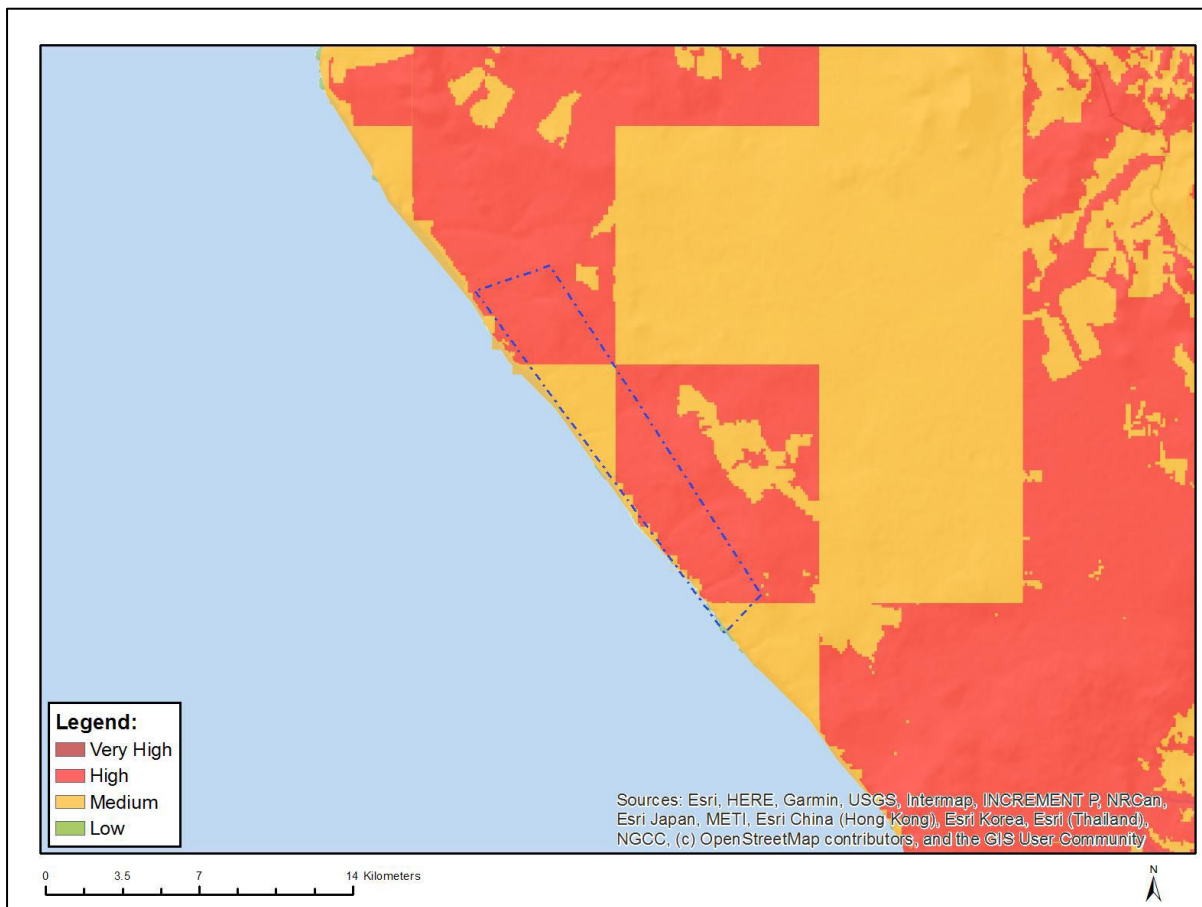


Figure 3 Animal Species Theme based on the results from the National Screening Tool Report

Based on the initial Site Sensitivity Verification (Section 6.5) undertaken by the specialist on **16 February 2022**, the Animal Species Theme sensitivity was confirmed to be of “Low” sensitivity rather than “High” as identified by the screening tool in Figure 6. Based on the aforementioned, a Compliance Statement will be necessary to assess the impacts of the proposed development footprint on the Animal Species Theme.

The protocols further specify that the content of minimum report content requirements (specific to Compliance Statements) on terrestrial animal species. The requirements are listed in the table below. The relevant section of this report is linked to each of the protocol’s minimum requirements.

Table 3 Content cross-reference checklist for specialist assessment and minimum report content requirements for Animal Species Theme Compliance Statement as per GN R 1150, with corresponding section names in the report.

Requirement	Section of this report
Contact details and relevant experience as well as the SACNASP registration number of the specialist preparing the assessment including a curriculum vitae;	Details of the specialist and review specialist
A signed statement of independence by the specialist;	Statement of independence - specialist
A statement on the duration, date and season of the site inspection and the relevance of the season to the outcome of the assessment;	Date and season of site visit

Requirement	Section of this report
A description of the methodology used to undertake the site verification and impact assessment and site inspection, including equipment and modelling used, where relevant;	Methodology
A description of the assumptions made and any uncertainties or gaps in knowledge or data as well as a statement of the timing and intensity of site inspection observations;	Assumptions, uncertainties, and gaps in knowledge
A description of the mean density of observations/number of samples sites per unit area of site inspection observations;	Methodology
Where required, proposed impact management actions and outcomes or any monitoring requirements for inclusion in the EMP;	Overall Impact Assessment
A description of the assumptions made and any uncertainties or gaps in knowledge or data; and	Assumptions, uncertainties, and gaps in knowledge
Any conditions to which the compliance statement is subjected.	Risk ratings and potential impacts

3. Methodology

4.1 Land cover, climate, and soils and geology

- Information related to land cover of the development was based on the available literature and the latest GIS data available from the Department of Environmental Affairs (Department of Environmental Affairs, 2020).
- Climate data was extracted from available literature and latest GIS data available.
- Information related to the classified Soils and Geology within the development site was based on available literature and the Environmental Potential Atlases (Department of Environmental Affairs and Tourism and University of Pretoria, 1995).

4.2 Botanical, Faunal and Terrestrial Impact Assessment

4.2.1 Vegetation and Fauna

- Vegetation types and their conservation status were extracted from the South African National Vegetation Map (Mucina and Rutherford, 2006), the 2018 National Biodiversity Assessment Synthesis Report (South African National Biodiversity Institute (SANBI), 2019) and the National List of Ecosystems that are Threatened and in Need of Protection (GN 1002 of 9 December 2012).
- A brief discussion on the vegetation type in which the study area is situated, using available literature, in order to place the study in context.
- A broad-scale map was generated of the vegetation and habitat sensitivity of the site using available GIS data and the DFFE Screening Tool.

- A list of endemic taxon species known to occur in the area was investigated prior to the site visit (Mucina and Rutherford, 2006). This list is also supplemented by the Plants of southern Africa (<http://posa.sanbi.org/sanbi/Explore>)
- Sightings from the area and surrounds extracted from the Global Biodiversity Information Facility and iNaturalist ("Global Biodiversity Information Facility," n.d.; "iNaturalist," n.d.), and the IUCN data base ("IUCN 2020," n.d.).
- Species and their Red Data Listing and Protected Status, occurring or expected to occur within the area were obtained from:
 - The DFFE Screening Tool,
 - Red List of South African Plants (Nick and Raimondo, 2007; South African National Biodiversity Institute (SANBI), 2016),
 - Nature Conservation Ordinance (No. 19 of 1974),
 - IUCN ("IUCN 2020," n.d.),
 - National Environmental Management Biodiversity Act, 2004 (Act 10 of 2004): Critically Endangered, Endangered, Vulnerable, and Protected Species List (2007, as amended),
 - Virtual databases to determine potential faunal species that may inhabit the site:
 - Atlas of African Lepidoptera
 - Southern African Bird Atlas Project 2
 - Reptile Atlas of Africa
 - Atlas of African Spiders
 - Atlas of African Scorpions
 - Frog Atlas of southern Africa
 - Virtual Museum of African Mammals,
- List of plant and faunal species recorded during the survey. Plants and animals were identified from photographs and specimens taken on site, and
- Avifauna does not form part of this assessment.

4.2.2 Sensitive areas

The Western Cape Spatial Biodiversity Plan (Pool-Stanvliet et al., 2017) was used to identify Critically Biodiverse Areas (CBAs) (Categories 1 and 2) and Ecological Support Areas (ESAs) (Categories 1 and 2) within the proposed development footprint, the proposed development property, and surrounding areas. The extent of the sensitive areas were mapped using the latest available GIS data.

4.2.3 Date and season of site visit

A site visit took place on 23 May 2023 to assess the site for the proposed development footprint. Sections of the development site were systematically chosen to be sampled. A walkthrough was done of each section, assessing environmental conditions and pictures were taken of the environment and plant species. The weather

conditions were accommodating, where clear visibility facilitated the inspection of the facility and surrounding vegetation. However, some herbaceous grasses, angiosperms and bulbs may not have been in flower during the time and season of the site visit.

4.3 Site Ecological Importance

The Site Ecological Importance (SEI) was evaluated according to the protocol outlined in the Species Environmental Assessment Guideline (2020). This protocol produces a standardised metric for identifying site-based ecological importance for species in relation to a proposed project. The SEI is a function of the biodiversity importance of a specific receptor (e.g., vegetation unit or SCC population) and its resilience to environmental impacts. The biodiversity importance is, in turn, a function of the conservation importance and functional integrity of the specific receptor.

4.4 Impacts and rating methodology

Potential impacts of the proposed project on the surrounding natural environment were identified, evaluated and rated as per the methodology described below:

The tables below indicate and explain the methodology and criteria used for the evaluation of the Environmental Risk Ratings as well as the calculation of the final Environmental Significance Ratings of the identified potential ecological impacts

Each potential environmental impact is scored for each of the Evaluation Components as per the Table 4 below.

