



TRANS ATLANTIC
DIAMONDS

FINAL BASIC ASSESSMENT REPORT FOR THE PROPOSED PROSPECTING IN SEA CONCESSION AREA 14C BY TRANS ATLANTIC DIAMONDS (PTY) LTD



May 2022

PART B: Environmental Management Programme



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May 2022

Report prepared for:

Trans Atlantic Diamonds (Pty) Ltd
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DIAMONDS

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ACRONYMS AND ABBREVIATIONS

Anchor/ AEC	Anchor Environmental Consultants (Pty) Ltd.
BAR	Basic Assessment Report
CA	Competent Authority
EA	Environmental Authorisation
EAP	Environmental Assessment Practitioner
EBSA	Ecologically or Biologically Significant Areas
ECO	Environmental Control Officer
EIA	Environmental Impact Assessment
EMPr	Environmental Management Programme Report
DFFE	Department of forestry, fisheries and the Environment (Formerly DEFF and DAFF)
DMRE	Department of Mineral Resources and Energy
FLO	Fisheries Liaison Officer
IBA	Important Bird and Biodiversity Area
IUCN	International Union for Conservation of Nature
MARPOL	The International Convention for the Prevention of Pollution from Ships
MMI	Marine Mammal Institute
MMSO	Marine Mammal and Seabird Observer
MPA	Marine Protected Area
MUCH	Maritime and Underwater Cultural Heritage
NBA	National Biodiversity Assessment
NEMA	National Environmental Management Act No. 107 of 1998, as amended
OMP	Operational Management Plan
PAM	Passive Acoustic Monitoring
PM	Project Manager
SAHRA	South African Heritage Resource Agency
SAMLMA	South African Marine Linefish Management Association
SAMSA	South African Maritime Safety Authority
SANBI	South African National Biodiversity Institute
SAPFIA	South African Pelagic Fishing Industry Association
SBP	Sub-bottom profiler
SOPEP	Shipboard Oil Pollution Emergency Plan
TAD	Trans Atlantic Diamonds (Pty) Ltd



mineral resources

Department:
Mineral Resources
REPUBLIC OF SOUTH AFRICA

SUBMITTED FOR ENVIRONMENTAL AUTHORIZATIONS IN TERMS OF THE NATIONAL ENVIRONMENTAL MANAGEMENT ACT, 1998 AND THE NATIONAL ENVIRONMENTAL MANAGEMENT WASTE ACT, 2008 IN RESPECT OF LISTED ACTIVITIES THAT HAVE BEEN TRIGGERED BY APPLICATIONS IN TERMS OF THE MINERAL AND PETROLEUM RESOURCES DEVELOPMENT ACT, 2002 (MPRDA) (AS AMENDED).

1 GENERAL INFORMATION

1.1 Prospecting Right Applicant

Name of the Applicant:	Trans Atlantic Diamonds (Pty) Ltd
Responsible Person	Anthony Peter
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File reference number SAMRAD:	WC30/5/1/1/2/10405PR

1.2 Important notice

In terms of the Mineral and Petroleum Resources Development Act (Act 28 of 2002 as amended), the Minister must grant a prospecting or mining right if, among others, the mining “will not result in unacceptable pollution, ecological degradation or damage to the environment”.

Unless an Environmental Authorisation can be granted following the evaluation of an Environmental Impact Assessment and an Environmental Management Programme report in terms of the National Environmental Management Act (Act 107 of 1998) (NEMA), it cannot be concluded that the said activities will not result in unacceptable pollution, ecological degradation or damage to the environment.

In terms of section 16(3)(b) of the EIA Regulations, 2014, any report submitted as part of an application for Environmental Authorisation must (a) be prepared in a format that may be determined by the Competent Authority and (b) in terms of section 17 (1) (c) of the same regulation, the competent Authority must check whether the application has taken into account the minimum requirements applicable or instructions or guidance provided by the competent authority to the submission of applications.

It is therefore an instruction that the prescribed reports required in respect of applications for an environmental authorisation for listed activities triggered by an application for a right or a permit are submitted in the exact format of, and provide all the information required in terms of, this template. Furthermore, please be advised that failure to submit the information required in the format provided in this template will be regarded as a failure to meet the requirements of the Regulation and will lead to the Environmental Authorisation being refused.

It is furthermore an instruction that the Environmental Assessment Practitioner must process and interpret his/her research and analysis and use the findings thereof to compile the information required herein. (Unprocessed supporting information may be attached as appendices). The EAP must ensure that the information required is placed correctly in the relevant sections of the Report, in the order, and under the provided headings, as set out below, and ensure that the report is not cluttered with uninterpreted information and that it unambiguously represents the interpretation of the applicant.

1.3 Objective of the Basic Assessment Process

The objective of the basic assessment process is, through a consultative process, to –

- (a) determine the policy and legislative context within which the proposed activity is located and how the activity complies with and responds to the policy and legislative context;
- (b) identify the alternatives considered, including the activity, location, and technology alternatives;
- (c) describe the need and desirability of the proposed alternatives,
- (d) through the undertaking of an impact and risk assessment process inclusive of cumulative impacts which focused on determining the geographical, physical, biological, social, economic, heritage, and cultural sensitivity of the sites and locations within sites and the risk of impact of the proposed activity and technology alternatives on these aspects, to determine:
 - (i) the nature, significance, consequence, extent, duration, and probability of the impacts occurring to; and
 - (ii) the degree to which these impacts—
 - (aa) can be reversed;
 - (bb) may cause irreplaceable loss of resources; and
 - (cc) can be managed, avoided or mitigated;
- (e) through a ranking of the site sensitivities and possible impacts the activity and technology alternatives will impose on the sites and location identified through the life of the activity to—
 - (i) identify and motivate a preferred site, activity and technology alternative;
 - (ii) identify suitable measures to manage, avoid or mitigate identified impacts; and (iii) identify residual risks that need to be managed and monitored.

1.4 Objectives of the Basic Assessment Report:

The main objectives of the BAR are as follows:

- Assess the significance of the identified impacts for the proposed prospecting activities on the environment
- Provide sufficient information to strategically plan the prospecting activities to mitigate social, economic, heritage, environmental and other impacts.
- Provide a management plan that is effective and practical for implementation.
- Anticipate the risks and impacts of the prospecting activities through environmental monitoring and inspections.
- Create an adaptive framework for management of impacts such that unplanned events or incidents can be effectively controlled or minimised.
- The impact management plan and associated mitigation measures will be developed in adherence to international (such as UNCLOS), national and regional legal standards such as those implemented by designated authorities which include the DMRE, NEMA, and EIA regulations and guidelines.

