APPENDIX C: SCREENING TOOL REPORTS AND SITE SENSITIVITY VERIFICATION REPORT

Screening Tool Report

SCREENING REPORT FOR AN ENVIRONMENTAL AUTHORIZATION AS REQUIRED BY THE 2014 EIA REGULATIONS – PROPOSED SITE ENVIRONMENTAL SENSITIVITY

EIA Reference number:

Project name: Prospecting Rights with Bulk Sampling Application - Sea Concession 12b

Project title: Prospecting Rights with Bulk Sampling Application - Sea Concession 12b

Date screening report generated: 31/08/2022 13:16:46

Applicant: Nisarox (Pty) Ltd

Compiler: GroenbergEnviro (Pty) Ltd

Compiler signature: J Botha .....

Application Category: Mining|Prospecting rights

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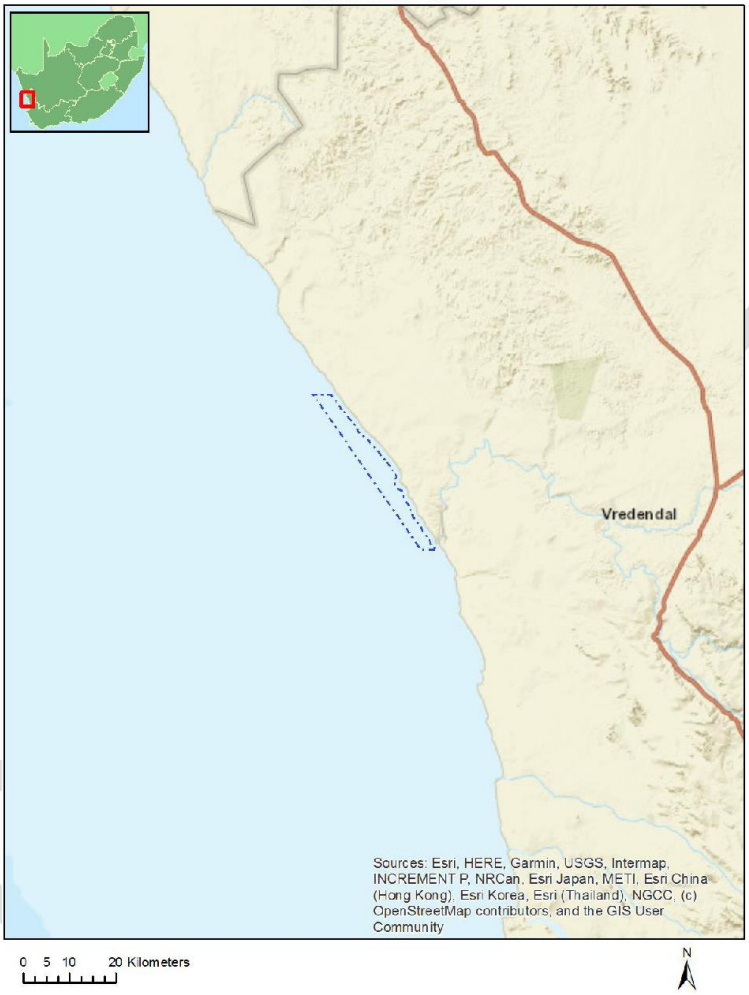
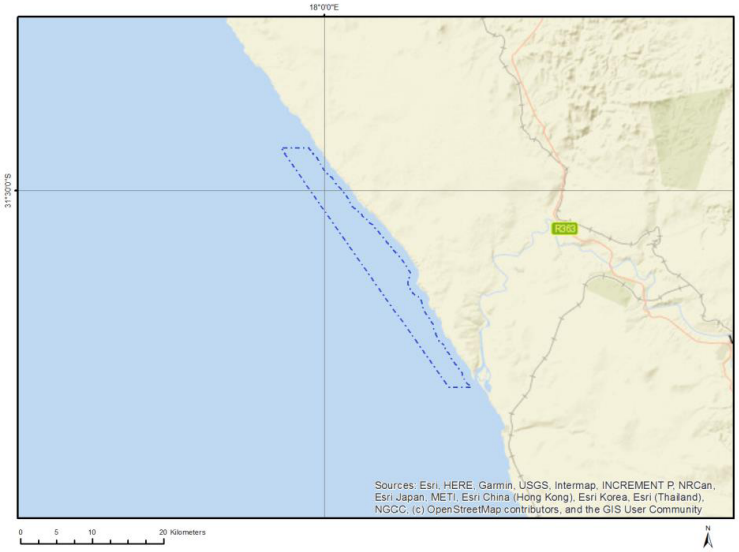
Proposed Project Location

Orientation map 1: General location

General Orientation: Prospecting Rights with Bulk Sampling Application - Sea Concession 12b



Map of proposed site and relevant area(s)



Cadastral details of the proposed site

Property details:
No intersection with any properties found.

Development footprint[1] vertices:
No development footprint(s) specified.

Wind and Solar developments with an approved Environmental Authorisation or applications under consideration within 30 km of the proposed area

No	EIA Reference No	Classification	Status of application	Distance from proposed area (km)
1	12/12/20/2178	Solar PV	Approved	28.7

Environmental Management Frameworks relevant to the application

No intersections with EMF areas found.

[1] "development footprint", means the area within the site on which the development will take place and incudes all ancillary developments for example roads, power lines, boundary walls, paving etc. which require vegetation clearance or which will be disturbed and for which the application has been submitted.

Environmental screening results and assessment outcomes

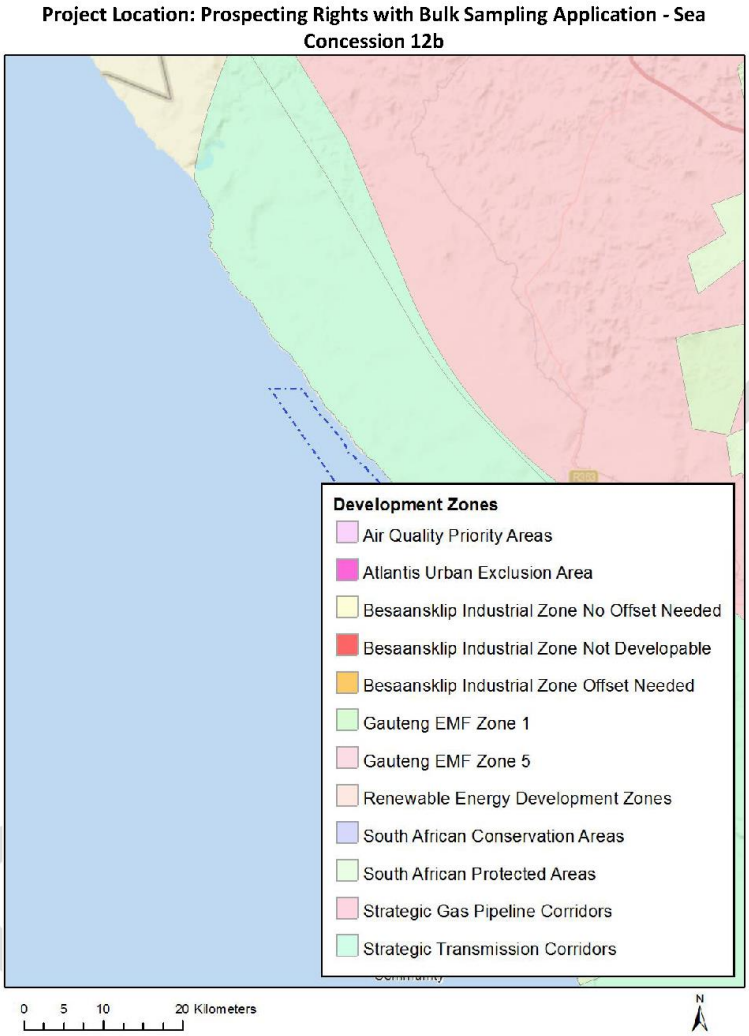
The following sections contain a summary of any development incentives, restrictions, exclusions or prohibitions that apply to the proposed development site as well as the most environmental sensitive features on the site based on the site sensitivity screening results for the application classification that was selected. The application classification selected for this report is: **Mining|Prospecting rights**.