Table 4 Scale utilised for the evaluation of the Environmental Risk Ratings.

Evaluation component	Ranking scale and description (criteria)
MAGNITUDE of negative impact (at the indicated spatial scale)	10 - Very high: Bio-physical and/or social functions and/or processes might be <i>severely</i> altered. 8 - High: Bio-physical and/or social functions and/or processes might be <i>considerably</i> altered. 6 - Medium: Bio-physical and/or social functions and/or processes might be <i>notably</i> altered. 4 - Low : Bio-physical and/or social functions and/or processes might be <i>slightly</i> altered. 2 - Very Low: Bio-physical and/or social functions and/or processes might be <i>negligibly</i> altered. 0 - Zero: Bio-physical and/or social functions and/or processes will remain <i>unaltered</i> .
MAGNITUDE of POSITIVE IMPACT (at the indicated spatial scale)	10 - Very high (positive): Bio-physical and/or social functions and/or processes might be <i>substantially</i> enhanced. 8 - High (positive): Bio-physical and/or social functions and/or processes might be <i>considerably</i> enhanced. 6 - Medium (positive): Bio-physical and/or social functions and/or processes might be <i>notably</i> enhanced. 4 - Low (positive): Bio-physical and/or social functions and/or processes might be <i>slightly</i> enhanced. 2 - Very Low (positive): Bio-physical and/or social functions and/or processes might be <i>negligibly</i> enhanced. 0 - Zero (positive): Bio-physical and/or social functions and/or processes will remain <i>unaltered</i> .

Evaluation component	Ranking scale and description (criteria)
DURATION	5 - Permanent 4 - Long term: Impact ceases after operational phase/life of the activity > 60 years. 3 - Medium term: Impact might occur during the operational phase/life of the activity – 60 years. 2 - Short term: Impact might occur during the construction phase - < 3 years. 1 - Immediate
EXTENT (or spatial scale/influence of impact)	5 - International: Beyond National boundaries. 4 - National: Beyond Provincial boundaries and within National boundaries. 3 - Regional: Beyond 5 km of the proposed development and within Provincial boundaries. 2 - Local: Within 5 km of the proposed development. 1 - Site-specific: On site or within 100 m of the site boundary. 0 - None
IRREPLACEABLE loss of resources	5 – Definite loss of irreplaceable resources. 4 – High potential for loss of irreplaceable resources. 3 – Moderate potential for loss of irreplaceable resources. 2 – Low potential for loss of irreplaceable resources. 1 – Very low potential for loss of irreplaceable resources. 0 - None
REVERSIBILITY of impact	5 – Impact cannot be reversed. 4 – Low potential that impact might be reversed. 3 – Moderate potential that impact might be reversed. 2 – High potential that impact might be reversed. 1 – Impact will be reversible. 0 – No impact.
PROBABILITY (of occurrence)	5 - Definite: >95% chance of the potential impact occurring. 4 - High probability: 75% - 95% chance of the potential impact occurring. 3 - Medium probability: 25% - 75% chance of the potential impact occurring 2 - Low probability: 5% - 25% chance of the potential impact occurring. 1 - Improbable: <5% chance of the potential impact occurring.
CUMULATIVE impacts	High: The activity is one of several similar past, present or future activities in the same geographical area, and might contribute to a very significant combined impact on the natural, cultural, and/or socio-economic resources of local, regional or national concern. Medium: The activity is one of a few similar past, present or future activities in the same geographical area, and might have a combined impact of moderate significance on the natural, cultural, and/or socio-economic resources of local, regional or national concern. Low: The activity is localised and might have a negligible cumulative impact. None: No cumulative impact on the environment.

Once the **Environmental Risk Ratings** have been evaluated for each potential ecological impact, the **Significance Score** of each potential ecological impact is calculated by using the following formula:

- **SS (Significance Score) = (magnitude + duration + extent + irreplaceable + reversibility) x probability.**

The maximum **Significance Score** value is 150.

The **Significance Score** is then used to rate the **Environmental Significance** of each potential ecological impact as per Table 5 below. The **Environmental Significance** rating process is completed for all identified potential ecological impacts both before and after implementation of the recommended mitigation measures.

Table 5 Scale used for the evaluation of the Environmental Significance Ratings.

Significance Points	Environmental Significance	Description
125 – 150	Very high (VH)	An impact of very high significance will mean that the project cannot proceed, and that impacts are irreversible, regardless of available mitigation options.
100 – 124	High (H)	An impact of high significance which could influence a decision about whether or not to proceed with the proposed project, regardless of available mitigation options.
75 – 99	Medium-high (MH)	If left unmanaged, an impact of medium-high significance could influence a decision about whether or not to proceed with a proposed project. Mitigation options should be relooked.
40 – 74	Medium (M)	If left unmanaged, an impact of moderate significance could influence a decision about whether or not to proceed with a proposed project.
<40	Low (L)	An impact of low is likely to contribute to positive decisions about whether or not to proceed with the project. It will have little real effect and is unlikely to have an influence on project design or alternative motivation.
+	Positive impact (+)	A positive impact is likely to result in a positive consequence/effect, and is likely to contribute to positive decisions about whether or not to proceed with the project.

4. Assumptions, uncertainties and gaps in knowledge

5.1 Assumptions and uncertainties

The processes of investigation which have led to the production of this report, harbours several assumptions, which include the following:

- All information provided by the applicant to the environmental specialist was correct and valid at the time that it was provided.
- Avifauna have not been included as part of this assessment.
- The proposed project footprint as provided by the applicant is correct and will not be significantly deviated from.
- Strategic level investigations undertaken by the applicant prior to the commencement of the EIA process, determined that the development site represents a potentially suitable and technically acceptable location.
- The public will receive a fair and reoccurring opportunity to participate and comment during the Environmental Authorisation (EA) application process, through the provision of adequate public participation timeframes stipulated in the EIA Regulations 2014 (as amended).
- The need and desirability of the project is based on strategic national, provincial and local plans and policies which reflect the interests of both statutory and public viewpoints.
- The EA application process is a project-level framework, and the specialists are limited to assessing the anticipated environmental impacts associated with the operational phases of the proposed project.

- Strategic level decision making is conducted through cooperative governance principles with the consideration of sustainable and responsible development principles underpinning all decision making.

Given that an EA application process involves prediction, uncertainty forms an integral part of the process. Two types of uncertainty are associated with the EA application process, namely process-related and prediction-related.

- Uncertainty of prediction is critical at the data collection phase as final certainty will only be obtained upon implementation of the proposed development. Adequate research, experience and expertise may minimise this uncertainty.
- Uncertainty of values depicts the approach assumed during the EA application process, while final certainty will be determined at the time of decision making. Enhanced communication and widespread/comprehensive coordination can lower uncertainty.
- Uncertainty of related decision relates to the interpretation and decision-making aspect of the EA application process, which shall be appeased once monitoring of the project phases is undertaken.
- The significance/importance of widespread/comprehensive consultation towards minimising the risk/possibility of omitting significant impacts is further stressed. The use of quantitative impact significance rating formulas (as utilised in this document) can further standardise the interpretation of results and limit the occurrence and scale of uncertainty.
- The initial study was undertaken as a desktop assessment and as such, the information gathered must be considered with caution, as inaccuracies and data capturing errors are often present within these databases.
- Global Positioning System (GPS) technology is inherently inaccurate and some inaccuracies due to the use of handheld GPS instrumentation may occur. If more accurate assessments are required, the relevant areas will need to be surveyed and pegged according to surveying principles.
- The risk assessment was applied on the basis that the stipulated mitigation measures in all specialist recommendations will be implemented as recommended and therefore the results presented demonstrate the impact significance of perceived impacts on the receiving environment post mitigation.

5.2 Gaps in the knowledge

The observations and findings made during the site inspection were during a specific time frame and the condition of the proposed site may vary throughout the year. Therefore, circumstances throughout the year may differ and deliver different results. The site visit was conducted in May (Winter) when many bulbs, grasses, and other angiosperms may not have been in flower. Flowering time for many South African plant species is in Spring which would have been the optimal time to conduct a site visit. The species that were observed during the site visit could be identified to species level with a relatively high degree of accuracy, despite the flowering time.

5. Results

6.1 Land cover

The land cover of the proposed site is classified as forested land and shrubland (Figure 4). The areas surrounding the proposed site are predominately natural areas or used for cultivation.