- Through the development of the EMPr, measures will be developed to avoid environmental, social and other risks and impacts, and to provide mitigation where possible. This will then be included in the EMPr to be retained by the Environmental Control Officer (or such designated authority) who can oversee and report on the impact monitoring and mitigation measures.
- Provides the stakeholders with an opportunity to provide questions and comments on the proposed project.

PART A: SCOPE OF ASSESSMENT AND BASIC ASSESSMENT REPORT

1.5 Contact Person and correspondence address

1.5.1 Details of the EAP

Name of The Practitioner	Dr Barry Clark
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Fax number:	021 701 5280
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Email address:	barry@anchorenvironmental.co.za/ info@anchorenvironmental.co.za

1.5.2 Expertise of the EAP.

Barry Clark holds a doctoral degree (Ph.D.) in Marine Biology, a Honours degree in Marine Biology, and a Bachelor of Science degree in Zoology and Ocean & Atmosphere Science. Dr Clark is also a SACNASP registered scientist and a Research Associate at the University of Cape Town. Qualifications and registrations will be included as appendices to this report. See Appendix 1 for more details. The CVs of the additional contributing consultants are also included as part of Appendix 1.

1.5.3 Summary of the EAP's past experience.

(In carrying out the Environmental Impact Assessment Procedure). Dr Barry Clark has thirty years' experience in marine biological research and consulting on coastal zone and marine issues. He has worked as a scientific researcher, lecturer and consultant and has experience in tropical, subtropical and temperate ecosystems. He is presently Director of an Environmental Consultancy firm (Anchor Environmental Consultants) and Research Associate at the University of Cape Town. As a consultant has been concerned primarily with conservation planning, monitoring and assessment of human impacts on estuarine, rocky shore, sandy beach, mangrove, and coral reef ecosystems as well as coastal and littoral zone processes, aquaculture and fisheries. Dr Clark is the author of 27 scientific publications in class A scientific journals as well as numerous scientific reports and popular articles in the free press. Geographically, his main area of expertise is southern Africa (South Africa, Lesotho, Namibia, Mozambique, Tanzania, Seychelles, Mauritius and Angola), but he also has working experience from elsewhere in Africa (Republic of Congo, Sierra Leone, Liberia, Cote d'Ivoire, Ghana, Nigeria), the Middle East (UAE) and Europe (Azerbaijan, Greenland).

2 INTRODUCTION

Trans Atlantic Diamonds (Pty) Ltd (The Applicant) is a licensed rough diamond dealer since October 1986. They act as an independent, online rough diamond sales channel which connects both buyers and sellers, while providing a sales solution for producers, small artisanal miners and suppliers. With over thirty years of diamond industry experience, they are well recognised within the trade, and have pioneered tender and auction services across the globe. Should prospecting reveal an economically viable resource and Environmental Authorisation following an application for a mining right be granted, all diamonds mined in the 14C concession area will be offered to the South African Diamond & Precious Metal Regulator (SADPMR) and will be put to tender on the Diamond Exchange and Export Centre, which is part of the SADPMR, with the intention of local beneficiation.

Trans Atlantic Diamonds (Pty) Ltd has applied for the right to prospect diamonds, gemstones, heavy and industrial minerals, as well as ferrous, base and precious metals in sea Concession Area 14C. This is an offshore concession area that extends from just north of Doringbaai (northern boundary) to just north of Donkinsbaai (southern boundary). The area is situated 9 km south of Strandfontein and 21 km north of the Lamberts Bay (Figure 1). The inshore boundary (closest to the shore) of this concession area starts approximately 5 km (2.7 nautical miles) west of the high-water mark at a water depth of 70 m (70 m isobath). Concession Area 14C extends 100 km westwards from this point to 200 m water depth (200 m isobath) (Figure 2).

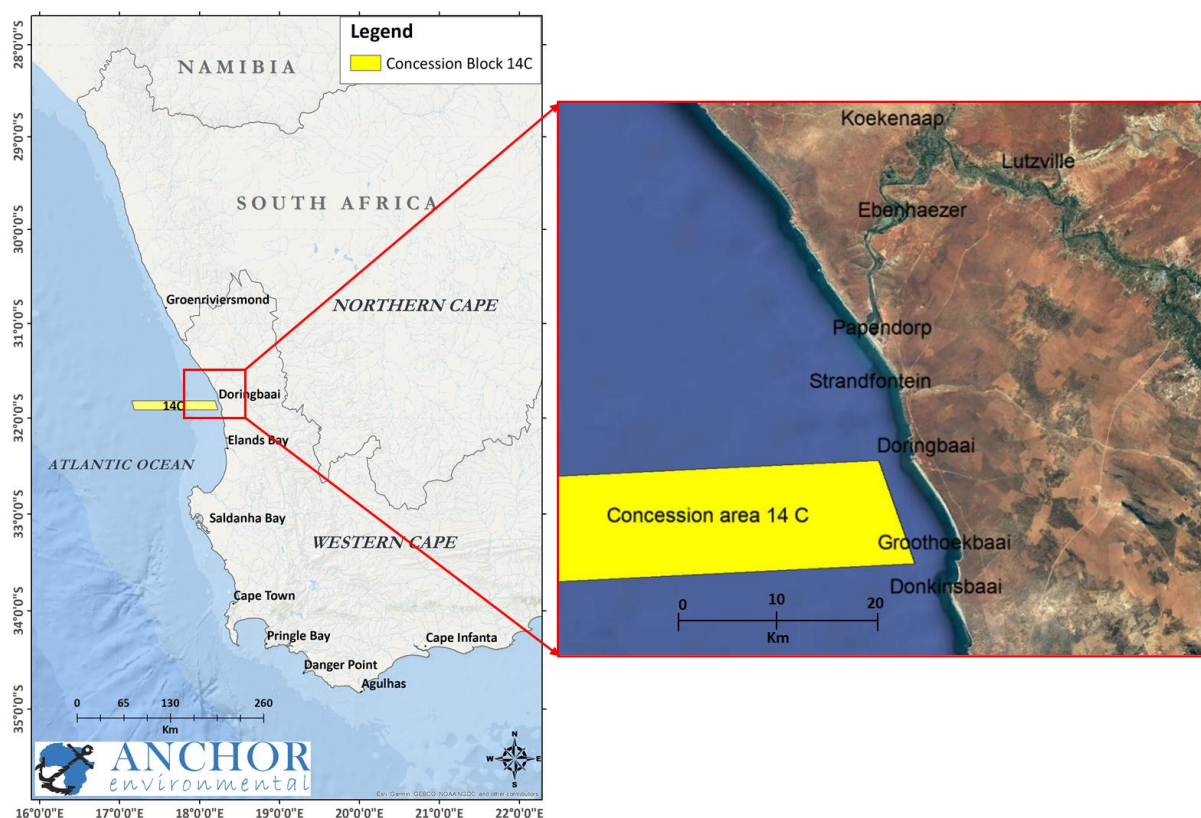


Figure 1. The location of Concession Area 14C along the West Coast.