Relevant development incentives, restrictions, exclusions or prohibitions

The following development incentives, restrictions, exclusions or prohibitions and their implications that apply to this site are indicated below.

No intersection with any development zones found.

Map indicating proposed development footprint within applicable development incentive, restriction, exclusion or prohibition zones



Proposed Development Area Environmental Sensitivity

The following summary of the development site environmental sensitivities is identified. Only the highest environmental sensitivity is indicated. The footprint environmental sensitivities for the proposed development footprint as identified, are indicative only and must be verified on site by a suitably qualified person before the specialist assessments identified below can be confirmed.

No intersection with any sensitive areas found.

Specialist assessments identified

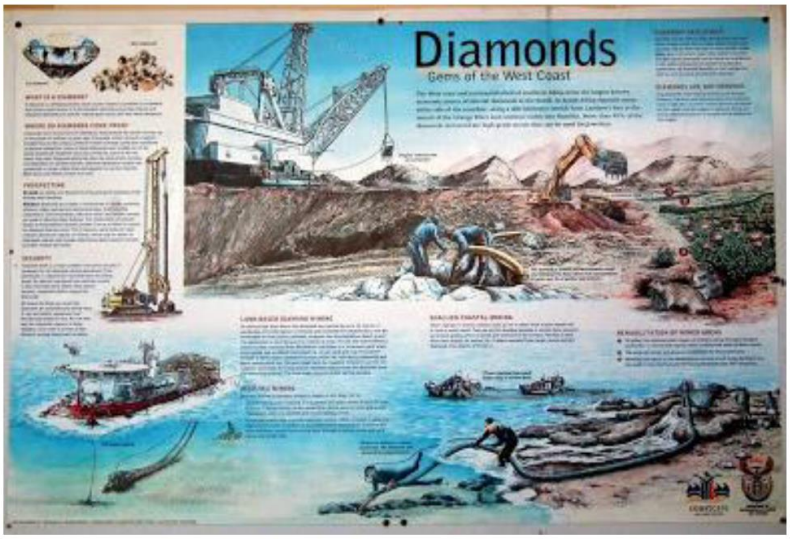
Based on the selected classification, and the environmental sensitivities of the proposed development footprint, the following list of specialist assessments have been identified for inclusion in the assessment report. It is the responsibility of the EAP to confirm this list and to motivate in the assessment report, the reason for not including any of the identified specialist study including the provision of photographic evidence of the site situation.

No	Specialist assessment	Assessment Protocol
1	Agricultural Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Agriculture_Assessment_Protocols.pdf
2	Archaeological and Cultural Heritage Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
3	Palaeontology Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
4	Terrestrial Biodiversity Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Terrestrial_Biodiversity_Assessment_Protocols.pdf
5	Aquatic Biodiversity Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Aquatic_Biodiversity_Assessment_Protocols.pdf
6	Noise Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Noise_Impacts_Assessment_Protocol.pdf
7	Radioactivity Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
8	Plant Species Assess	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Plant_Species_Assessment_Protocols.pdf

	ment	
9	Animal Species Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Animal_Species_Assessment_Protocols.pdf

Results of the environmental sensitivity of the proposed area.

The following section represents the results of the screening for environmental sensitivity of the proposed site for relevant environmental themes associated with the project classification. It is the duty of the EAP to ensure that the environmental themes provided by the screening tool are comprehensive and complete for the project. Refer to the disclaimer.



SITE SENSITIVITY VERIFICATION REPORT

Proposed Prospecting Right with Bulk Sampling over Sea Concession 12B, Western Cape

Reference Number: WC 30/5/1/1/2/10424 PR

September 2022

Final Report

DOCUMENT NAME:

Proposed Prospecting Right with Bulk Sampling over Sea Concession 12B, Western Cape.

PROJECT NUMBER:	**DATE:**	**REPORT STATUS:**
N/A	September 2022	FINAL REPORT

CARRIED OUT BY:

GroenbergEnviro (Pty) Ltd

COMMISSIONED BY:

Nisarox (Pty) Ltd

CLIENT CONTACT DETAILS:

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AUTHOR(S):

Helene Botha

SYNOPSIS:

See Below.

PREPARED BY:

GroenbergEnviro (Pty) Ltd

Revision Status

Rev No.	Issue Date	Author	Technical Review	Report Review
0	September 2022	H. Botha	H. Badenhorst	H. Badenhorst

Disclaimer

The opinions expressed in this report have been based on the information supplied to GBE by the Applicant. GBE has exercised all due care in reviewing the supplied information, with conclusions from the review being reliant on the accuracy and completeness of the supplied data.

GBE does not accept responsibility for any errors or omissions in the supplied information and does not accept any consequential liability arising from commercial decisions or actions resulting from them.

Professional environmental opinions presented in this report apply to the site conditions and features as they existed at the time of GBE's investigations, and those foreseeable. These opinions do not necessarily apply to conditions and features that may arise after the date of this report, about which GBE had no prior knowledge nor had the opportunity to evaluate.

POPIA

Regulation 42 of the Environmental Impact Assessment Regulations, 2014, as amended (EIA Regulations) provides for the opening and maintenance of a register of interested and affected parties (I&APs), by the proponent or applicant, which must contain personal information (names, contact details and addresses). It is therefore the duty of the proponent or applicant to collect the information that must be contained in the register.

Regulation 42 further requires that these registers must be submitted to the Competent Authority (CA). There is no legal requirement in the EIA Regulations that such registers must be included in the reports that are published for public consultation purposes or be made publicly available as part of the EIA process. Since the information in the registers is personal/private information, it should not be included in or attached to reports and be made available in the public domain. CAs, applicants and environmental assessment practitioners (EAPs) should take note that, if this information was previously included in reports and shared in the public domain, this now requires reconsideration in accordance with the POPIA. The Department realises that EAPs may have included some personal information in these reports when they receive and compile them. Likewise, this information may reach CAs who also now need to be sensitive about the management of this information.