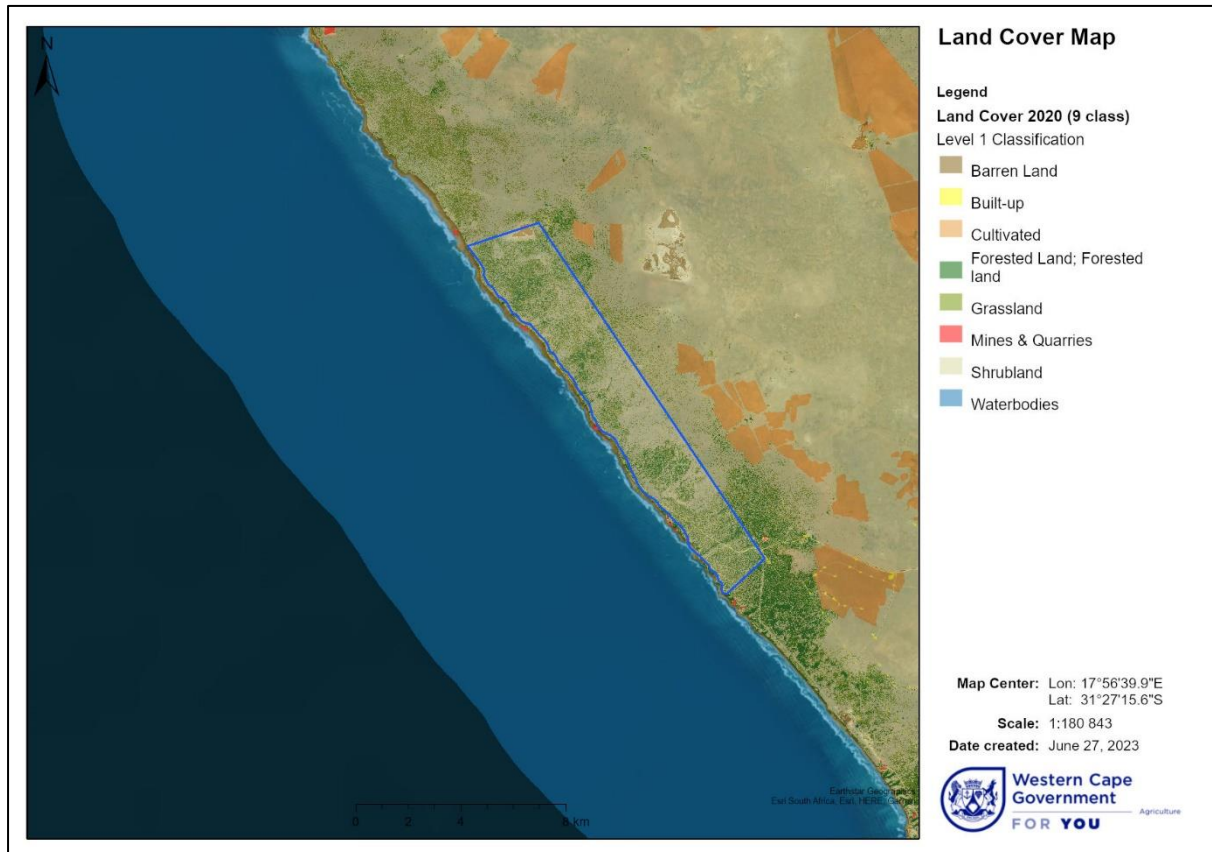


Figure 4 Landcover map of the proposed prospecting site

6.2 Climate

The climate of the proposed site is classified as Mediterranean, often experiencing hot summers that can reach up to 18.9°C in February and cold winters with minimum temperatures of 13.7°C in July. Mean annual rainfall in the area is approximately 304 mm. In terms of the dune environment, the system is driven by the predominant wind system which is a stable dominant wind from the South – South Southeast. There is very little variation in the wind pattern and the dunes show a typical dominant wind direction. The major dune sand movement will be from the S- SSE.

6.3 Soils and Geology

The soil is red-yellow apedal, freely drained soils; red and yellow, high base status, usually < 15% clay (Ah44). It consists of mainly aeolian material overlying undifferentiated granites and gneisses of the Namaqualand Metamorphic Complex as well as marine sediments (Schulze, 2009).

6.4 Botanical, Faunal and Terrestrial Impact Assessment

6.4.1 General Vegetation description

The proposed prospecting site (demarcated in blue) consists of Namaqualand Heuveltjie Strandveld and Namaqualand Inland Duneveld (Figure 8).

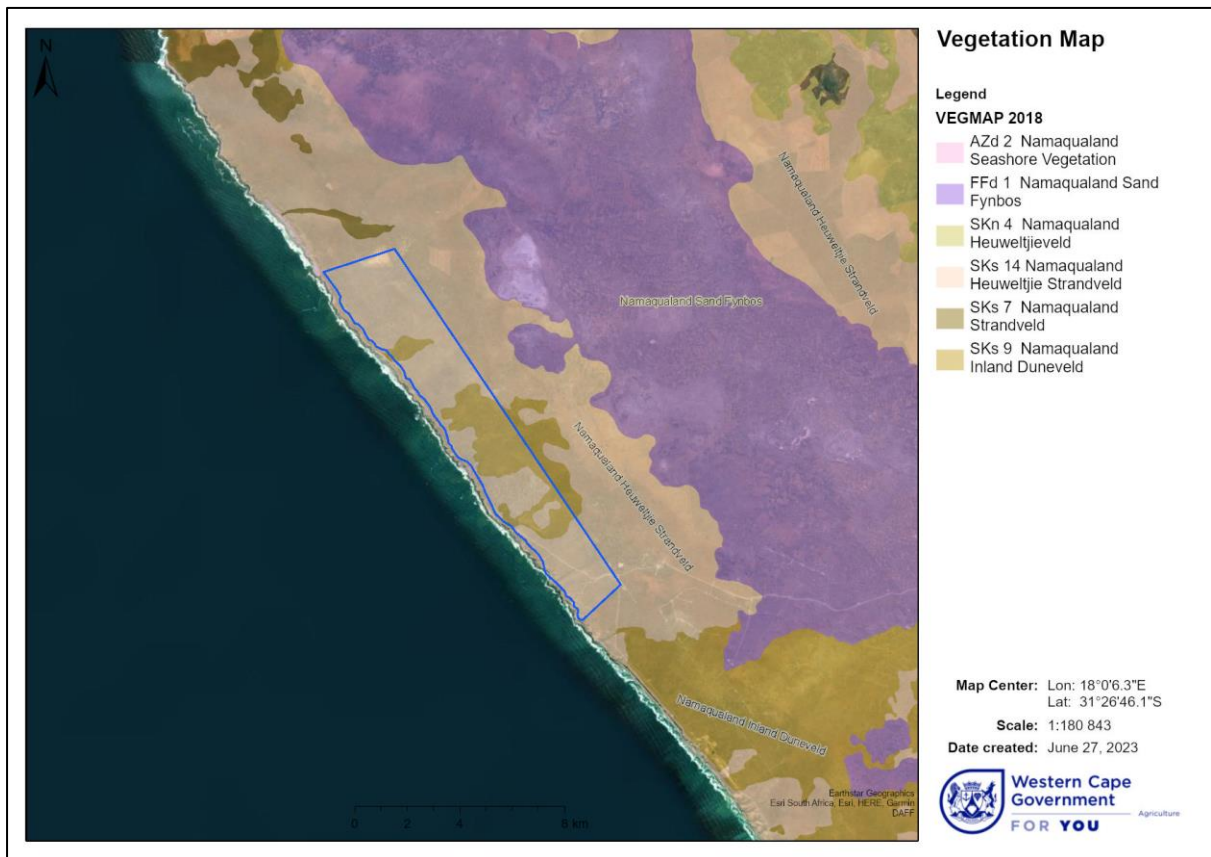


Figure 5 Vegetation types within the proposed development site (demarcated in blue)

Namaqualand Inland Duneveld

Distribution Northern Cape Province: Namaqualand Sandveld, where it occurs in two patches—one between Kotzesrus northwards to Groen River while another is located between Wallekraal and Hondeklipbaai. Altitude 60–280 m.

Vegetation & Landscape Features Coastal peneplain with mobile dunes. Vegetation is tall shrubland dominated by nonsucculent shrubs (*Berkheya*, *Eriocephalus*, *Euclea*, *Gloveria*, *Lycium*, *Rhus*, *Tetragonia*, *Tripteris*, *Zygophyllum*) as well as some grasses (*Ehrharta*) and restioids (*Willdenowia*).

Geology & Soils Quaternary aeolian, deep, loose, red to yellowish sand, forming medium (1–3 m) to high (3–6 m) dunes. Ah land type covers almost two thirds of the area, while the rest is classified as Ai land type.

Climate Arid, winter-rainfall area with MAP only 104 mm, with almost all the rainfall from May to August. Dew occurs throughout the winter. Lowest temperatures in winter just below 10°C. Hardly any incidence of frost. The highest temperatures in summer 25–30°C. See also climate diagram for SKs 9 Namaqualand Inland Duneveld (Figure 5.39).

Important Taxa Succulent Shrubs: *Othonna cylindrica* (d), *Tetragonia fruticosa*, *Zygophyllum morgsana*. Tall Shrubs: *Diospyros ramulosa*, *Euclea racemosa*, *Nylandtia spinosa*, *Rhus longispina*, *R. undulata*. Low Shrubs: *Eriocephalus racemosus* var. *affinis* (d), *Helichrysum hebelepis* (d), *Berkheya fruticosa*, *Gloveria integrifolia*, *Hermannia trifurca*, *Lebeckia sericea*, *Monechma spartioides*, *Pharnaceum incanum*, *Pteronia paniculata*, *Salvia lanceolata*, *Selago pingicula*, *Trichogyne ambigua*, *Tripteris oppositifolia*. Graminoids: *Willdenowia incurvata* (d), *Ehrharta barbinodis*, *E. calycina*, *Ficinia argyropa*.

Conservation Least threatened and none conserved in statutory conservation areas. Target 26%. No obvious transformation observed, although overgrazing and (animal) trampling can result in destabilising of the sandy substrate (on the whole erosion is still very low). Some areas are invaded by *Acacia cyclops*.

Namaqualand Heuweltjie Strandveld (SK s14)

Namaqualand Strandveld which incorporates the areas mapped as Namaqualand Heuweltjie Strandveld occurs on the coastal penneplain, associated with deep stabilised aeolian yellowish-red dunes and deep sand overlying marine sediments and granite gneisses. The vegetation consists of low species-rich shrubland dominated by erect and creeping succulent shrubs as well as non-succulent shrubs (Mucina and Rutherford 2006). It has a rich component of annual and perennial flora, producing spectacular spring displays. Mucina and Rutherford (2006) list eight endemic species for this vegetation type (*Lampranthus suavissimus*, *Tylecodon decipiens*, *T. fragilis*, *Afrolimon* sp., *Gorteria* sp. nov. *Sutera multiramosa*, *Lachenalia valeriae* and *Romulea sinispinosensis*). This is likely an underestimate and there are certainly additional species of conservation concern present as undescribed species are regularly encountered in this vegetation unit as it has not been well investigated in the past.