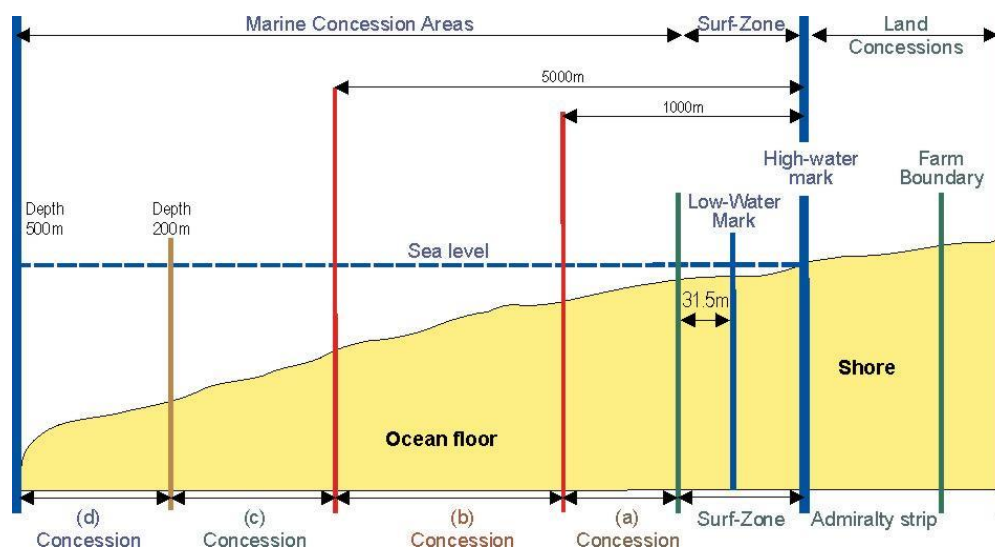


Figure 2. Diagram of the onshore and offshore boundaries of the South African marine diamond mining concession areas (from Penney *et al.* 2007).

The prospecting activity triggers a number of Listed Activities in the Environmental Impact Assessment Regulations, 2014 (as amended), promulgated in terms of the National Environmental Management Act (Act No. 107 of 1998). The Applicant is therefore required to apply for Environmental Authorization (EA), in addition to prospecting rights, from the competent authority, i.e., the Department of Mineral Resources and Energy (DMRE), to commence with the activity. To apply for EA, a Basic Assessment of the proposed activity and its potential impacts, along with a Public Participation Process, must be conducted. These findings then need to be submitted as a Basic Assessment Report (BAR), along with an Environmental Management Programme (EMPr), to the DMRE and to the public for review and comment.

The Applicant has appointed Anchor Environmental Consultants (Pty) Ltd (Anchor) as the independent Environmental Assessment Practitioner to assist with applying for prospecting rights, Environmental Authorisation and conducting a Basic Assessment and Public Participation Process.

This document, if approved by the DMRE, represents the binding EMPr for the full cycle of the prospecting rights activities at the management level. The management and mitigation measures identified during the BA process apply to the following phases of prospecting:

- The Planning and Design Phase: These measures are applicable to the planning and design of the prospecting activities. Note, however, that no environmental impacts are associated with the planning phase. All mitigation measures listed in this section have the purpose to minimise impacts during the operational and decommissioning phase.
- The Operational Phase: These measures are applicable during the long-term operation of the prospecting rights activities.
- The Decommissioning Phase: These mitigation measures are applicable during the decommissioning phase and refer to a reduction in prospecting activities (>90%).

The measures listed for the various phases are either:

- **Essential:** Mitigation measures which must be implemented and are non-negotiable; or
- **Best practice:** Recommended to comply with best practice, with adoption dependent on the proponent's risk profile and commitment to adhere to best practice, and which must be shown to have been considered and sound reasons provided by the proponent if not implemented. *These measures have been italicised for ease of reference.*

Note that the EMPr was submitted to the DMRE for approval along with the Draft BAR. If an Environmental Authorisation is issued by the DMRE, this document may need to be updated to ensure that all relevant conditions of authorisation are adequately captured. It is also recommended that the EMPr is reviewed regularly and, where necessary, amended and submitted to the DMRE for acceptance.

2.1 Description of the Aspects of the Activity.

Trans Atlantic Diamonds (Pty) Ltd is proposing to prospect within Sea Concession area 14C using both non-invasive and invasive sampling activities, none of which require infrastructure. For the purpose of this study, non-invasive means not physically destructive and invasive means physical sampling that is destructive. As the activity is located offshore and comprises prospecting only, no land-based infrastructure will be required. Prospecting will be conducted using a dedicated survey vessel such as the IMD SA survey vessel DP Star or the Explorer. They are proposing to prospect for precious metals (gold, silver and platinum), gemstones (alluvial diamonds, sapphires and garnets), ferrous and base metals such as rare earths (monasite mineral), black sand minerals (titanium minerals e.g. ilmenite and rutile), zirconium ore (zircon) and iron ore (magnetite) within Sea Concession area 14C. The proposed prospecting programme will take place during spring and/or summer and when weather conditions are suitable, and seas are calm. It is anticipated to be completed within five (5) years. Sampling will be conducted in four phases and include a combination of non-invasive and invasive activities to detect the presence of paleo-beach deposits, which are known from other concessions to contain diamondiferous gravels. Prospecting operations are expected to occur sporadically within the concession area. The non-invasive activities will include geophysical exploration (acoustic survey), data acquisition and analysis, while the invasive activities will include physical sampling (collection of core, drill and grab samples).

Non-invasive sampling activities will include the following: desktop study; geophysical survey and seafloor mapping; data acquisition and synthesis; geological modelling; and Feasibility study.