Section 11(1)(a) of POPIA provides further that personal information may only be processed if the data subject consents to the processing.

The requirements of section 18.1 of POPIA requires that if personal information is collected, the responsible party must take reasonably practicable steps to ensure that the data subject is aware of, amongst other things, the information being collected, the name and address of

the responsible party (in this case the EAP and applicant), the purpose for which the information is collected, whether or not the supply of the information by the data subject is voluntary or mandatory, the consequence of the failure to provide the required information, further information such as the recipient of the information, as well as the existence of the right to object to the processing of the personal information.

EAPs should obtain express consent from commenting parties to include their names with their comments in the reports. It is therefore recommended that the EAP, when requesting comment, should also request the persons who may comment to provide consent that their names may be included with their comments in the reports. Commenting parties should also be informed that they may opt to not have their names shared, as well as an indication of the consequences of such an option being exercised, in which case only the comments will be included. This will ensure that the requirements of section 11(1)(a) of POPIA, which provides that personal information may only be processed if the data subject consents to the processing, is given effect to. Even when consent is obtained it is recommended that only the minimum details (the names) should be included in reports and the inclusion of unnecessary and excessive information should be avoided.

Contact Information

Please contact the undermentioned should you require further information.

GroenbergEnviro PTY Ltd	
Address: Office	Wellington Klein Opperhorst PO Box 1058 Wellington 7654 Fax: +27 86 476 7139
Website	www.groenbergenviro.co.za
Contact Person	Helene Botha I have 7 years of experience in project management and report writing. I have a BSc degree and gained my master's degree in Environmental Management from the North-West University in Potchefstroom. My focus in GroenbergEnviro is primarily on Environmental Impact Assessments and Water Use License Applications. EAPASA registration no: 2019/558
Contact number	+27 79 509 0785-
Cell number	+27 79 509 0785
Fax Number	+27 86 476 7139
Email	helene@groenbergenviro.co.za

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List of Abbreviations

AIA	Archaeological Impact Assessment
BAR	Basic Assessment Report
BGIS	Biodiversity Geographic Information System
dSR	Draft Scoping Report
EAP	Environmental Assessment Practitioner
EAPASA	Environmental Assessment Practitioners Association of South Africa
GBE	GroenbergEnviro Pty Ltd
GN	Government Notice
HIA	Heritage Impact Assessment
PIA	Palaeontological Impact Assessment
POPIA	Protection of Personal Information Act, 2013
SANBI	South African National Biodiversity Institute
S&EIA	Scoping & Environmental Impact Assessment
SSVR	Site Sensitivity Verification Report

Requirements for Initial Site Sensitivity Verification

Requirement	Compliance with Requirement
1. The Initial Site Sensitivity Verification must be undertaken by an environmental assessment practitioner or a registered specialist with expertise in the relevant environmental theme being considered.	Undertaken by an Environmental Assessment Practitioner (EAP): EAP: Helene Botha Qualification: B. Sc Degree in Zoology & Genetics, B Sc Honours Degree in Zoology and master's degree in Environmental Management EAPASA Registration Number: 2019/558
2. The Initial Site Sensitivity Verification must be undertaken through the use of: (a) a desktop analysis, using satellite imagery; (b) a preliminary on-site inspection; and (c) any other available and relevant information.	(a) A desktop analysis was done. (b) A pre-liminary on-site inspection was conducted on 9 June 2022 by Helene Botha and Pieter Badenhorst. (c) Google Earth, South African National Biodiversity Institute's Biodiversity Geographic Information System (SANBI's BGIS) and CapeFarmMapper are some of the additional sources used.
3. The outcome of the Initial Site Sensitivity Verification must be recorded in	This document serves as the Site Sensitivity Verification Report (SSVR), which complies

the form of a report that- (a) confirms or disputes the current use of the land and environmental sensitivity as identified by the national web-based environmental screening tool; (b) contains a motivation and evidence (e.g., photographs) of either the verified or different use of the land and environmental sensitivity; and (c) is submitted together with the relevant reports prepared in accordance with the requirements of the Environmental Impact Assessment Regulations.	with the criteria as stated in point 3.

1 Project Description

1.1 Introduction and Background

Nisarox (Pty) Ltd is applying for a prospecting right with bulk sampling on Sea Concession 12 B to prospect for and remove and dispose of diamond (alluvial).

As per the Prospecting Works Programme (2022): "*Diamonds were introduced to the continental shelf via several river systems draining the interior of southern Africa. The Orange. Buffels and Olifants Rivers and their pre-cursors, have supplied the majority of diamonds to the west coast by eroding the kimberlite pipes from the interior.*

The offshore deposits are the product of repeated reworking of material derived from the hinterland during a series of marine regressions and transgressions over the continental shelf.

The formation of the offshore deposits has been controlled by marine coastal and near shore processes (M.D. Lynn 1998).

The concession is situated off the Olifants River mouth and extends about 25 kilometres northward and two kilometres southward from the river mouth. The shoreward boundary of the concession is one kilometre from the shore, whereas the western boundary is defined by a straight line between two points situated 34.6 kilometres apart as 31 27' 18"S, 17 56' 37'' E and 31 42' 37"S,18 09' 20"E, and which lie approximately five kilometres from the South African coast. The concession varies in width between 4.3 kilometres and 2.5 kilometres (average 3.5 kilometres) and encompasses an area of approximately 116 square kilometres. The water depth in the concession ranges from 15 meters to 75 meters."

1.2 The Scope of the Proposed Activities

The information in **Table 1** below is referenced from the Prospecting Works Programme (PWP) (2022).

Table 1: Details of the Mineral Resource (PWP; 2022)

ITEM	DETAIL
Type of mineral	Diamonds (General); Diamonds (Alluvial);
Locality (direction and distance from nearest town)	Sea Concession 12(b) is situated ap-proximately 300 km north of Cape Town, with the inshore boundary located 1km seaward of the coast be-tween Strandfontein in the south and Namakwa Sands Wet Separation Plant in the north. The offshore boundary is located ap-proximately 4 km offshore.
Extent of application	11166.9ha

Extent of the area required for infrastructure	Not applicable
Extent of the area required for prospecting	11166.9ha
Geological formation	The oldest basement rocks of the coastal plain are comprised of metamorphic formations (metasediments), gneisses and granites of the Namaqualand Metamorphic Province (1200Ma to 1000Ma old). These rocks are locally overlain by meta-sediments (quartz-ites, schists, phyllites and marbles) of the Gariep Supergroup, between 770Ma and 550Ma old. Sandstones and shales of the Nama Group and the Vanrhynsdorp Group occur inland below the escarpment. These sediments are generally well-pre-served and deposited during the Precambrian-Cambrian boundary of around 540Ma (De Beer, 2010).