The vegetation type is classified as Least Concern (2018) but is provincially protected.

6.4.2 Sensitive areas

The proposed development footprint is situated in- and is surrounded by a Critical Biodiversity Area (CBA), Other Natural Areas and Aquatic Ecological Support Areas (Figure 6).

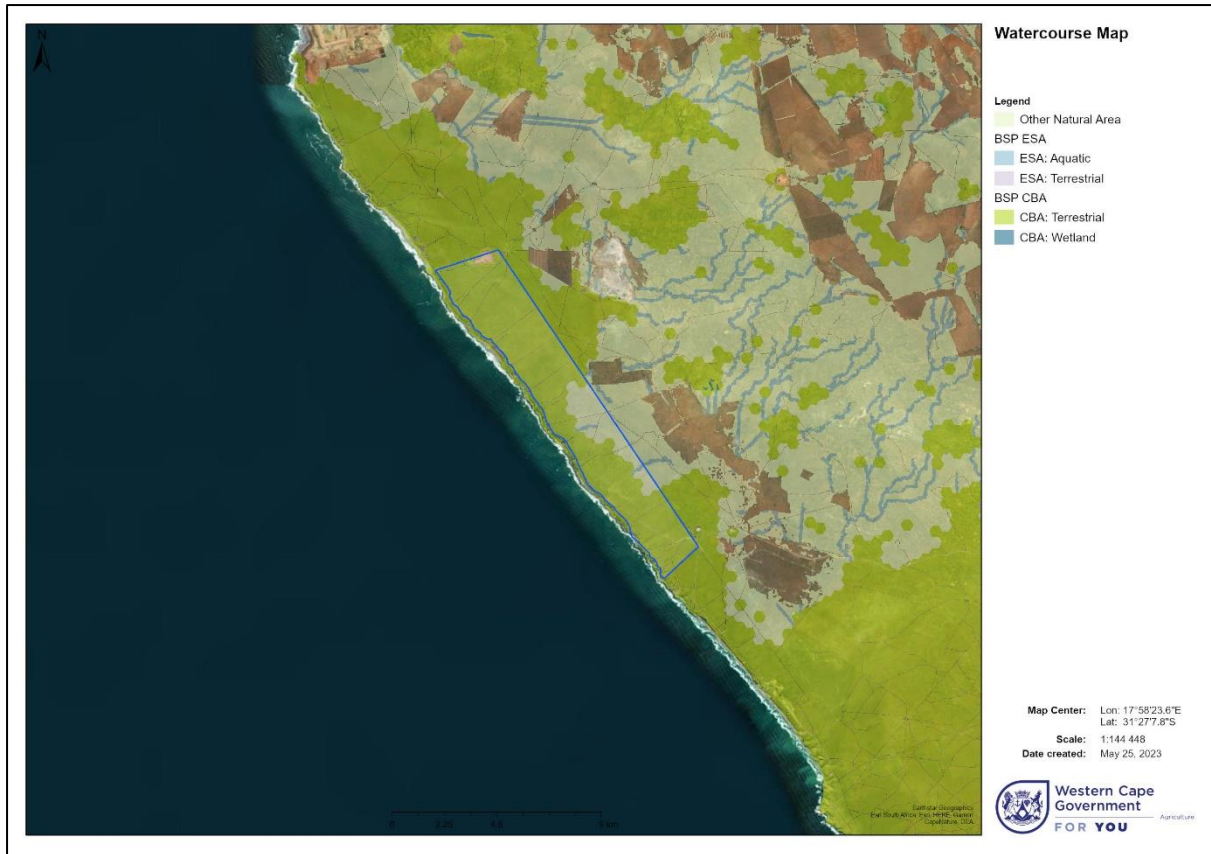


Figure 6 Sensitivity of the proposed prospecting footprint

CBA are areas of high biodiversity and ecological value. These areas are required to meet biodiversity targets for species, ecosystems or ecological processes and infrastructure. CBAs that are likely to be in a natural condition are classified as Category 1 CBAs and those that are potentially degraded or represent secondary vegetation are classified as Category 2 CBAs. Only low-impact, biodiversity-sensitive land uses are considered appropriate within CBAs (Pool-Stanvliet et al., 2017). These areas are also to be managed for biodiversity conservation purposes, restored where required and incorporated into the Protected Area network.

Ecological Support Areas (ESAs) are terrestrial and aquatic areas that are not essential for meeting biodiversity representation targets (thresholds), but which nevertheless play a vital role in supporting the ecological functioning of critical biodiversity areas and/or in delivering ecosystem services that support socio-economic development, such as water provision, flood mitigation or carbon sequestration. The degree or extent of restriction on land use and resource use in these areas may be lower than that recommended for CBAs.

Other Natural Areas are areas not currently identified as a priority but retain most of their natural character and perform a range of biodiversity and ecological infrastructure functions. Although not prioritised, they are still an important part of the natural ecosystem. The conservation targets for these areas are to minimize habitat and species loss and ensure ecosystem functionality through strategic landscape planning. There is flexibility in permissible land-uses.

Since the proposed development footprint is situated in sensitive areas identified by the Western Cape Biodiversity Spatial Plan, the footprint is considered to hold conservation importance within these sensitive areas. Nevertheless, care should be taken to avoid development in these sensitive areas to conserve their ecological importance. The state of these areas is discussed in Section 6.4.5. Note that the ESAs have been excluded from this assessment as they will be included in the Aquatic Biodiversity Assessment.

6.4.3 Site Assessment

During the site visit for the current study, the area within the proposed development site was found to be overall natural with high species diversity and cover (although evidence of grazing from sheep was evident throughout the site). For the current assessment, the site was confirmed to have the two mapped vegetation types: Namaqualand Heuweltjie Strandveld and Namaqualand Inland Duneveld.

Within Namaqualand Heuweltjie Strandveld, common and dominant species within this habitat type include *Othonna cylindrica*, *Exomis microphylla* var. *axyrioides*, *Tetragonia fruticosa*, *Asparagus capensis*, *Cephalophyllum framesii*, *Psilocaulon dinteri*, *Vanzijlia annulata*, *Galenia fruticosa*, *Phyllobolus spinuliferus*, *Rushia* sp., *Leipoldtia schultzei*, *Berkhaya fruticosa*, *Didelta carnosus* var. *carnosus*, *Euphorbia caput-medusae*, *Tripteris oppositifolia*, *Hypertelis angrae-pequenae* and *Zygophyllum morgsana*. The diversity of this plant community is quite high, but the only endemic species observed in this habitat within the site was *Hermannia* sp. nov. (*bungholensis*), which is also present in the other strandveld communities of the site. The firmer soils present here make it a preferred habitat of smaller burrow-dwelling fauna such as Meerkat which cannot maintain burrows in the sandier parts of the site.

Common and typical species associated with the Namaqualand Inland Duneveld habitat include *Stoeberia utilis*, *Zygophyllum morgsana*, *Othonna cylindrica*, *Pteronia onobromoides*, *Eriocephalus racemosus* var. *affinis*, *Exomis microphylla* var. *axyrioides*, *Tetragonia fruticosa*, *Senecio sarcoides*, *Ehrharta calycina*, *Asparagus capensis*, *Asparagus lignosus*, *Asparagus aethiopicus*, *Helichrysum hebelepis*, *Pteronia divaricata*, *Lycium ferocissimum*, *Salvia africanalutea*, *Euphorbia burmannii*, *Galenia fruticosa*, *Conicosia pugioniformis* subsp. *pugioniformis*, *Rushia* sp., *Leipoldtia schultzei*, *Mesembryanthemum crystallinum*, *Hermannia* sp. nov., *Tripteris oppositifolia* and *Pelargonium gibbosum*. This community is widespread at the site and forms the majority of the affected area.



Figure 7 Example of Namaqualand Heuweltjie Strandveld



Figure 8 Examples of Namaqualand Inland Duneveld

6.4.4 Species of conservation concern

6.4.4.1 Plant Species

Table 6 lists species of special concern as identified by the DFFE Screening Tool that are often listed in Namaqualand Dune Strandveld vegetation types and that may be potentially found in the proposed prospecting area. None of the expected species of special concern were observed during the site visit. However, the proposed footprint may provide suitable habitat for the species listed in Table 8 including, but not limited which are all species mostly associated with sandy flats/dunes.

Two additional species was recorded on the footprint *Helichrysum tricostatum* , but these individuals are in low abundance. However, various other species are likely to inhabit the area (in addition to the species in Table 6) including *Babiana thunbergia*, *Lapeirousia simulans*, *Babiana hirsuta* and *Ferraria foliosa*. These species have been recorded on the adjacent Tormin Mine footprint. Moreover, some species recorded on the footprint are also provincially protected including *Boophone haemanthoides*, *Rushia sp.*, *Cephalophyllum framesii*, *Psilocaulon dinteri*, *Vanzijlia annulata*, *Phyllobolus spinuliferus*.

The aforementioned the site sensitive from the Plant Species Environmental Theme. To avoid impact on potential habitats for the abovementioned species, the mitigation measures in Section 7 should be adhered to.

Table 6 The potential species of special concern in the proposed development as identified by the DFFE Screening Tool.