Invasive sampling activities will include: Van Veen grab sampling; Core sampling using either a Vibracore, Gravity core or Sonic core; Drilling with a specialised drilling tool; and Resource estimation.

2.1.1 Phase 1

Desktop Study: A comprehensive literature review will be undertaken to investigate the depositional environments, sediment stratigraphy and geological units of the area. Data will be obtained from a variety of sources including previous explorations in neighbouring concession areas, published papers, data from field surveys, databases, etc. This review will allow the applicant to identify target sites that are likely to contain diamonds or other valuable minerals within the concession area. It will also enable the applicant to identify potential challenges and the best means to address these challenges with a view to minimising environmental impacts and costs. This will allow for a more efficient and effective prospecting sampling programme.

Geophysical Exploration (Acoustic survey): Geophysical surveying will be undertaken to collect high-resolution acoustic and multibeam echosounder data throughout the concession area. The purpose of the acoustic survey is to collect high-resolution acoustic and multibeam echosounder data. This activity will allow the identification and mapping of features and various rock formations and sedimentary types within the concession area. Based on the geological formation of the seafloor in concession area 14 (C), as revealed by the geophysical survey, an appropriate sampling method will be identified.

2.1.2 Phase 2:

Van Veen grab sampling: This is a popular method used to collect sediment samples for biological, environmental and geotechnical studies. It usually comprises a clamshell bucket made of stainless steel that collects sediment from the seafloor. A Van Veen grab with a sampling capacity of approximately 50 kg will be used to collect baseline environmental data on sediment and benthic macrofauna at 20-50 sites. The grab can penetrate to depths of 20 to 50 cm and collects surficial sediment samples that will be subjected to subsampling. Those for biological analyses will be stored in formalin or ethanol whereafter they will be sent for biological analysis, while the geotechnical subsamples will be frozen and sent to a laboratory to test for shear strength, grain size composition, etc. Samples for biological will be analysed to identify benthic macrofauna (small animals such as worms, mussels, and crustaceans) and to determine the geological units of the seafloor. The grab samples will disturb a total surface area of 5 square meters (m²) while the total volume of samples that will be collected will be 1.5 cubic meters (m³). Results from this survey will represent baseline data against which any change in macrofaunal communities in the area can be benchmarked after prospecting and mining (should the project proceed to production).

Coring: Geotechnical samples will be collected at 100-200 sites using either vibracoring, gravity coring or sonic coring. A core is used to penetrate the seafloor to collect sediment samples. These samples are analysed to determine the sea floor geology (types of material present, i.e. sand, gravel and/ or rock and the hardness of the rock), topography (trenches or elevations) and sediment stratigraphy (how sand and rock are layered). This information is then used to engineer the drilling tool (for phase three of the prospecting activities – see below) and the future mining vessel. Geotechnical sampling is also used for resource evaluation, i.e. determining whether there are materials that can be mined in the area and whether it will be economically viable. The type of coring will depend on the geological formations of the seafloor. The diameter of core samples will be approximately 10 cm, the corers will

penetrate to depths of 3–8 m. The volume per core is estimated at 0.024 m³. It is estimated that an initial 100 core samples will be required. The exact sampling sites will be informed by the information acquired during the geophysical surveying and the recommendations from the environmental impact assessment (marine ecology specialist study). The core samples will disturb a total surface area of 1.57 m², while the total volume of samples that will be collected by the cores will be 4.71 m³.

2.1.3 Phase 3

Drilling: In addition to the above, prospective target areas will be analysed by a uniquely designed drill tool that can dredge gravel from the seabed. Material will be processed onboard by a processing plant and tailings will be discarded overboard, and may result in sediment plumes, in this instance as a near-shore deposits. The discard material is expected to consist mostly of sand that has a minimal suspension time. Pending the final tool design, the drill bit footprint is estimated to be 5 m² diameter. The expected average hole depth will be 3 m. Sample volumes are anticipated to be in the range of 9 to 15 m³ per sample.

Drilling will be done in three steps: (1) At an initial sample density of 0.06 samples/ha, an initial 150 samples will be collected and analysed. (2) An additional 150 samples will be collected during follow-up sampling. Should these follow-up samples indicate that there could be a potential resource, only then will step 3 (resource development phase) commence. (3) An additional 60 samples will be collected in a resource area of 500 m x 300 m. Approximately 20 resource development areas will be required. This equates to 1 200 samples. In total, 1500 samples will be collected and will cover a surface area of 7 500m².

The total surface area that will be disturbed during Phases 1, 2, and 3 is estimated at 7 507 m² or 0.75 ha. This equates to 0.000007% of the total area of Concession Area 14C that will be disturbed. The information acquired will be used for understanding the seafloor topography, resource evaluation and to determine if diamond or other mineral mining within Concession Area 14C is economically viable. Information will also be used to inform the construction of the mining vessel and to identify areas for mining.

2.1.4 Phase 4

Feasibility study: Should Phases 1, 2 and 3 yield positive results and the targeted features be identified, a feasibility study will be conducted to assess the likely magnitude of the resource and the economic viability of mining in the proposed prospecting area.

2.2 Composite Map: Location and environmental sensitivities in Concession 14C

The following section includes maps showing the location of Concession Area 14C, the environmental sensitivities, and areas that should be avoided and buffered (Figure 3 and Figure 4).