1.3 Project Description

Nisarox (Pty) Ltd is proposing to prospect within Sea Concession area 12B using both non-invasive and invasive sampling activities, none of which require infrastructure. Sea Concession 12(b) is situated approximately 300km north of Cape Town, with the inshore boundary located 1km seaward of the coast between Strandfontein to the south and Namakwa Sands Wet Separation Plant to the north. The offshore boundary is located approximately 4km offshore.

The prospecting activities will take place in four phases:

Phase 1: Geophysical Surveys include geophysical exploration (acoustic survey), data acquisition and analysis.

Phase 2: Drill Sampling by means of core samples with a vibrocorer.

Phase 3: Bulk Sampling by bulk trench sampling to confirm the economic viability of the resource for mining.

Phase 4: Pre-/feasibility studies throughout the programme where data is consolidated and processed, and the programme is amended depending on the results.

1.4 Prospecting Works Programme

The different phases that will be exercised during the prospecting works are indicated above in **1.3**. Refer to **Table 2** below, which provides an indication of the typical programme followed in prospecting.

1.5 Vessel Emissions and Discharges

This section provides a brief description of the types of emissions and discharges that are expected from the proposed prospecting operations during normal operations. These would include:

- Discharges such as deck drainage, machinery space wastewater, sewage, etc.;
- Disposal of solid waste such as food waste; and
- Vessel machinery emissions.

These are discussed in more detail below.

1.5.1 Discharges to Sea

(a) Vessel machinery spaces (bilges), ballast water and deck drainage

The concentration of oil in discharge water from any vessel (bilge and ballast) would comply with the MARPOL Regulation 21 standard of less than 15ppm oil in water. Any oily water would be processed through a suitable separation and treatment system to meet the MARPOL Annex I standard before discharge overboard. Drainage from marine (weather) deck spaces would wash directly overboard.

(b) Sewage

South Africa is a signatory to MARPOL Annex IV Regulations for the Prevention of Pollution by Sewage from Ships and contracted vessels would be required to comply with the legislated requirements of this Annex.

(c) Food (galley) wastes

The disposal into the sea of food waste is permitted in terms of MARPOL Annex V when it has been comminuted or ground and the vessel is located more than 3 nautical miles (approximately 5.5km) from land. Such comminuted or ground food wastes shall be capable of passing through a screen with openings no greater than 25mm. Disposal overboard without macerating can occur greater than 12 nautical miles (approximately 22km) from the coast. The daily discharge from a vessel is typically approximately 0.15 m^3.

(d) Detergents

Detergents used for washing exposed marine deck spaces would be discharged overboard. The toxicity of detergents varies greatly depending on their composition. Water-based detergents are low in toxicity and are preferred for use. Preferentially biodegradable detergents would be used. Detergents used on work deck space would be collected with the deck drainage and treated as described under deck drainage.

(e) Other

Vessels used during prospecting activities would have a certified antifouling coating system that is tin free.

1.5.2 Waste disposal to land

A number of other types of waste generated during the bulk sampling activities would not be discharged at sea but would be transported onshore for ultimate disposal. Waste transported to land would be disposed at a licensed municipal landfill facility or at an alternative approved site. Operators would co-operate with local authorities to ensure that waste disposal is carried out in an environmentally acceptable manner. A summary

of these waste types generated by a vessel used during typical prospecting operations is given below.

(a) General waste

This includes waste, paper, plastics, wood, glass, etc. Waste would be disposed of at an onshore landfill site in accordance with legal requirements.

(b) Scrap Metal

Scrap metal would be stored and recycled / disposed of on land in accordance with legal requirements.

(c) Drums and Containers

Empty drums containing residues, which may have adverse environmental effects (solvents, lubricating/gear oil, etc.), would be recycled / disposed of in a licensed landfill site in accordance with legal requirements.

(d) Used Oil

This includes used lubricating and gear oil, solvents, hydrocarbon-based detergents and machine oil. Toxicity varies depending on oil type. All non-recycled waste oils would be securely stored, transported to shore and disposed of at a licensed landfill site, acceptable to the relevant authorities.

(e) Chemicals and hazardous wastes

Disposal of any unexpected chemical and hazardous substance (e.g., fluorescent tubes, toner cartridges, batteries, etc.) would be undertaken on a case-by-case basis and in a manner acceptable to appropriate regulatory authorities.

(f) Infectious wastes

Infectious wastes include bandages, dressings, surgical waste, tissues, medical laboratory wastes, needles, and food wastes from persons with infectious diseases. Only minor quantities of medical waste are expected.

Prevention of exposure to contaminated materials is essential, requiring co-operation with local medical facilities to ensure proper disposal. All such waste will be incinerated onboard or stored and brought onshore for disposal via a registered medical waste company.

(g) Filters and filter media

This includes air, oil and water filters from machinery. Oily residue and used media in oil filters that may contain metal (e.g., copper) fragments, etc. are possibly toxic. Filters and media would be transported onshore and disposed of at a licensed landfill facility.

1.5.3 Discharges to air

Compliance with the requirements of Marpol Annex VI - Prevention of Air Pollution from Ships will be required for all vessel engines and where vessels are fitted with rubbish incinerators.

Table 2: Prospecting Program as per PWP (2022)

Phase	Activity	Skill(s) required	Timeframe	Outcome	Timeframe for out-come	What technical expert will sign off on the out-come?
1 Non – invasive	Regional scale, High-Resolu-tion geophysical surveys	Geologist Project Manager	20 days per year for 4 years	Maps, plan & report on previous work. Delineation of potential gravel resource.	Year 4	Geologist
2a Invasive	Shallow water Collection of core and grab samples	Geologist Project Manager	8 days per year for 4 years	Diamond Ore Characterization (DOC) study for metallurgical purposes	Year 4	Geologist
2b Invasive	Deep water Large diameter drill sam-pling					
3a Bulk Sampling	Shallow water Remote Pump Mining	Geologist Project Manager	1 month over a two-year period	Diamond Ore Characterization (DOC) study for metallurgical purposes and to allow the suffi-cient recovery of diamonds for evaluation and foot printing pur-poses.	Year 4	Geologist
3b Bulk Sampling	Deep water Remote Dredge (crawler) Mining					
4 Feasibility study	Final analysis, quality con-trol, database update and resource statement Application for mining right or final decommissioning and closure	Geologist Economist	Month 49-60	Feasibility study and decision making if results prove negative then decommissioning and final closure if results prove positive then continue with mining Mining right or Closure certifi-cate	Year 5	Project Manager

2 *Description of the Receiving Environment*

2.1 Agricultural Theme

The proposed development is located over Sea Concession 12B in the Atlantic ocean. Therefore, this theme is not applicable, although the Agricultural Impact Assessment has been identified by the Screening Tool Report for inclusion in the assessment report.

2.2 Archaeological, Cultural Heritage and Palaeontology Theme

The majority of known wrecks along the West Coast are located in relatively shallow water close inshore (within the 100m isobath). According to the South African Heritage Resources Information System, there are at least 89 ship wrecks recorded between the Berg and Orange Rivers, many of which were vessels involved in coastal trade and fishing.