Species name	Common name	Family	Redlist status (Nick and Raimondo, 2007)	Protected Status (DFFE, 2007; "NATURE CONSERVATION ORDINANCE NO. 19 OF 1974," n.d.)	Habitat preference (Nick and Raimondo, 2007)
<i>Ruschia bipapillata</i>	N/A	AIZOACEAE	Vulnerable B1ab(iii)	Provincially Protected	Deep sandy soils
<i>Otholobium incanum</i>	N/A	FABACEAE	Endangered B1ab(iii)	Not protected	West Coast Sandveld, in calcareous soils below 120 m.
<i>Romulea lutea</i>	N/A	IRIDACEAE	Critically Endangered A3c	Not protected	Seasonally moist drainage lines and depressions.
<i>Ferraria ornata</i>	N/A	IRIDACEAE	Rare	Not protected	Deep sandy soil in strandveld near the coast.
<i>Sensitive species 1002</i>	Information is classified				
<i>Tetragonia pillansii</i>	N/A	AIZOACEAE	Vulnerable B1ab(iii)+2ab(iii)	Provincially Protected	It is found on sand flats and riverbeds near the coast.
<i>Leucoptera nodosa</i>	N/A	ASTERACEAE	Vulnerable B1ab(iii)	Not protected	Coastal dune strandveld.
<i>Oncosiphon schlechteri</i>	N/A	ASTERACEAE	Endangered B1ab(ii,iii,v)	Not protected	Seasonally wet, saline coastal sands.
<i>Sensitive species 1156</i>	Information is classified				
<i>Aspalathus obtusata</i>	N/A	FABACEAE	Vulnerable B1ab(iii)	Not protected	Rocky quartz ridges.
<i>Helichrysum dunense</i>	N/A	ASTERACEAE	Vulnerable B1ab(ii,iii,v)	Not protected	Coastal calcareous dunes.
<i>Muraltia obovata</i>	N/A	POLYGALACEAE	Vulnerable C2a(i)	Not protected	Sandy flats.

6.4.4.2 Animal Species

Table 7 lists faunal species of special concern as identified by the DFFE Screening Tool that are often listed in Namaqualand Strandveld vegetation types and that may be potentially found in the proposed development. Note that avifauna have been excluded from this assessment. None of the expected species of special concern (Table 9) were observed during the site visit. Given that the species is known at ten locations, it is unlikely that the species will be found on the footprint.

Various faunal species were directly encountered (or evidence thereof was encountered) during the site inspection in genus *Stegodyphus* (community nest spiders), *Raphicerus campestris*, *Hystrix africae australi*, *Otocyon megalotis*. Examples of evidence of faunal activity are presented in Figures 9 and 10. There is a high likelihood that other reptiles, mammals and arachnids will inhabit the area based on sighting in the immediate surrounding area (See list in the Terrestrial Impact Assessment Completed by Simon Todd, 2018 for an adjacent site). Given that there is potential habitat surrounding the footprint and that the footprint is small, any faunal species that inhabits the footprint, will likely be able to find refuge in the surrounding areas.

Table 7 The potential faunal species of special concern in the proposed development as identified by the DFFE Screening Tool.

Species name	Common name	Family	Redlist status	Protected Status	Habitat preference
<i>Brinckiella mauerbergerorum</i>	Mauerberger's Winter Katydid	ORTHOPTERA	Vulnerable	Not protected	This species is found in the Succulent Karoo biome, on succulent shrubs. The species has only been recorded in ten locations, and area and extent of its habitat are estimated to be in decline.



Figure 9 Example of burrows recorded on the development footprint.



Figure 10 Example of skeletons recorded on the development footprint.

6.4.5 Site Ecological Importance

The Site Ecological Importance (SEI) of footprint was evaluated as Medium (Table 8) for each of the habitat units. Therefore, impacts should be minimised, and restoration activities should follow disturbance. Development activities of medium impact acceptable followed by appropriate restoration activities.

Table 8 Site Ecological Importance of the different habitat units delineated within the proposed prospecting area.

Habitat	Conservation Importance	Functional Integrity	Receptor Resilience	Site Ecological Importance
Namaqualand Heuweltjie Strandveld	<p>Medium. Confirmed or highly likely occurrence of populations of NT species, threatened species (CR, EN, VU) listed under Criterion A only and which have more than 10 locations or more than 10 000 mature individuals. Presence of range-restricted species. > 50% of receptor contains natural habitat with potential to support SCC.</p>	<p>Medium</p> <p>Mostly minor current negative ecological impacts with some major impacts (e.g. established population of alien and invasive flora) and a few signs of minor past disturbance. Moderate rehabilitation potential.</p>	<p>Medium. Will recover slowly (~ more than 10 years) to restore > 75% of the original species composition and functionality of the receptor functionality, or species that have a moderate likelihood of remaining at a site even when a disturbance or impact is occurring, or species that have a moderate likelihood of returning to a site once the disturbance or impact has been removed.</p>	<p>Medium. Minimisation and restoration mitigation – development activities of medium impact acceptable followed by appropriate restoration activities.</p>
Namaqualand Inland Duneveld	<p>Medium. Confirmed or highly likely occurrence of populations of NT species, threatened species (CR, EN, VU) listed under Criterion A only and which have more than 10 locations or more than 10 000 mature individuals. Presence of range-restricted species.</p>	<p>Medium</p> <p>Mostly minor current negative ecological impacts with some major impacts (e.g. established population of alien and invasive flora) and a few signs of minor past disturbance. Moderate rehabilitation potential.</p>	<p>Medium. Will recover slowly (~ more than 10 years) to restore > 75% of the original species composition and functionality of the receptor functionality, or species that have a moderate likelihood of remaining at a site even when a disturbance or impact is occurring, or species that have a moderate likelihood of</p>	<p>Medium. Minimisation and restoration mitigation – development activities of medium impact acceptable followed by appropriate restoration activities.</p>

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	> 50% of receptor contains natural habitat with potential to support SCC.		returning to a site once the disturbance or impact has been removed.	
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6.5 Site Sensitivity Verification of the Environmental Themes

The DFFE National Screening Tool Classified the proposed development area as “Very High” sensitivity for the Terrestrial Biodiversity theme and “Medium” sensitivity for the Plant Species Theme, and “High” the Animal Species Theme.

Specific areas within the proposed development site have been classified as Critically Biodiverse Areas (CBAs) and Other Natural Areas as stipulated in the Section 6.4.2. These areas considered to be natural with high species diversity. These areas are of conservation value would perform the functions of the Other Natural Areas and Critical Biodiverse Areas. The immediate surrounding area is also in a natural condition and stretches for about 4 km north and south of the proposed prospecting footprint.

With reference to the vegetation condition, much of the vegetation units or ecosystems (as listed in Section 6.4.3) are in good ecological condition and do represent the indigenous vegetation types. These areas are expected to provide habitat to various plant species of conservation concern including those that are listed as provincially protected. Various fauna is also expected to inhabit and forage in the area, but none of these are expected to be conservation concern besides the various tortoise species that would be found on the site.

Based on the abovementioned site verification, the development footprint has been confirmed to be classified as “Very High” for the Terrestrial Biodiversity Theme and “Medium” for the Plant Species Theme, and “Low” for the Animal Species Theme.

6. Overall impact assessment

The following section provides descriptions of the potential ecological impacts which the proposed project will have as well as the recommended mitigation measures to be implemented for each impact as identified below.

7.1 Site establishment and drill operations phase impacts

Destruction of Indigenous Vegetation

Indigenous vegetation loss will occur during the site establishment and construction phase. In areas that are natural and largely undisturbed, there is likely good ecosystem functioning and the vegetation does represent the indigenous vegetation type.

Mitigation measures to reduce potential impacts:

- The project footprint must be demarcated before construction starts.
- All areas disturbed outside of the prospecting drill areas must be rehabilitated according to a rehabilitation plan or method statement (to be compiled by a Botanical Specialist)
- All laydown areas must be confined to already disturbed areas.

- Drilling should be done in stages to allow for rehabilitation measures to be implemented at disturbed sites.
- Disturbance of areas outside of the footprint is strictly prohibited.
- Movement of vehicles and personnel should be restricted to the already developed informal roads to limit trampling of indigenous species and prevent disturbance to the surrounding vegetation.
- All stockpile areas must be restricted to areas already disturbed.
- Stockpiles on vegetation not earmarked for development is strictly prohibited.

Impact on Listed or Protected Plant Species

Species of conservation concern were found within the development site. Based on the habitat requirements of potential species that can be found within the development footprint, the footprint may be a potential habitat for several species of conservation concern. It is recommended that a search and rescue operations be conducted prior to commencement of the project during the spring (July-November) when most species in the vegetation will be in flower. This will ensure that the risk of Red Data Listed species being impacted will be mitigated or avoided.

Mitigation measures to reduce potential impacts:

- A search and rescue operations must be conducted prior to commencement of the drilling during the flowering period (July-November) of herbs, succulents, and grasses. This will ensure that no provincially protected or threatened species have potentially been missed.
- Should any threatened species be located within the footprint, these must be translocated to a suitable location outside of the footprint.
 - Translocation methodology and suitable areas must be detailed in a Translocation Method Statement compiled by an Environmental Compliance Officer. This method statement must be reviewed and signed-off by a Botanical Specialist.
- Should any protected or threatened species be removed from the footprint, a Plant Removal Permit must be obtained from Cape Nature prior to any being removed.
- An Ordinance Plant Removal Permit must be obtained for the removal of provincially protected species.
- No plants may be removed that have not been specifically earmarked as part of the demarcated footprint.
- Construction, movement of personnel and vehicles must be restricted to the development footprint.
- Should any areas be disturbed outside of the development footprint, these areas must be rehabilitated via a Rehabilitation Plan or Method Statement
- All laydown areas must be confined to already disturbed areas.
- All construction personnel must be subjected to awareness training to make the personnel aware of the mitigation measures as stipulated above.

Impact on Faunal Species

Some faunal species were observed on the footprint. However, these species are not expected to be threatened or protected. It is expected that these species will be able to find refuge in areas adjacent to the footprint should the habitat in the footprint be lost. Other species are expected to utilise the area, but would be able to find refuge outside of the drilling footprints.