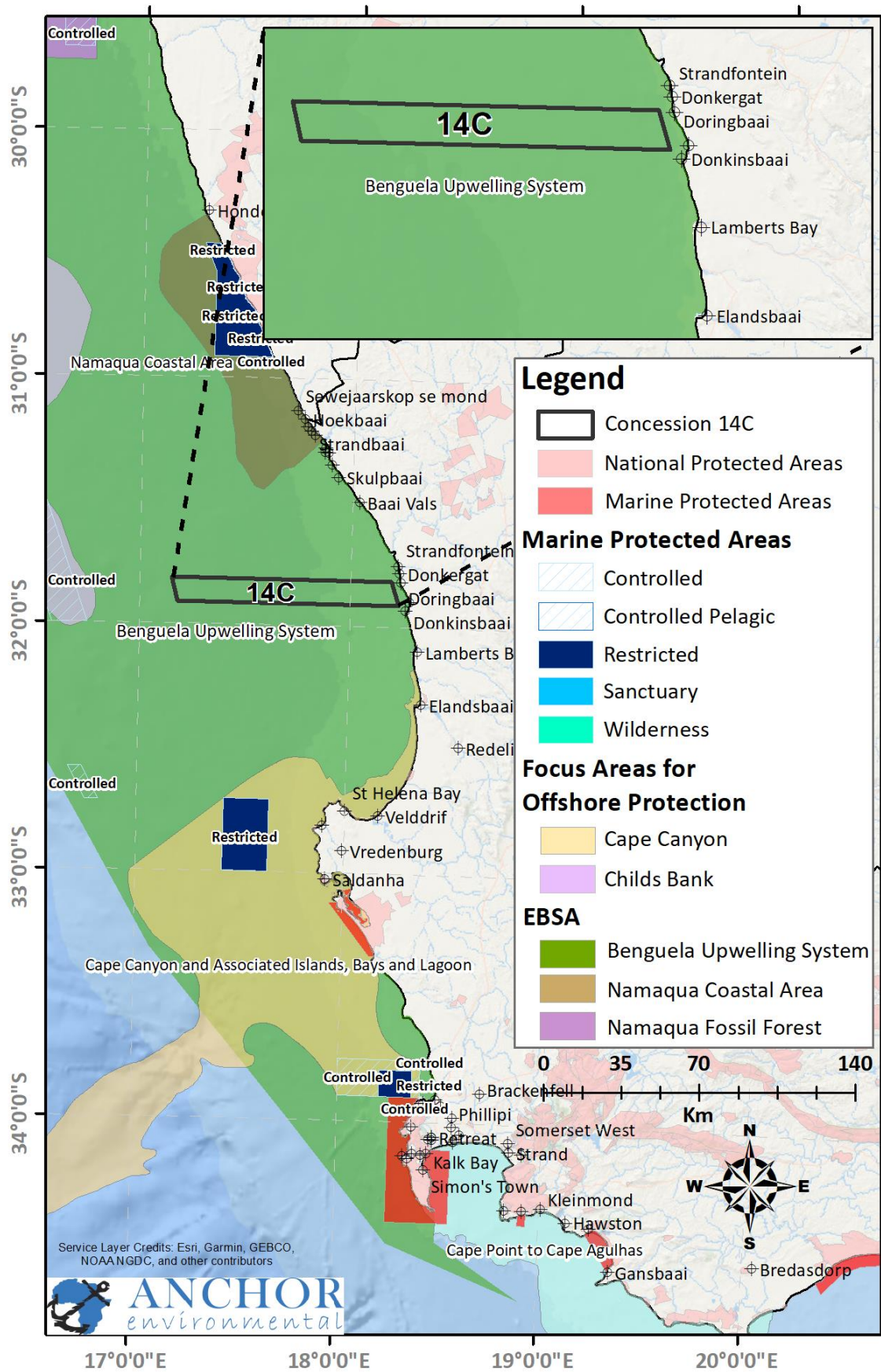


Figure 3. Marine protected Areas (dark blue), proposed EBSA's and the location of Concession Area 14C. Source: <https://bgis.sanbi.org/>.

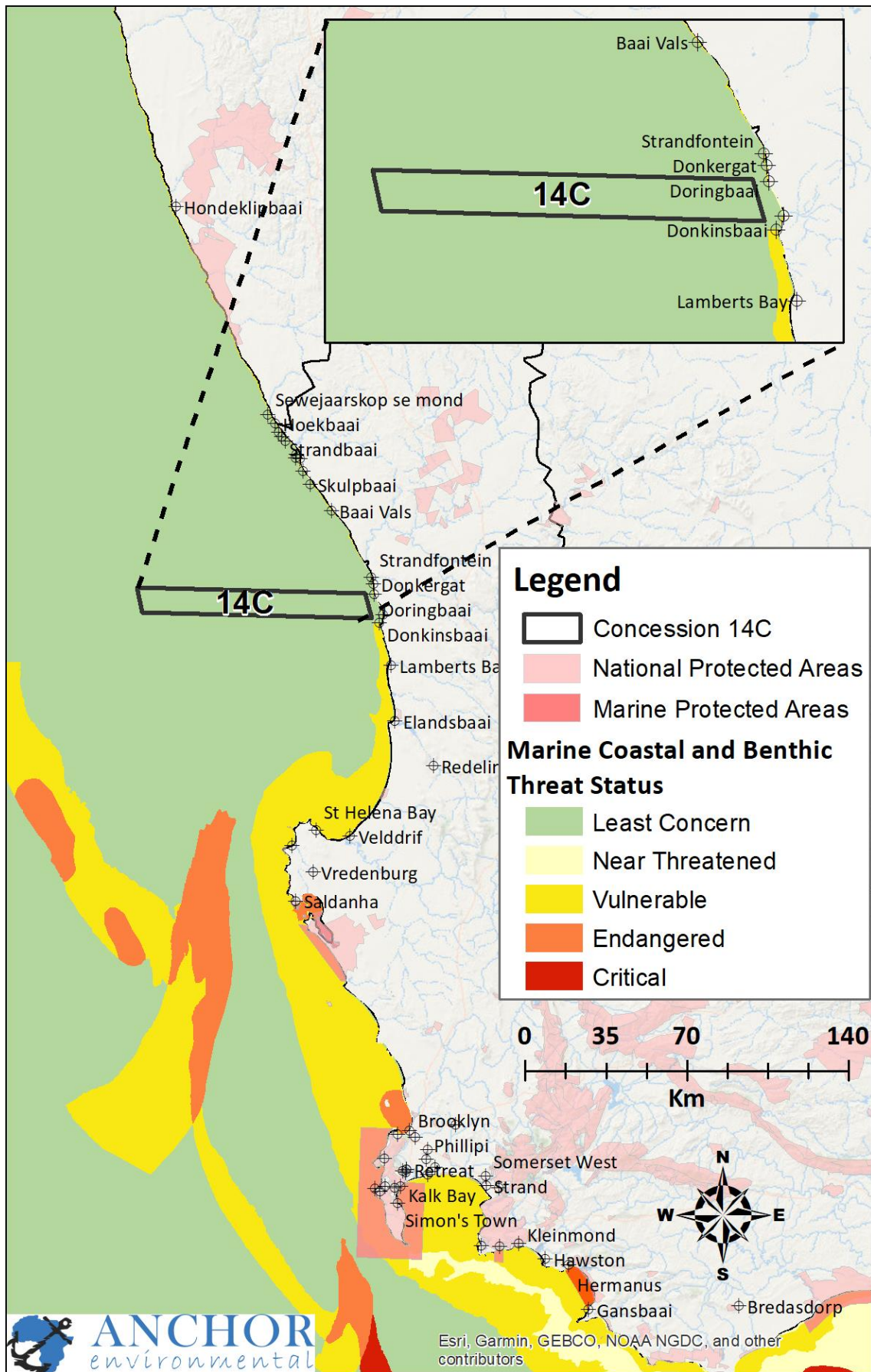


Figure 4 SANBI Ecosystem Threat Status and location of Concession Area 14C. Source: <https://bgis.sanbi.org/>.