2.3 Terrestrial Biodiversity Theme and Plant Species Theme

The proposed development is located over Sea Concession 12B in the Atlantic ocean and will not take place in terrestrial land. Therefore, this theme is not applicable, although the Terrestrial Biodiversity Impact Assessment & Plant Species Assessment have been identified by the Screening Tool Report for inclusion in the assessment report.

2.4 Aquatic Biodiversity & Animal Species Theme

The proposed development is located over Sea Concession 12B in the Atlantic ocean and will not take place in freshwater or on terrestrial land, however it will take place in saltwater which is still an aquatic environment.

The biological oceanography and conservation areas are included in the description of the receiving environment below in sections 2.5.1 and 2.5.2.

2.4.1 Biological Oceanography

Biogeographically, the Sea Concession areas falls in the cold temperate Namaqua Bioregion, which extends from Sylvia Hill, north of Lüderitz in Namibia to Cape Columbine (Emanuel et al. 1992; Lombard et al. 2004) (see **Figure 1**). The coastal, wind-induced upwelling characterising the Western Cape coastline, is the principle physical process which shapes the marine ecology of the southern Benguela region. The Benguela system is characterised by the presence of cold surface water, high biological productivity, and highly variable physical, chemical and biological conditions. The West Coast is, however, characterized by low marine species richness and low endemicity (Awad et al. 2002).

Communities within marine habitats are largely ubiquitous throughout the Southern African West Coast region, being particular only to substrate type or depth zone. These biological communities consist of many hundreds of species, often displaying considerable temporal and spatial variability (even at small scales). The majority of the proposed prospecting right area is located beyond the 50m depth contour. The near- and offshore marine ecosystems comprise a limited range of habitats, namely unconsolidated seabed sediments, deep water reefs and the water column. The biological communities 'typical' of these habitats are described briefly below, focussing both on dominant, commercially important and conspicuous species, as well as potentially threatened or sensitive species, which may be affected by the proposed prospecting activities.

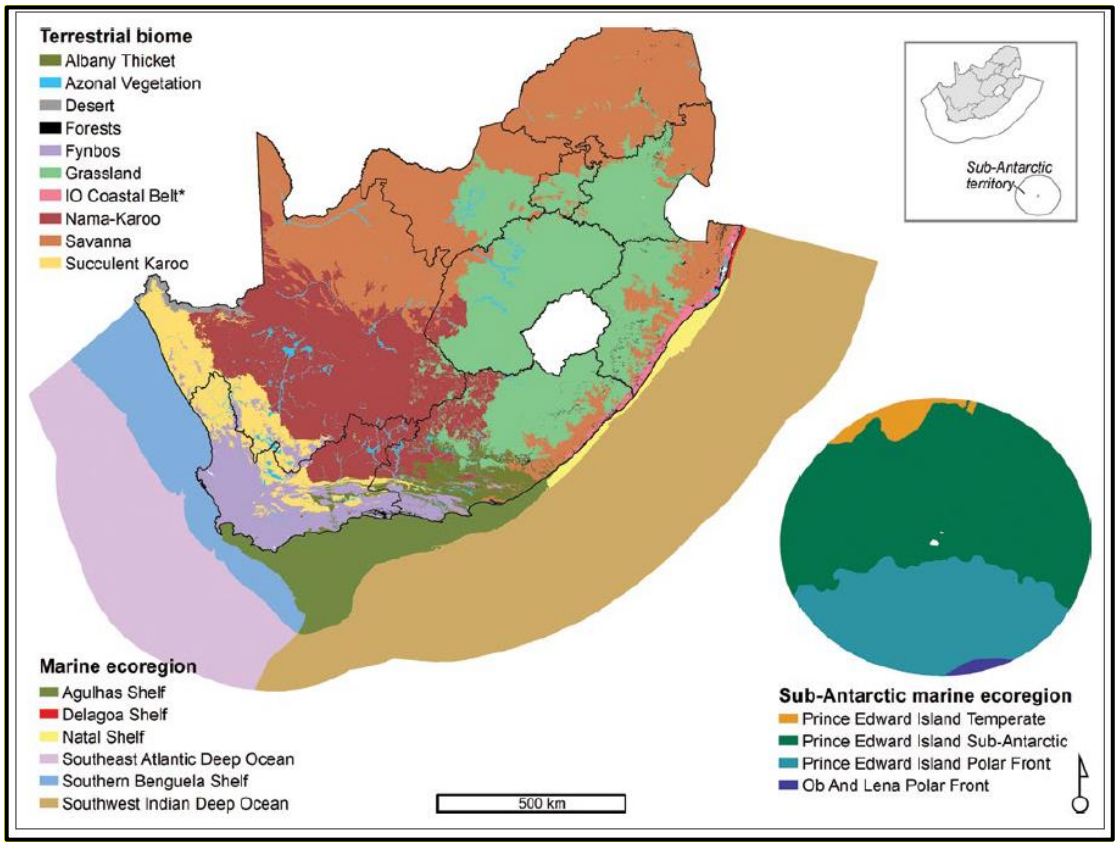

Figure 1: South Africa's nine marine bioregions, as defined by Lombard

(a) Habitats & Communities

<u>Nearshore and Offshore Unconsolidated Habits</u>

The benthic biota of unconsolidated marine sediments constitutes invertebrates that live on (epifauna) or burrow within (infauna) the sediments and are generally divided into macrofauna (animals >1mm) and meiofauna (<1mm).

Rocky Subtidal Habitat and Kelp Beds

Biological communities of the rocky sublittoral can be broadly grouped into an inshore zone from the sublittoral fringe to a depth of about 10m dominated by flora and an offshore zone below 10m depth dominated by fauna.

From the sublittoral fringe to a depth of between 5 and 10m, the benthos is largely dominated by algae, in particular two species of kelp. The canopy forming kelp *Ecklonia maxima* extends seawards to a depth of about 10m. The smaller *Laminaria pallida* forms a sub-canopy to a height of about 2m underneath *Ecklonia* but continues its seaward extent to approximately 30m depth, although further north up the west coast increasing turbidity limits growth to shallower waters (10-20m) (SRK 2021). *Ecklonia maxima* is the dominant species in the south forming extensive beds from west of Cape Agulhas to north of Cape Columbine but decreasing in abundance northwards. *Laminaria* becomes the dominant kelp north of Cape Columbine and thus in the project area, extending from Danger Point east of Cape Agulhas to Rocky Point in northern Namibia (SRK 2021).

Kelp beds absorb and dissipate much of the typically high wave energy reaching the shore, thereby providing important partially-sheltered habitats for a high diversity of marine flora and fauna, resulting in diverse and typical kelp-forest communities being established. Through a combination of shelter and provision of food, kelp beds support recruitment and complex trophic food webs of numerous species, including commercially important rock lobster stocks (SRK 2021).