Mitigation measures to reduce potential impacts:

- No animals may be hunted, trapped, or captured.
- Search and Rescue operation should occur before the construction works begin to ensure that any slow moving or burrowing species (such as moles, chameleons, snakes or tortoises) would be moved to adjacent suitable habitats by a qualified Faunal Specialist.
- Vehicles should be restricted to a clearly demarcated area and drivers should be vigilant.
- A speed limit of 20km per hour should apply to the roads on site to reduce the chance of road fatalities.
- Avoidance of all vegetated systems in the surrounding area.
- Drilling should be done in stages to avoid significant impact on fauna species.
- All personnel should attend an environmental induction which includes awareness raising around the illegal collection of fauna and flora.
- Loud signing is prohibited.
- All machinery must be fitted with noise silencers.
- Emergency numbers for all animal related incidents must be clearly displayed in the offices.
- The Environmental Officer must be a trained snake handler.
- No feeding of any fauna is allowed.
- All laydown areas must be confined to already disturbed areas.
- Should any protected species need to be translocated, a permit must be obtained from the relevant authority.

Alien Invasive Species Establishment

Areas within and around the proposed project footprint are prone to establishment of alien invasive species due to disturbances caused by construction activities. Considering that the proposed development footprint and surrounds consists of indigenous vegetation and Critical Biodiversity Area/ Other Natura; Area, spreading of alien invasive species into surrounding areas would have a negative impact. Soil stored seedbanks could also persist in the topsoil stockpiles and thus provide a stepway for the spread and persistence of alien invasive species in the landscape.

Mitigation measures to reduce potential impacts:

- Implement suitable alien invasive species establishment prevention measures during the excavation phase such as proper storage, transport and disposal of plant material and minimizing disturbance to the area surrounding the development footprint.

- Impacted areas must be adequately rehabilitated to prevent significant alien invasive species establishment.
- The project footprint and surroundings should be monitored during the initial construction period for alien invasive species, and annually for the lifetime of the fence and road and managed according to each species during the operational phase.
- Any detected alien invasive species should be controlled using the appropriate methods and removed plant material should be properly handled and disposed of to prevent the spread and propagation of alien invasive species.
- An alien invasive species management plan must be compiled for the proposed development area to ensure that the spread of alien invasive species will be controlled.
- Care should be taken to remove any biological material from equipment, personnel clothing and gear before entering and when leaving the work site to prevent the spread and establishment of alien invasive species.
- Topsoil must be monitored bi-weekly by the designated Environmental Officer on site to detect the emergence of any alien invasive species.

Damage to sensitive habitats

The footprint lies within a CBA and Other Natural Area. Most areas mapped as a CBA within the development footprint do have good ecological functioning and the surrounding areas are of conservation importance.

Mitigation measures to reduce potential impacts:

- Construction activities, movement of personnel and vehicles must be restricted to the informal pathways, areas already transformed, and the development footprint.
- Waste management mitigation measures must be strictly adhered to.
- Areas around the footprint that fall within a CBA or Other Natural Area must be adequately rehabilitated if exposed to any disturbance.
- Drilling should be done in stages to allow for rehabilitation measures to be implemented at disturbed sites.
- Areas within the Critical Biodiverse Areas must be avoided as far as practically possible

Dust generation and emissions

The construction/drilling activities of the proposed project could potentially result in significant fugitive dust emissions, due to excavations and vegetation removal, which could spread into the surrounding areas. Due to the remote location of the proposed development, the significance of this potential impact will however be low and only temporary.

Mitigation measures to reduce potential impacts:

- Implement suitable dust management and prevention measures during the initial excavation phase.
- Areas around the proposed development footprint must be adequately rehabilitated to prevent significant dust emissions

Changing local fire regime from wildfires

Increased fire occurrences may encourage the invasion of alien invasive species and smaller shrubs and discourage the growth of larger, slower growing trees. Alterations in the species composition or plant guild (group of species that exploit the same resources, or that exploit different resources in related ways e.g., pollination strategy) composition of Strandveld vegetation types may negatively impact the ecological functioning of the area. Due to the proximity of the proposed development to natural vegetation, the potential risk of a veld fire is high.

Mitigation measures to reduce potential impacts:

- No open fires are permitted within or around the proposed development site.
- Smoking should only take place in designated areas away from the natural vegetation and cigarette buds must be disposed of properly in an ashtray.
- At least one (1) construction personnel must be trained in firefighting and the remaining personnel should be briefed on the emergency procedures during a veld fire.
- Fire extinguishers should be present within vehicles and on site.
- The emergency contact details of the local firefighting department should be present at the Transnet office.
- If a construction camp will be erected, emergency contact details and fire extinguishers must be at the camp offices.
- All personnel must be made aware of the above-mentioned mitigation measures.

Waste Management

The establishment and construction of the facilities poses a pollution risk to the environment, should any general and hazardous waste generated be improperly disposed of.

Mitigation measures to reduce potential impacts:

- Littering is strictly prohibited
- All waste must be taken back to the site offices and disposed of correctly in waste bins.
- Any hazardous waste such as fuel must be stored at a warehouse, in a bunded area, at the site offices.
- No refuelling of vehicles is allowed on site.
- Hazardous waste produced by works must be disposed of at a registered waste facility.
- All rubble must be removed from the site and disposed of at a registered waste facility.
- Rubble must be stored in skips and in already disturbed footprints.

7.2 Decommissioning phase impacts

Positive Impact of Rehabilitation

A positive impact on the environment is possible if the footprint is suitably rehabilitated and restored to host a structure, composition, and ecological functioning similar to the surrounding vegetation after decommissioning.

- Rehabilitation must be completed via a Rehabilitation Method Statement which should be compiled by a Rehabilitation Specialist.
- Clear and completely remove all structures and temporary infrastructure in areas not identified as part of the development footprint.
- Remove all inert waste and rubble, such as excess rock, and remaining aggregates. Only once this material has been removed, the disturbed surrounding areas shall be re-instated and rehabilitated.
- The replacement of topsoil in areas surrounding the development footprint should be sought in situ immediately after the disturbance.
- All stockpiled topsoil together with herbaceous vegetation should be replaced and redistributed over disturbed areas such as temporary access roads.
- Topsoil must be returned to the same site from where it was stripped.
- When insufficient topsoil remains, soil of a similar quality can be obtained from a nearby area within the area which was disturbed.
- All re-growth of invasive vegetative material must be monitored by the Applicant during the decommissioning phase of the development.
- All areas under rehabilitation are to be treated as no-go areas using danger tape and steel droppers/fencing and cordoned off, to prevent vehicular, pedestrian and livestock access.
- Active alien invasive plant control measures must be implemented to prevent invasion by exotic and alien vegetation within the disturbed area.
- Rehabilitation structures must be inspected regularly for the accumulation of debris, blockages, instabilities, and erosion with concomitant remedial and maintenance actions.

7. Cumulative impacts

The area surrounding the proposed development footprint is adjacent to natural vegetation and cultivated areas. Therefore, the proposed prospecting works will contribute cumulatively to the removal of a natural vegetation types, sections of a CBA, potential habitat loss for Species of Conservation Concern, and habitat for faunal species. Although the proposed project will result in the removal of indigenous vegetation within an CBA, the development is small. The overall cumulative impact will thus be low given the current site conditions and immediate surrounding site conditions.

8. Recommendation

Most of the prospecting footprint is in good ecological condition and represents the indigenous vegetation types. These are likely to contribute to the overall ecological functioning of the area. These areas are also of conservation importance given that they are classified as a Critical Biodiverse Area/Other Natural Area. In addition, some species of conservation were recorded in the prospecting footprint and the area is likely to provide habitat for those species (as identified by the DFFE Screening Tool) not observed during the site inspection. It must also be noted that various provincially protected species were recorded on the footprint (not identified by the Screening Tool). For the aforementioned species, a Plant Removal Permit must be applied for before they can be removed. It is recommended that search and rescue operations be conducted prior to construction to ensure that all SCC's are properly translocated to suitable alternative habitats.

No animal species of conservation concern were recorded on the development footprint. However common, non-threatened species are likely to inhabit the footprint and immediate surrounds. Given that area surrounding the development footprint is natural and mostly undisturbed, any faunal species that are found on the development footprint would be able to find refuge outside of the footprint.

If all mitigation measures are implemented, the likelihood of significant impacts occurring, and the consequence of the impacts are significantly reduced to acceptable levels (see risk ratings and potential impacts). All risk, their ratings and specific mitigation measures can be viewed in Risk ratings and potential impacts section below. The proposed drilling poses a low risk to the sensitive areas if the mitigation measures and recommendations are implemented. Therefore, it is deemed acceptable that the prospecting works be approved.

9. Risk ratings and potential impacts

Table 9 Environmental significant risk rating of the proposed works.