2.3 Project Phasing

2.3.1 Planning and design Phase

The planning and design phase of the development refers to the actual planning and design of the operational phase. This refers to the desktop literature study, literature review and stakeholder consultation that will inform the prospecting activities taking place within the operational phase. A comprehensive literature review will be undertaken to investigate the depositional environments, sediment stratigraphy and geological units in the area. This will include an assessment of whether diamonds and other resources are likely to occur within the prospecting area. Data will be obtained from a variety of sources including previous explorations in neighbouring concession areas, published papers, data from field surveys, databases, etc. This review will allow the applicant to identify target prospecting sites within the concession area, and help to exclude sensitive or no-go areas. It will also enable the applicant to identify potential challenges and means to address these challenges to reduce environmental impacts and costs. This will allow for a more efficient and effective prospecting sampling programme.

2.3.2 Operational Phase

The operational phase of the development will commence once a thorough due diligence has been conducted regarding the activities scheduled to take place during this phase. This refers to geophysical (acoustic) surveys, Van Veen grab sampling, coring and drilling of the seabed.

2.3.3 Decommissioning Phase

Decommissioning refers to the process of removing the operating assets of the project after completion of the operational phase and activities.

3 IMPACTS TO BE MITIGATED IN THEIR RESPECTIVE PHASES

Studies were conducted where expert input was provided on the potential impacts to the marine environment and fishing industry as well as heritage and socio-economic impacts by the proposed prospecting activities. The marine specialist study is included in Appendix 3 of the Draft Basic Assessment Report (BAR). Anchor also appointed a Maritime Archaeologist to conduct a Maritime and Underwater Cultural Heritage (MUCH) study as requested by the South African Heritage Resource Agency (SAHRA). The heritage specialist study has been included as Appendix 4 of the Draft BAR. A desktop-based socio-economic study was conducted and has been included as Appendix 5 to the Draft BAR. The findings of these reports and all other relevant information have been integrated into the Draft Basic Assessment Report (BAR) and used to inform the Environmental Management Programme (EMPr, this document).

Based on the professional experience of the environmental assessment practitioner, The National Web based Environmental Screening Tool, legal requirements, the nature of the proposed activity,

and the nature of the receiving environment, the potential positive and negative impacts associated with prospecting in Concession Area 14C were grouped and assessed based on the following major receptors: (1) Marine ecology and fisheries, (2) Heritage resources, (3) Socio-economic aspects, (4) Noise, (5) Safety surrounding the material prospected (radioactivity), (6) Shipping traffic, (7) Visual integrity, and (8) Science and Research. Cumulative impacts and the no-go option were also considered. The assessment identified 29 potential negative impacts ranging from MEDIUM to INSIGNIFICANT and two potential positive impacts ranging from LOW to INSIGNIFICANT. With the implementation of effective mitigation measures, the negative impacts can all be reduced to LOW, VERY LOW, or INSIGNIFICANT.

The negative impacts are associated with the disturbance of fauna (invertebrates, fish, mammals, seabirds and turtles), submerged prehistoric resources, shipping activities, fishing activities, tourism, and the community of Doringbaai. Mechanisms include disturbance by means of physical sampling activities, acoustic surveys or vessel movement and noise. These impacts have the potential to result in the loss of environmental integrity, social values and economic opportunities. It should, however, be noted that most of these impacts were assessed to be either INSIGNIFICANT or VERY LOW. Marine mammals and shipwrecks of high heritage significance are expected to be the most significantly affected by the prospecting activities. For mammals, this is due to the impacts that the acoustic surveys could have on their echolocation and hence behaviour and critical activities such as feeding. For shipwrecks, this would be related to damage during invasive prospecting activities. However, this latter impact is not likely to occur as vessels of high significance are improbable to be present in Concession Area 14C and would be detected during the acoustic survey before invasive activities commence. The impact of prospecting on submerged cultural, prehistoric heritage and palaeontological resources is expected to be LOW or VERY LOW and would yield a positive outcome if samples and resources are retained for assessment and reported to the South African Heritage Resource Agency. Due to the location of the concession area relative to the nearest town and harbours (5 km offshore of Doringbaai) and the short duration of the activities, prospecting is not expected to have a significant impact on fishing effort, the visual integrity of the area, tourism, sense of place, noise levels or local crime rates.

Prospecting activities could also provide benefits in the form of local and regional socio-economic opportunities in addition to contributing towards scientific knowledge, specifically in terms of baseline environmental sediment, species and high-resolution bathymetry data. These benefits are, however, considered to be relatively low in the broader context.

The assessment of impacts in this concession area further revealed that the significance of the impacts is lower when compared to that of impacts identified in other nearshore concession areas. This could be attributed to the concession area's distance from and location relative to the coastline, fishing areas, aquaculture farms, harbours, shipping routes and towns.

A summary of the potential impacts of the proposed development are presented in Sections 3.1, 3.2 and 3.3 below using the following colour scheme to indicate whether the impact is positive or negative as well as the significance of impacts:

Negative	Positive
VERY HIGH	VERY HIGH
HIGH	HIGH
MEDIUM	MEDIUM
LOW	LOW
VERY LOW	VERY LOW
INSIGNIFICANT	INSIGNIFICANT

3.1 Planning and Design Phase

No environmental impacts are anticipated to be associated with the Planning and design phase.

3.2 Operational Phase

A summary of the potential operational phase impacts of the proposed development are presented in Table 1 below. Cumulative impacts are summarised in Table 2 while the no-go option assessments are presented in Table 3 (negative impacts) and Table 4 (positive impacts).

Table 1. Potential impacts associated with prospecting in Concession area 14C, as identified during the Basic Assessment Process, before and after mitigation.