Growing beneath the kelp canopy, and epiphytically on the kelps themselves, are a diversity of understorey algae, which provide both food and shelter for predators, grazers and filter-feeders associated with the kelp bed ecosystem. Representative under-storey algae include *Botryocarpa prolifera, Neuroglossum binderianum, Botryoglossum platycarpum, Hymenena venosa* and Rhodymenia (=Epymenia) obtusa, various coralline algae, as well as subtidal extensions of some algae occurring primarily in the intertidal zones (Bolton 1986). Epiphytic species include *Polysiphonia virgata, Gelidium vittatum (=Suhria vittata)* and *Carpoblepharis flaccida*. In particular, encrusting coralline algae are important in the under-storey flora as they are known as settlement attractors for a diversity of invertebrate species. The presence of coralline crusts is thought to be a key factor in supporting a rich shallow-water community by providing substrate, refuge, and food to a wide variety of infaunal and epifaunal invertebrates (SRK 2021).

The sublittoral invertebrate fauna is dominated by suspension and filter-feeders, such as the mussels *Aulacomya ater* and *Choromytilus meriodonalis*, and the Cape reef worm *Gunnarea capensis*, and a variety of sponges and sea cucumbers. Grazers are less common, with most herbivory being restricted to grazing of juvenile algae or debris-feeding on detached macrophytes. The dominant herbivore is the sea urchin

Parechinus angulosus, with lesser grazing pressure from limpets, the isopod *Paridotea reticulata* and the amphipod *Ampithoe humeralis*. The abalone *Haliotis midae*, an important commercial species present in kelp beds south of Cape Columbine is naturally absent north of Cape Columbine.

Deep-water coral communities

There has been increasing interest in deep-water corals in recent years because of their likely sensitivity to disturbance and their long generation times. These benthic filter-feeders generally occur deeper than 150m with some species being recorded from as deep as 3 000m. Some species form reefs while others are smaller and remain solitary. Corals add structural complexity to otherwise uniform seabed habitats thereby creating areas of high biological diversity (Breeze et al. 1997; MacIssac et al. 2001). Deep water corals establish themselves below the thermocline where there is a continuous and regular supply of concentrated particulate organic matter, caused by the flow of a relatively strong current over special topographical formations which cause eddies to form. Nutrient seepage from the substratum might also promote a location for settlement (Hovland et al. 2002).

In the productive Benguela region, substantial areas on the shelf should thus potentially be capable of supporting rich, cold water, benthic, filter-feeding communities.

Demersal Fish Species

Demersal fish are those species that live and feed on or near the seabed. As many as 110 species of bony and cartilaginous fish have been identified in the demersal communities on the continental shelf of the West Coast (Roel 1987).

Pelagic Communities

In contrast to demersal and benthic biota that are associated with the seabed, pelagic species live and feed in the open water column. The pelagic communities are typically divided into plankton and fish, and their main predators, marine mammals (seals, dolphins and whales), seabirds and turtles. It is pointed out that the marine component of the 2011 National Biodiversity Assessment (Sink et al. 2012), rated the majority of the offshore pelagic habitat types as 'least threatened', with only a narrow band along the shelf break of the West Coast being rated as 'vulnerable', primarily due to its importance as a migration pathway for various resource species (e.g. whales, tuna, billfish, turtles).

- **Plankton**

  Plankton is particularly abundant in the shelf waters off the West Coast, being associated with the upwelling characteristic of the area. Plankton range from single-celled bacteria to jellyfish of 2m diameter, and include bacterio-plankton, phytoplankton, zooplankton, and ichthyoplankton.

- **Cephalopods**

  Fourteen species of cephalopds have been recorded in the southern Benguela, the majority of which are sepiods/cuttlefish (Lipinski 1992; Augustyn et al. 1995). Most of the cephalopod resource is distributed on the mid-shelf with *Sepia australis* being most abundant at depths between 60-190 m, whereas *S. Hieronis* densities were higher at depths between 110-250m. *Rossia enigmatica* occurs more commonly on the edge of the shelf to depths of 500m. Biomass of these species was generally higher in the summer than in winter. Cuttlefish are largely epi-benthic and occur on mud and fine sediments in association with their major prey item; mantis shrimps (Augustyn et al. 1995). They form an important food item for demersal fish.

- **Pelagic Fish**

  The structure of the nearshore and surf zone fish community varies greatly with the degree of wave exposure. Species richness and abundance is generally high in sheltered and semi-exposed areas but typically very low off the more exposed beaches (SRK 2021). The surf-zone and outer turbulent zone habitats of sandy beaches are considered to be important nursery habitats for marine fish; however, composition and abundance of individual assemblages appears heavily dependent on wave exposure (SRK 2021). Surf-zone fish communities off the South African West Coast have relatively high biomass, but low species diversity.

  Two species that migrate along the West Coast following the shoals of anchovy and pilchards are snoek *Thyrsites atun* and chub mackerel *Scomber japonicas*. Their appearance along the West and South-West coasts are highly seasonal. Snoek migrating along the southern African West Coast reach the area between St Helena Bay and the Cape Peninsula between May and August. They spawn in these waters between July and October before moving offshore and commencing their return northward migration (Payne & Crawford 1989). They are voracious predators occurring throughout the water column, feeding on both demersal and pelagic invertebrates and fish. Chub mackerel similarly migrate along the southern African West Coast reaching South-Western Cape waters between April and August. They move inshore in June and July to spawn before starting the return northwards offshore migration later in the year. Their abundance and seasonal migrations are thought to be related to the availability of their shoaling prey species (Payne & Crawford 1989).

- **Turtles**

  Three species of turtle occur along the West Coast, namely the Leatherback (*Dermochelys coriacea*), and occasionally the Loggerhead *(Caretta caretta*) and the Green (*Chelonia mydas*) turtle. Loggerhead and Green turtles are expected to occur only as occasional visitors along the West Coast. The Leatherback is the only turtle likely to be encountered in the offshore waters of west South Africa.

The Benguela ecosystem, especially the northern Benguela where jelly fish numbers are high, is increasingly being recognized as a potentially important feeding area for leatherback turtles from several globally significant nesting populations in the south Atlantic (Gabon, Brazil) and south east Indian Ocean (South Africa) (Lambardi et al. 2008, Elwen & Leeney 2011; SRK 2021).

- **Seabirds**

  Large numbers of pelagic seabirds exploit the pelagic fish stocks of the Benguela system. Of the 49 species of seabirds that occur in the Benguela region, 14 are defined as resident, 10 are visitors from the northern hemisphere and 25 are migrants from the southern Ocean. The area between Cape Point and the Orange River supports 38% and 33% of the overall population of pelagic seabirds in winter and summer, respectively. Most of the species in the region reach highest densities offshore of the shelf break (200 – 500m depth) with highest population levels during their non-breeding season (winter).