Project activity	Potential environmental impact/ Nature of impact	Environmental significance																	
		Before mitigation							After mitigation										
		Magnitude	Duration	Extent	Irreplaceability	Reversibility	Probability	Total (SP)	Significances	Cumulative	Magnitude	Duration	Extent	Irreplaceability	Reversibility	Probability	Total (SP)	Significances	Cumulative
Project activity		Site establishment and initial construction phase impacts																	
PROPOSED PROSPECTING MINING RIGHT APPLICATION FOR KLIPVLEY KAROO KOP 153, WESTERN CAPE PROVINCE	Destruction of Indigenous Vegetation	4	5	2	2	4	5	95	Medium High	Medium	2	2	1	1	1	2	14	Low	Low
	Impacts on Listed or Protected Plant Species	4	5	2	2	4	3	51	Medium	Low	0	2	0	0	0	2	4	Low	Low
	Impact on Faunal Species	4	5	2	2	4	3	51	Medium	Low	2	2	1	2	2	2	11	Low	Low
	Alien Invasive Species Establishment	6	4	1	3	3	3	51	Medium	Medium	2	4	1	1	1	2	18	Low	Low
	Damage to sensitive habitats	4	5	2	2	4	5	95	Medium High	Low	2	3	1	0	1	2	14	Low	Low
	Dust generation and emissions	4	3	2	2	4	3	45	Medium	-	2	3	2	1	1	3	27	Low	Low
	Changing local fire regime from wildfires	6	3	2	3	4	4	72	Medium	-	2	3	1	2	2	2	20	Low	-
	Waste management	4	2	1	2	2	3	33	Low	Low	2	3	1	1	3	24	Low	Low	
Project activity		Decommissioning phase impacts																	

Project activity	Potential environmental impact/ Nature of impact	Environmental significance																	
		Before mitigation							After mitigation										
		Magnitude	Duration	Extent	Irreplaceability	Reversibility	Probability	Total (SP)	Significances	Cumulative	Magnitude	Duration	Extent	Irreplaceability	Reversibility	Probability	Total (SP)	Significances	Cumulative
PROPOSED PROSPECTING MINING RIGHT APPLICATION FOR KLIPVLEY KAROO KOP 153, WESTERN CAPE PROVINCE	Positive Impact of Rehabilitation	4	5	1	2	3	2	30	Low (+)	-	2	2	1	1	1	2	14	Low (+)	-

10. Conclusion

If all mitigation measures are implemented, the likelihood of significant ecological impacts occurring within the ecosystems, found within the development site, will be reduced to acceptable low levels. The specific footprints of the drill sites are not likely to generate a significant impact on broad scale ecological processes or landscape connectivity, on condition that all mitigation measures are followed. It is thus recommended that the proposed EA application be approved from an Animal Species, Plant Species, and Terrestrial Biodiversity Theme perspective provided that all mitigation measures are implemented.

11. References

- Department of Environmental Affairs, 2018. Land Cover 73-class raster layer.
- Department of Environmental Affairs and Tourism, University of Pretoria, 1995. ENPAT: Environmental Potential Atlases : User's Reference and Database Guides, 3rd ed. Department of Environmental Affairs and Tourism.
- DFFE, 2007. NATIONAL ENVIRONMENTAL MANAGEMENT: BIODIVERSITY ACT, 2004 (ACT 10 of 2004): PUBLICATION OF LISTS OF CRITICALLY ENDANGERED, ENDANGERED, VULNERABLE AND PROTECTED SPECIES.
- Global Biodiversity Information Facility [WWW Document], n.d. URL <https://www.gbif.org/>
- iNaturalist [WWW Document], n.d. URL <https://www.inaturalist.org>
- IUCN 2020 [WWW Document], n.d. . The IUCN Red List of Threatened Species. Version 2019-3. URL <https://www.iucnredlist.org> (accessed 7.29.20).
- Mucina, L., Rutherford, M.C., 2006. The vegetation of South Africa, Lesotho and Swaziland, Strelizia. South African National Biodiversity Institute, Pretoria.
- NATURE CONSERVATION ORDINANCE NO. 19 OF 1974, n.d.
- Nick, N.A., Raimondo, D., 2007. National Assessment: Red List of South African Plants version 2020.1. [WWW Document].
- Pool-Stanvliet, R., Duffell-Canham, A., Smart, R., 2017. The Western Cape Biodiversity Spatial Plan Handbook. CapeNature., Stellenbosch.
- Schulze, R.E., 2009. South African atlas of agrohydrology and climatology.
- South African National Biodiversity Institute (SANBI), 2019. National Biodiversity Assessment 2018: The status of South Africa's ecosystems and biodiversity, Synthesis Report. South African National Biodiversity Institute, an entity of the Department of Environment, Forestry and Fisheries, Pretoria.
- South African National Biodiversity Institute (SANBI), 2016. Botanical Database of Southern Africa (BODATSA) [dataset] [WWW Document].

13. Appendixes

Appendix A - Specialist CVs.

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Appendix A

Curriculum Vitae of specialist

Name:	Megan
Surname:	Smith
Highest qualification:	MSc Biological Sciences (UCT)
South African Association of Botanists	Ordinary member since 2020
Botanical Society of southern Africa	No. 80495
IAIAsa membership	No. 6459
EAPASA Registration	2020/2855 (Candidate EAP)
SACNASP Registration	130295 (Pr.Nat.Sci) – Ecological Science
Years' experience conducting botanical/ecological related works in the Cape Floristic Region	>6 years

RELEVANT QUALIFICATIONS AND TRAINING

- MSc Biological Sciences (UCT): Specialising in Plant Ecology
- BSc Hons Botany (NMU)
- BSc Environmental Sciences (NMU)
- Scientific writing training led by Dr Pippin Anderson (August 2019)
- Fynbos plant identification training (July 2019)
- CDM calibration training by Renew Technologies (August 2020)
- ISO 14001:2015 Lead auditor training by SACAS (March 2021)
- Hydroponology and wetland delineation course led by WETrust and digital Soils Africa (September 2021)

WORK EXPERIENCE

- March 2015 – September 2016: Research assistant determining sustainable cultivation practices of Honeybush (*Cyclopia* spp.) at NMU
- March 2019 – April 2020: Restoration Ecology and Conservation Planning intern at SANBI
- March 2019- December 2021: Lead several Fynbos Identification courses for amateur botanists
- April 2020 – current: Ecological specialist and legal assistant at Enviroworks
- November 2022 – Current: Lead of Ecological Specialist Services at Enviroworks

PUBLISHED ARTICLES:

- Smith, M., Rebelo, A.G. 2020. The Amazing Nature Race. Veld and Flora 106: 16-21.
- Smith, M., Rebelo, A., Rebelo, A.G. 2020. Passive restoration of Critically Endangered Cape Flats Sand Fynbos at lower Tokai Park section of Table Mountain National Park, Cape Town. ReStory
- Smith, M., Rebelo, A., Rebelo, A.G. 2020. Saving Critically Endangered Peninsula Granite Fynbos from extinction at Tokai Park, Cape Town. ReStory.
- Smith, M., Rebelo, A.G. 2020. iNaturalist: your portal into nature and becoming a citizen scientist. African Wildlife and Environment 75.

BASIC ASSESSMENT/ FULL SCOPING AND EIA PROCESS

- The proposed development of a thirty-five metre (35m) telecommunication base station and associated infrastructure on Portion 42 of Farm 428, Plettenberg Bay, Western Cape Province, SBA Towers South Africa.
- The proposed development of a twenty-five metre (25m) telecommunication base station and associated infrastructure on Lorraine Farm, the Remainder of Farm 790, Phillipi Western Cape Province, SBA Towers South Africa.
- The proposed development of a desalination or reverse osmosis plant, Tormin Mine, Western Cape Province, Mineral Sands Resources
- Proposed expansion of chicken houses from approximately 30 000 to 60 000 chickens, Bulhoek Farm, near Swartruggens, Northwest Province, Quantum Foods.
- Proposed expansion of the Samrand Data Centre, African Data Centres.
- Proposed development of the Lendlovu Lodge, Addo Elephant Park, Eastern Cape Province, SANParks (in progress).
- Proposed Development of One Hundred and Fifty Metres (150m) Fence And Associated Four Hundred Metres (400m) Access Road, Saldanha Port, Western Cape Province, Transnet Ports Authority.

WATER USE LICENSE APPLICATION

- Proposed expansion of chicken houses from approximately 30 000 to 60 000 chickens, Bulhoek Farm, near Swartruggens, Northwest Province, Quantum Foods (in progress).
- Proposed development of a community hall and associated parking lot on erven 4978 & erven 4979 on a portion of Portion 6 of the Remaining Extent (Re) of the Farm Selosesha Townlands No. 900, Thaba 'Nchu, Free State Province, Mission Point (in progress).

ENVIRONMENTAL MANAGEMENT PLANS

- The proposed development of a thirty-five metre (35m) telecommunication base station and associated infrastructure on Portion 42 of Farm 428, Plettenberg Bay, Western Cape Province, SBA Towers South Africa.
- The proposed development of a twenty-five metre (25m) telecommunication base station and associated infrastructure on Lorraine Farm, the Remainder of Farm 790, Phillipi Western Cape Province, SBA Towers South Africa.
- The proposed development of a desalination or reverse osmosis plant, Tormin Mine, Western Cape Province, Mineral Sands Resources
- Proposed expansion of chicken houses from approximately 30 000 to 60 000 chickens, Bulhoek Farm, near Swartruggens, Northwest Province, Quantum Foods.
- Proposed development of the Lendlovu Lodge, Addo Elephant Park, Eastern Cape Province, SANParks (in progress).
- Proposed Development of One Hundred and Fifty Metres (150m) Fence and Associated Four Hundred Metres (400m) Access Road, Saldanha Port, Western Cape Province, Transnet Ports Authority
- Proposed expansion of the Samrand Data Centre, African Data Centres.

BOTANICAL, FAUNAL, AND TERRESTRIAL IMPACT STUDIES

- Botanical Impact Assessment: Rezoning and the development of fifteen (15) resort units on Portion 12 of the Farm Riet Valley no. 452, Hessequa Local Municipality, Western Cape Province (Faunal Compliance Statement and Botanical Impact Assessment), Hessequa Municipality.