POTENTIAL IMPACT	CONSEQUENCE	PROBABILITY	SIGNIFICANCE	STATUS	CONFIDENCE	
IMPACTS ON MARINE AND FISHERIES RESOURCES						
Impact 1	Underwater noise disturbance to invertebrates	Very low	Possible	INSIGNIFICANT	-ve	Medium
	No mitigation					
Impact 2	Underwater noise disturbance to fish	Very low	Possible	INSIGNIFICANT	-ve	Medium
	No mitigation					
Impact 3	Underwater noise disturbance to marine mammals	Medium	Probable	MEDIUM	-ve	Medium
	With mitigation	Low	Improbable	VERY LOW	-ve	Medium
Impact 4	Underwater noise disturbance to seabirds	Low	Probable	LOW	-ve	High
	With mitigation	Very Low	Improbable	INSIGNIFICANT	-ve	High
Impact 5	Underwater noise disturbance to turtles	Very low	Improbable	INSIGNIFICANT	-ve	High
	With mitigation	Very low	Improbable	INSIGNIFICANT	-ve	High

POTENTIAL IMPACT		CONSEQUENCE	PROBABILITY	SIGNIFICANCE	STATUS	CONFIDENCE
Impact 6	Marine megafauna collisions with survey vessels	Low	Possible	VERY LOW	-ve	High
	With mitigation	Very low	Improbable	INSIGNIFICANT	-ve	High
Impact 7	Offshore based seabed sampling and tailings disposal	Low	Definite	LOW	-ve	High
	No mitigation					
Impact 8	Fine sediment plumes	Very low	Definite	VERY LOW	-ve	High
	No mitigation					
Impact 9	Waste discharges during vessel operations	Very low	Probable	VERY LOW	-ve	High
	With mitigation	Very low	Improbable	INSIGNIFICANT	-ve	High
Impact 10	Impact on fisheries	Very Low	Probable	VERY LOW	-ve	High
	With mitigation	Very Low	Possible	INSIGNIFICANT	-ve	High
MARINE HERITAGE RESOURCES IMPACTS						
Impact 11	Cultural heritage and artefacts	Medium	Improbable	LOW	-ve	Medium
	With Mitigation	Medium	Improbable	LOW	+ve	Medium
Impact 12	Impacts on Maritime Heritage - shipwrecks DEFINITELY present	Low	Definite	LOW	-ve	High
	With Mitigation	Low	Definite	LOW	+ve	High
Impact 13	Impacts on Maritime Heritage - shipwrecks POSSIBLY present	Low	Possible	VERY LOW	-ve	Medium
	With mitigation	Low	Possible	VERY LOW	+ve	Medium
Impact 14	Impacts on Maritime Heritage - shipwrecks IMPROBABLE to be present with NO heritage significance	Low	Improbable	VERY LOW	-ve	Medium
	With mitigation	Low	Improbable	VERY LOW	+ve	Medium
Impact 15	Impacts on Maritime Heritage - shipwrecks IMPROBABLE to be present with LOW heritage significance	Low	Improbable	VERY LOW	-ve	Medium
	With mitigation	Low	Improbable	VERY LOW	+ve	Medium

POTENTIAL IMPACT		CONSEQUENCE	PROBABILITY	SIGNIFICANCE	STATUS	CONFIDENCE
Impact 16	Impacts on Maritime Heritage - shipwrecks IMPROBABLE to be present with MEDIUM heritage significance	Medium	Improbable	LOW	-ve	Medium
	With mitigation	Medium	Improbable	LOW	+ve	Medium
Impact 17	Impacts on Maritime Heritage - shipwrecks IMPROBABLE to be present with HIGH heritage significance	High	Improbable	MEDIUM	-ve	Medium
	With mitigation	High	Improbable	MEDIUM	+ve	Medium
SOCIO-ECONOMIC IMPACTS						
Impact 18	Impacts on Tuna pole and linefisheries	Very Low	Improbable	INSIGNIFICANT	-ve	High
	With mitigation	Very Low	Improbable	INSIGNIFICANT	-ve	High
Impact 19	Impacts on Traditional linefish Sector	Very Low	Improbable	INSIGNIFICANT	-ve	High
	No mitigation					
Impact 20	Impacts on Small Pelagic Purse Seine Fisheries	Very Low	Probable	VERY LOW	-ve	High
	With mitigation	Very Low	Possible	INSIGNIFICANT	-ve	High
Impact 21	Local households	Low	Improbable	VERY LOW	-ve	High
	No mitigation					
Impact 22	Local tourism and businesses	Very Low	Probable	VERY LOW	-ve	Medium
	With mitigation	Very Low	Improbable	INSIGNIFICANT	-ve	Medium
Impact 23	Sense of place, health and wellbeing	Very Low	Improbable	INSIGNIFICANT	-ve	High
	No mitigation					
Impact 24	Local crime	Very Low	Improbable	INSIGNIFICANT	-ve	High
	No mitigation					
Impact 25	Local and regional socio-economic performance	Very Low	Possible	INSIGNIFICANT	+ve	Medium
	No mitigation					

POTENTIAL IMPACT		CONSEQUENCE	PROBABILITY	SIGNIFICANCE	STATUS	CONFIDENCE
LESS SIGNIFICANT IMPACTS						
Impact 26	Impacts on palaeontological resources	Low	Possible	VERY LOW	-ve	Low
	With mitigation	Low	Possible	VERY LOW	+ve	Low
Impact 27	Noise impacts associated with prospecting	Low	Possible	INSIGNIFICANT	-ve	High
	No mitigation					
Impact 28	Impacts associated with prospecting radioactive material	Medium	Improbable	LOW	-ve	Low
	With mitigation	Very Low	Possible	INSIGNIFICANT	-ve	High
Impact 29	Potential interference with commercial shipping traffic	Very Low	Possible	INSIGNIFICANT	-ve	Low
	No mitigation					
Impact 30	Impacts on the visual integrity of the area.	Very Low	Possible	INSIGNIFICANT	-ve	Medium
	No mitigation					
Impact 31	Impacts on Science	Low	Definite	LOW	+ve	High
	No mitigation					

Table 2. Assessment of cumulative impacts for all impacts reviewed in the Basic Assessment Report, except for heritage resources. Note that these impacts are assessed “after mitigation”.