- **Marine Mammals**

  The marine mammal fauna occurring off the southern African coast includes several species of whales and dolphins and one resident seal species. Thirty-five species of whales and dolphins are known (based on historic sightings or strandings records) or likely (based on habitat projections of known species parameters) to occur in these waters. The offshore areas have been particularly poorly studied with almost all available information from deeper waters (>200m) arising from historic whaling records prior to 1970. Current information on the distribution, population sizes and trends of most cetacean species occurring on the west coast of southern Africa is lacking. Information on smaller cetaceans in deeper waters is particularly poor and the precautionary principal must be used when considering possible encounters with cetaceans in this area.

  Records from stranded specimens show that the area between St Helena Bay (~32°S) and Cape Agulhas (~34°S, 20°E) is an area of transition between Atlantic and Indian Ocean species, as well as those more commonly associated with colder waters of the west coast (e.g. dusky dolphins and long finned pilot whales) and those of the warmer east coast (e.g. striped and Risso's dolphins) (Findlay et al. 1992). The location of the sea concessions lies north of this transition zone and can be considered to be truly on the 'west coast'.

2.4.2 Conservation Areas

(a) Marine Protected Areas

Using biodiversity data mapped for the 2004 and 2011 National Biodiversity Assessments, a systematic biodiversity plan has been developed for the West Coast (Majiedt et al. 2013) with the objective of identifying both coastal and offshore priority

areas for MPA expansion. To this end, various focus areas were identified for protection on the West Coast between Cape Agulhas and the South African – Namibian border, and these were carried forward through Operation Phakisa for the proposed development of offshore MPAs. A network of 20 MPAs was gazetted on 23 May 2019, thereby increasing the ocean protection within the South African EEZ to 5%.

No MPA overlaps the Sea Concession 12B area. The Namaqua Fossil Forest (nr 3 on **Figure 2**) is situated 65km north-north-west of the concession area. The Childs Bank MPA (nr 4 on **Figure 2**) is situated 195km North-West and the Cape Canyon (nr 5 on **Figure 2**) and Benguela Muds (nr 6 on **Figure 2**) are situated more than 120km South West.

Figure 2: Locality of the South African Marine Protected Areas in relation to the prospecting area (red oval).

(b) Threat Status and Vulnerable Marine Ecosystems

Rocky shore and sandy beach habitats are generally not particularly sensitive to disturbance and natural recovery occurs within 2-5 years. However, much of the Namaqualand coastline has been subjected to decades of disturbance by shore-based diamond mining operations (Penney et al. 2007). These cumulative impacts and the lack of biodiversity protection has resulted in most of the coastal habitat types in Namaqualand being assigned a threat status of 'critically endangered' (Lombard et al. 2004; Sink et al. 2012). Using the SANBI benthic and coastal habitat type GIS database, the threat status of the benthic habitats in the general area, and those potentially affected by proposed prospecting activities in Sea Concessions 12B, were identified asNamaqua Muddy Inner Shelf and Southern Bengual Outer Shelf.

As part of a regional Marine Spatial Management and Governance Programme (MARISMA; 2014-2020) the Benguela Current Commission (BCC) and its member states have identified a number of Ecologically or Biologically Significant Areas (EBSAs) both spanning the border between Namibia and South Africa and along the South African West and South Coasts, with the intention of implementing improved conservation and protection measures within these sites. Those areas identified as being of high priority for place-based conservation measures within the broad project area are shown in **Figure 3**. These EBSAs have been proposed and inscribed under the Convention of Biological Diversity (CBD). Concession area 12B fall within the transboundary Benguela Upwelling System EBSA. The principal objective of these EBSAs is identification of features of higher ecological value that may require enhanced conservation and management measures. No specific management actions have been formulated for the various areas at this stage.

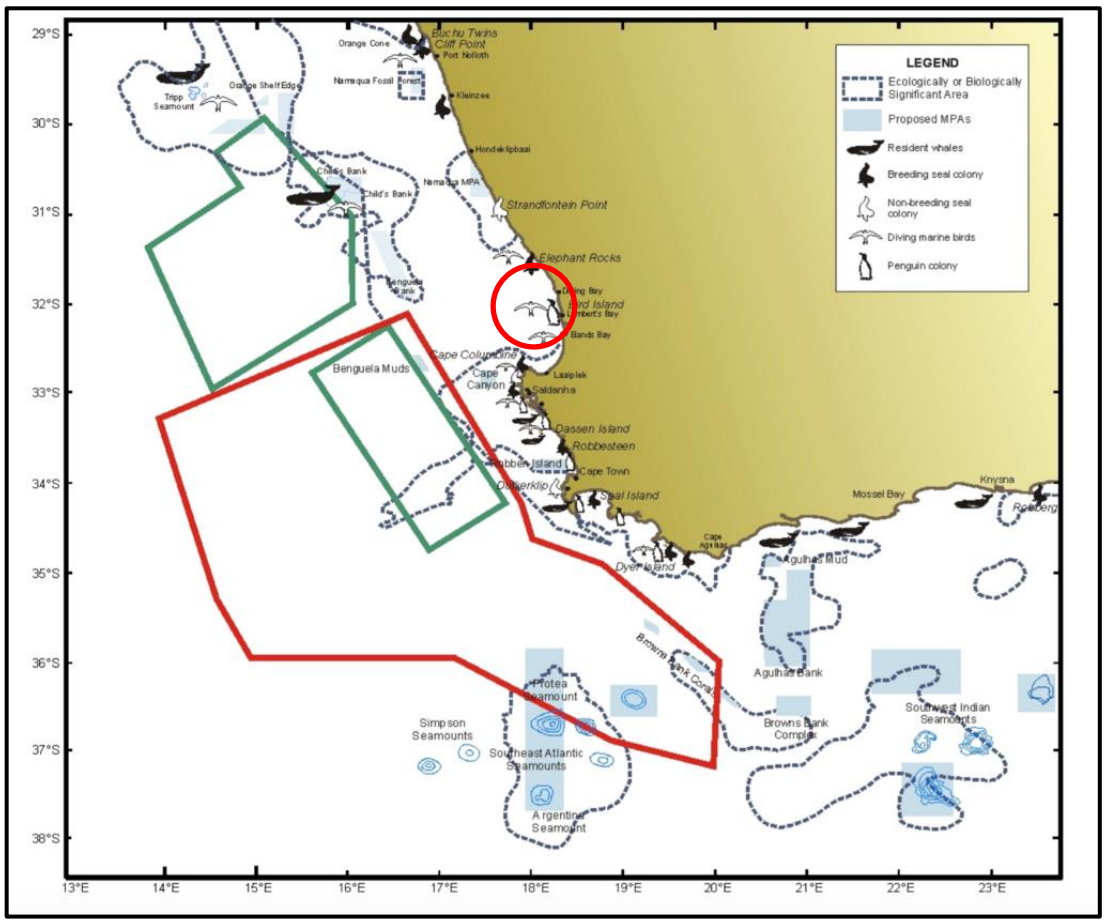

Figure 3: Environment interaction points on the west coast, illustrating the location of Seabird and seal colonies and resident whale populations in relation to the 12b sea concession area (red circle), offshore marine protected areas and EBSAS (as of 30 august 2019) are also shown.