- Botanical survey and delineation of sensitive areas for the proposed development of a six-point three kilometre (6.3km) long pipeline along Macassar Road, Macassar, Cape Town, Western Cape Province, BVi Consulting Engineers Western Cape.
- Botanical, Faunal and Terrestrial Biodiversity Compliance Statement; Proposed expansion of chicken houses from approximately 30 000 to 60 000 chickens, Bulhoek Farm, near Swartruggens, Northwest Province, Quantum Foods.
- Protected Tree and Animal Species Survey: Ramatlabama Poultry Farm, Mahikeng, Northwest Province, Supreme Poultry (in progress).
- Botanical, Terrestrial and Faunal Compliance Statement: Proposed development of a Battery Energy Storage Facility, Ashton, Western Cape Province.
- Botanical and Faunal Site Sensitivity: Proposed housing development on Erven 2244 & 2245; Private Landowner.
- Botanical, Faunal, and Terrestrial Impact Assessment: Proposed sand mining permit on Erf 656, Schaap Kraal, located in the Wynberg Magisterial District, Atlantic Sands.
- Plant Species, Terrestrial Biodiversity Theme and Faunal Species Site Verification: Proposed Photovoltaic Solar Energy Facilities (PEFS) And Grid Connections Near Welkom, Free State Province: Khauta Solar PV Cluster, WKN Windcurrent SA
- Plant Species, Terrestrial Biodiversity Theme and Faunal Species Impact Assessment (Including a Dune Impact Assessment): Proposed Development of One Hundred and Fifty Metres (150m) Fence and Associated Four Hundred Metres (400m) Access Road, Saldanha Port, Western Cape Province, Transnet Ports Authority.
- Plant Species, Terrestrial Biodiversity Theme and Faunal Species Scoping Report, Proposed Mixed-Use Development on Farm 820, Bot River, Western Cape Province, Wildekrans Estate
- Plant Species, Terrestrial Biodiversity Theme and Faunal Species Theme Compliance Statement: S24g Environmental Rectification for The Operation of Facilities For The Treatment Of Wastewater With A Daily Throughput Of 4200 Cubic Meters, Moedi Engineers.
- Plant Species, Terrestrial Biodiversity Theme and Faunal Species Theme Compliance Statement: Proposed Upgrades To The Geelbek Restaurant, West Coast National Park, Langebaan, SANParks.
- Plant Species, Animal Species and Terrestrial Biodiversity Theme Compliance Statement: Proposed Prospecting Right Application for Four Drill Holes, Vorstershoop, North West.
- Threatened Species Survey and Plant Removal Permit Application: Proposed Development of One Hundred and Fifty Metres (150m) Fence And Associated Four Hundred Metres (400m) Access Road, Saldanha Port, Western Cape Province, Transnet Ports Authority.

REHABILITATION IMPLEMENTATION PLANS

- Protocols for restoring Critically Endangered Cape Flats Sand Fynbos within lower Tokai Park, Cape Town, South African National Biodiversity Institute.
- Proposed development of a six-point three kilometre (6.3km) long pipeline along Macassar Road, Macassar, Cape Town, Western Cape Province, BVi Consulting Engineers Western Cape.
- Rehabilitation implementation plan for Tormin Mine, Western Cape Province, Mineral Sands Resources
- Overseeing rehabilitation works and compilation of quarterly monitoring reports and annual updates of the rehabilitation plan: Tormin Mine, Western Cape Province, Mineral Sands Resources (in progress)
- Rehabilitation Method Statement for 132 kV and 33 kV transmission lines, transmission substation, cabling line trenches, and access roads on Roggeveld Wind Farm, Western Cape, Raubex Infra.
- Reseeding Method Statement: 132 kV and 33 kV transmission lines, transmission substation, cabling line trenches, and access roads on Roggeveld Wind Farm, Western Cape, Raubex Infra.
- Reseeding training: Roggeveld Wind Farm, Western Cape, Raubex Infra.

- Rehabilitation Method Statement for Areas Disturbed by The Buffer Yard And Lay Down Area on Roggeveld Wind Farm, Raubex Infra.
- Overseeing rehabilitation works and compilation of quarterly monitoring reports: Roggeveld Wind Farm, Western Cape Province, Raubex Infra (in progress).
- Environmental Rehabilitation Plan for All the Areas Affected by The Continuous Spillage of Raw Sewage In and Around Upington, Dawid Kruiper Municipality, Northern Cape Province, Stabilis Environmental On Behalf Of Dawid Kruiper Municipality.
- Rehabilitation Plan Proposed Upgrade of The Bayside Stormwater Canal, Tableview, Cape Town, Western Cape Province, BVi Consulting Engineers
- Rehabilitation Plan and Aquatic Impact Assessment for All the Areas Affected by The Spillage of Raw Sewage, Caledon, Theewaterskloof Municipality (In progress).
- Rehabilitation Plan: Illegal Clearance of More Than 1 Hectare/300 m² Of Indigenous Vegetation at Farmall Agricultural Holding, Fourways, City of Johannesburg Metropolitan Municipality, Life Co.
- Rehabilitation Plan: Residential development on portion 205 of Farm 559, Hangklip, Western Cape Province, private landowner (in progress)

WETLAND DELINEATION AND SECTION 21 (C) & (I) RISK MATRIXES

- Wetland Delineation and Section 21 (c) and (i) risk matrix: Residential development on portion 205 of Farm 559, Hangklip, Western Cape Province, private landowner.
- Freshwater Impact Assessment: Proposed development of a community hall and associated parking lot on erven 4978 & erven 4979 on a portion of Portion 6 of the Remaining Extent (Re) of the Farm Selosesha Townlands No. 900, Thaba 'Nchu, Free State Province, Mission Point.
- Wetland Delineation and Section 21 (c) and (i) risk matrix: Proposed Residential Development on Remainder of Erf 4413, Betty's Bay Western Cape Province, private landowner.
- Freshwater Impact Assessment: Proposed Development of The R300/Bottlery Road Cabling Route, City Of Cape Town, Western Cape Province, Element Consulting on behalf of City of Cape Town.
- Watercourse verification and Section 21 (c) and (i) risk matrix: Proposed housing development on Erven 2244 & 2245; Private Landowner.
- Aquatic Biodiversity Theme Compliance Statement and Section (c) and (i) Risk Matrix: The Proposed Development of a Twenty-Five Metre (25m) Monopole Telecommunications Mast on Portion 1 Of The Farm No. 1248, Sonop Primary School, Western Cape, SBA Towers.
- Aquatic Biodiversity Theme Compliance Statements and Section 21 (c) and (i) risk matrix: S24g Environmental Rectification for The Operation Of Facilities For The Treatment Of Wastewater With A Daily Throughput Of 4200 Cubic Meters, Moedi Engineers (Itsoseng, Itekeng, Coligny, and Lichtenburg) (in progress).
- Aquatic Biodiversity Theme Compliance Statement: Proposed Prospecting Right Application for Four Drill Holes, Vorstershoop, North West.
- Aquatic Biodiversity Compliance Statement and Section 21 (c) and (i) risk matrix: Proposed Development of gravity outflow pipelines and oxidation ponds, Schweizer Reneke, North West Province.
- Aquatic Biodiversity Theme Impact Assessment and Section 21 (c) and (i) risk matrix: The Proposed Cultivation Of 19,8 Ha Pomegranate Farming on The Remainder Portion of The Farm Jagfontein No. 85 Near Calitzdorp, Western Cape Province
- Wetland Verification and Section 21 (c) and (i) Risk Matrix: Proposed Housing Development on Erf 1341, Greyton.

ENVIRONMENTAL CONTROL OFFICER (ECO) AND AUDITING

- Environmental Control Officer: The proposed development of a backup energy centre including diesel storage and generators, on Erf 142504, Diep River, Cape Town, Western Cape Province, African Data Centres.
- The proposed construction of new and rehabilitation of existing non-motorised transport facilities in the Cape Town CBD, Western Cape Province, BVi Consulting Engineers Western Cape.
- Environmental Compliance Audit for Franki Africa Stock Yard, Durban, KwaZulu Natal Province, Franki Africa.
- The proposed development of a twenty-five metre (25m) telecommunication base station and associated infrastructure on Lorraine Farm, the Remainder of Farm 790, Phillipi Western Cape Province, SBA Towers South Africa
- The proposed maintenance of the Blue Stone Quarry Wall, Robben Island, Robben Island Museum.

MAINTENANCE MANAGEMENT PLANS

- The proposed maintenance of the Blue Stone Quarry Wall, Robben Island, Robben Island Museum.
- Proposed erosion control measures for road OP06914 on Swartvlei Lake, Sedgfield, Garden Route District Municipality.

ENVIRONMENTAL SCREENING

- Proposed upgrading of the Durbanville Public Transport Interchange, Western Cape, BVi Consulting Engineers Western Cape.
- Proposed the upgrade on national road R40 section from Hazyview (km 0.0) to Maviljan (km 32.1), BVi Consulting Engineers Western Cape.
- Proposed development of a data centre in Tatu City, Kenya, Africa Data Centre.
- Proposed construction of a back-up data energy centre on Erf 33, Atlantic Hills Business Park, Durbanville, Africa Data Centre
- Proposed development of a data centre in Grand Bassam, Côte D'ivoire, Africa Data Centre
- Proposed Development of a Data Centre In Accra, Ghana, Africa Data Centre
- Proposed Development of a Data Centre In Casablanca, Morocco, Africa Data Centre

ALIEN INVASIVE SPECIES MANAGEMENT PLANS

- Invasive species monitoring, control and eradication plan, Garden Route District Municipality, Western Cape Province, Garden Route District Municipality.
- Alien Invasive Species Management Plan and consultation services for Tormin Mine, Western Cape Province, Mineral Sands Resources.
- Alien Invasion Management Plan for Ramatlabama Poultry Farm, Mahikeng, Northwest Province, Supreme Poultry.

CLEAN DEVELOPMENT MECHANISM

- Calibration and advisory services for the CDM Methane Burning Plant at the Coastal Park and Bellville South Landfill Sites, Promethium Carbon (in progress)