2.5 Radioactivity Theme

The proposed development is located over Sea Concession 12B in the Atlantic ocean and will not make use of radioactive materials. Therefore, this theme is not applicable, although the Radioactivity Impact Assessment has been identified by the Screening Tool Report for inclusion in the assessment report.

2.6 Noise Theme

The proposed development is located over Sea Concession 12B in the Atlantic ocean and will take place below the surface therefore not creating high levels of ambient noise. Therefore, this theme is not applicable, although the Noise Impact Assessment has been identified by the Screening Tool Report for inclusion in the assessment report.

3 *Outcome of the Site Sensitivity Verification*

3.1 Agricultural Theme

According to the screening report, no sensitivity rating has been given in terms of agriculture. The proposed prospecting activity will take place over Sea Concession 12B in the Atlantic ocean and will not affect on any terrestrial agriculture activities.

The Environmental Assessment Practitioner (EAP) doesn't concur with the identification of the Agriculture impact Assessment and is of the opinion that this impact assessment will be insignificant to the Scoping & EIA process.

As such, an Agriculture impact Assessment or Compliance Statement will not be conducted.

3.2 Animal Species Theme

According to the screening report, no sensitivity rating has been given in terms of animal species although an Animal Species Impact Assessment have been identified.

Due to the nature of the sea concession area and the locality of the activities taking place below the surface, the EAP rates the sensitivity as **MEDIUM.**

As such, a Marine Ecology Impact Assessment Report will be conducted for the EIA phase.

3.3 Aquatic Biodiversity Theme

According to the screening report, no sensitivity rating has been given in terms of aquatic biodiversity. The proposed prospecting activity will take place over Sea Concession 12B in the Atlantic ocean and will not effect on any freshwater biodiversity.

The Environmental Assessment Practitioner (EAP) concurs with the identification of the Aquatic Biodiversity Impact Assessment and rates the sensitivity as **Medium.**

A Marine Ecology Impact Assessment Report will however be conducted for the EIA phase.

3.4 Terrestrial Biodiversity Theme and Plant Species Theme

According to the screening report, no sensitivity rating has been given in terms of terrestrial biodiversity and plant species. The proposed prospecting activity will take place over Sea Concession 12B in the Atlantic ocean and will not take place on terrestrial land.

The Environmental Assessment Practitioner (EAP) doesn't concur with the identification of the Terrestrial Biodiversity Impact Assessment or Plant Species

Assessment and is of the opinion that this impact assessment will be insignificant to the Scoping & EIA process.

A Marine Ecology Impact Assessment Report will however be conducted for the EIA phase.

3.5 Archaeological, Cultural Heritage and Palaeontology Theme

According to the screening report, no sensitivity rating has been given in terms of the Archaeological, Cultural Heritage and Palaeontology Themes. Due to the locality and unknown terrain below the surface, the EAP deems the sensitivity as **Medium.**

No specific protocol has been gazetted for the Archaeological, Cultural Heritage and Palaeontology Themes. Where a specialist assessment is required and no specific environmental theme protocol has been prescribed, the required level of assessment must be based on the findings of the site sensitivity verification and must comply with Appendix 6 of the EIA Regulations.

As such, an Offshore Palaeontological Impact Assessment & a Maritime Archaeology Impact Assessment will be included in the EIA phase.

3.6 Noise Theme

According to the screening report, no sensitivity rating has been given in terms of noise theme although Noise Impact Assessment have been identified.

Due to the nature of the sea concession area and the locality of the activities taking place below the surface with minimal ambient noise, the EAP rates the sensitivity as **insignificant.**

As such, no Noise Impact Assessment Report will be conducted for the EIA phase.

3.7 Radioactivity Theme

According to the screening report, no sensitivity rating has been given in terms of the radioactivity theme although a Radioactivity Impact Assessment have been identified.

Due to the nature of the sea concession area and the fact that no radioactivity substances will be used, the EAP rates the sensitivity as **insignificant.**

As such, no Radioactivity Impact Assessment Report will be conducted for the EIA phase.

4 *Summary Table of Site Analysis Verification*

	Specialist Assessment	Screening Report Sensitivity Rating	Inclusion or Exclusion	Reasons for exclusion
1.	Agricultural Theme & Agricultural Impact Assessment	No rating	Exclusion	The Environmental Assessment Practitioner (EAP) doesn't concur with the identification of the Agriculture impact Assessment and is of the opinion that this impact assessment will be insignificant to the Scoping & EIA process. As such, an Agriculture impact Assessment or Compliance Statement will not be conducted.
2.	Archaeological and Cultural Heritage Theme & Impact Assessment Palaeontology Theme & Impact Assessment	No rating	**Inclusion**	According to the screening report, no sensitivity rating has been given in terms of the Archaeological, Cultural Heritage and Palaeontology Themes. Due to the locality and unknown terrain below the surface, the EAP deems the sensitivity as **Medium.** As such, an Offshore Palaeontological Impact Assessment & a Maritime Archaeology Impact Assessment will be included in the EIA phase.
3.	Terrestrial Biodiversity, Plant Species Themes & Impact Assessment	No rating	Exclusion	According to the screening report, no sensitivity rating has been given in terms of terrestrial biodiversity and plant species. The proposed prospecting activity will take place over Sea Concession 12B in the Atlantic ocean and will not take place on terrestrial land. **A Marine Ecology Impact Assessment Report will however be conducted for the EIA phase.**
4.	Animal Species Theme	No rating	Exclusion	According to the screening report, no sensitivity rating has been given in terms of animal species although an Animal Species Impact Assessment have been identified. Due to the nature of the sea concession area and the locality of the activities takin place below the surface, the EAP rates the sensitivity as **MEDIUM.** **As such, a Marine Ecology Impact Assessment Report will be conducted for the EIA phase.**

5.	Aquatic Biodiversity Theme & Impact Assessment	No rating	Exclusion	According to the screening report, no sensitivity rating has been given in terms of aquatic biodiversity. The proposed prospecting activity will take place over Sea Concession 12B in the Atlantic ocean and will not effect on any freshwater biodiversity. The Environmental Assessment Practitioner (EAP) concurs with the identification of the Aquatic Biodiversity Impact Assessment and rates the sensitivity as **Medium.** **A Marine Ecology Impact Assessment Report will however be conducted for the EIA phase.**
6.	Noise Theme	No rating	Exclusion	Due to the nature of the sea concession area and the locality of the activities taking place below the surface with minimal ambient noise, the EAP rates the sensitivity as **insignificant.** **As such, no Noise Impact Assessment Report will be conducted for the EIA phase.**
7.	Radioactivity Theme	No rating	Exclusion	Due to the nature of the sea concession area and the fact that no radioactivity substances will be used, the EAP rates the sensitivity as **insignificant.** **As such, no Radioactivity Impact Assessment Report will be conducted for the EIA phase.**