CUMULATIVE IMPACT	CONSEQUENCE	PROBABILITY	SIGNIFICANCE	STATUS	CONFIDENCE
IMPACTS ON MARINE AND FISHERIES RESOURCES					
Impact 1: Underwater noise disturbance to invertebrates	Medium	Possible	LOW	-ve	LOW
Impact 2: Underwater noise disturbance to fish	Medium	Possible	LOW	-ve	Low
Impact 3: Underwater noise disturbance to marine mammals	High	Improbable	MEDIUM	-ve	Low
Impact 4: Underwater noise disturbance to seabirds	High	Improbable	MEDIUM	-ve	Low
Impact 5: Underwater noise disturbance to turtles	Medium	Improbable	LOW	-ve	Low
Marine 6: megafauna collisions with survey vessels	Medium	Possible	LOW	-ve	Low

CUMULATIVE IMPACT	CONSEQUENCE	PROBABILITY	SIGNIFICANCE	STATUS	CONFIDENCE
Impact 7: Offshore based seabed sampling and tailings disposal	Medium	Possible	LOW	-ve	Low
Impact 8: Fine sediment plumes	Very low	Definite	VERY LOW	-ve	Low
Impact 9: Waste discharge during vessel operations	Low	Improbable	VERY LOW	-ve	Low
Impact 10: Impact on fisheries	Low	Probable	LOW	-ve	Low
SOCIO-ECONOMIC IMPACTS					
Impact 18: Impacts on Tuna pole and linefisheries	Medium	Possible	LOW	-ve	Low
Impact 19: Impacts on Traditional linefish Sector	Medium	Improbable	LOW	-ve	Low
Impact 20: Impacts on Small Pelagic Purse Seine Fisheries	Medium	Probable	MEDIUM	-ve	Low
Impact 21: Local households	Very High	Improbable	HIGH	-ve	Low
Impact 22: Local tourism and businesses	Medium	Possible	LOW	-ve	Low
Impact 23: Sense of place, health and wellbeing	Medium	Improbable	LOW	-ve	Low
Impact 24: Local crime	Medium	Improbable	LOW	-ve	Low
Impact 25: Local and regional socio-economic performance	High	Possible	MEDIUM	+ve	Low
LESS SIGNIFICANT IMPACTS					
Impact 26: Impacts on palaeontological resources	Medium	Probable	MEDIUM	+ve	Low
Impact 27: Noise impacts associated with prospecting	Low	Possible	VERY LOW	-ve	Low
Impact 28: Impacts associated with prospecting radioactive material	Medium	Possible	LOW	-ve	Low
Impact 29: Potential interference with commercial shipping traffic	Medium	Probable	MEDIUM	-ve	Low
Impact 30: Impacts on the visual integrity of the area.	Medium	Probable	MEDIUM	-ve	Low
Impact 31: Impacts on Science	Medium	Definite	MEDIUM	+ve	Low

Table 3. Assessment of the “No-go” alternative in terms of the negative impacts.

	Extent	Intensity	Duration	Consequence	Probability	Significance	Status	Confidence
Without mitigation	Regional 2	Medium 1	Long-term 3	Medium 6	Possible	LOW	-ve	Medium
Mitigation measures:								
No essential or potential mitigation measures.								

Table 4. Assessment of the “No-go” alternative in terms of the positive impacts.

	Extent	Intensity	Duration	Consequence	Probability	Significance	Status	Confidence
Without mitigation	Local 1	Low 1	Long-term 3	Low 5	Probable	LOW	+ve	Medium
Mitigation measures: No essential or potential mitigation measures.								

Below follows a more detailed summary of the potential impacts identified and assessed according to each major receptor.

3.2.1 Marine ecology and fisheries

Ten potential negative impacts on the Marine Environment and Fisheries were identified, with impacts before mitigation ranging from MEDIUM to INSIGNIFICANT. With effective mitigation these impacts can all be reduced to VERY LOW or INSIGNIFICANT. Impacts include seismic disturbance to marine fauna; survey vessel collision with marine megafauna; direct impact of seabed excavation and tailings disposal on benthic habitats (soft sediment and reef associated communities); impact of fine sediment plumes on surrounding benthos and water column; waste discharges during vessel operations; and impacts on fisheries and the livelihoods of fishing communities due to exclusion from fishing grounds and disturbance of target fish species. The potential impact of most concern is that of seismic disturbance to marine mammals and was assessed as MEDIUM negative significance prior to mitigation. It is known that migrating humpback, southern right whales, dusky dolphins and the near threatened Heaviside’s dolphin are frequently encountered on the west coast of southern Africa. Of the proposed seismic survey activities, the Topas sub-bottom profiler system could present a risk to dusky and Heaviside’s dolphins. Effective implementation of mitigation measures should ensure that potential impacts on marine mammals arising from the proposed seismic survey activities in Concession 14C would be reduced to VERY LOW significance.

The proposed sampling via coring and drilling is not expected to create significant underwater noise as the sound is largely restricted to the seabed material (sand/rock) and environmentally significant sound propagation in the water column is not anticipated. Seabird collision with the vessel is not anticipated as the vessel will not be creating fish offal to attract sea birds and is not expected to create light that will be brighter or more intense than that on any other operational vessel. Potential impacts of acoustic surveys on zooplankton were scoped out of the assessment as previous studies did not find any discernible effects on zooplankton. The limited spatial scale, temporary nature of operations (approximately two months over 5 years) and low volume of any sediment plumes generated during sampling are not anticipated to have noticeable impacts on small pelagic fish recruitment. It is worth noting that much of the West Coast constitutes a recruitment area for anchovies and only a tiny proportion may be impacted by the generation of turbidity plumes for a very short duration.

3.2.2 Heritage

Prospecting activities in Concession Area 14C are likely to have an impact on submerged Prehistoric Heritage, Marine Archaeological and Palaeontological Resources present within the concession area. The significance of prospecting-related impacts on such material was assessed to be LOW for Prehistoric Heritage and VERY LOW for Palaeontological Resources, while impacts on the Marine Archaeological Resources were assessed to range from MEDIUM to VERY LOW. The significance will depend on the type of maritime resource discovered and whether and whether it has been damaged during prospecting. There is potential for the status of the potential impacts to be changed from negative to positive if core samples are retained for assessment of paleoenvironmental and prehistoric lithic material.

3.2.3 Socio-economics

Prospecting activities are anticipated to have potential negative impacts on several sectors and other aspects within Concession Area 14C. These include potential impacts to tuna pole and line, traditional linefish, small pelagic purse seine fishing sectors, local households, tourism and small businesses, sense of place, crime levels and noise levels. These impacts are related to the 1) the operation and physical presence of vessels in the area; 2) the temporary disturbance of marine resources; 3) exclusion of fishing vessels from the concession area 14C; and 4) the degradation of water quality. The impacts of all of these were assessed to be INSIGNIFICANT, except for impacts on the small pelagic purse seine fishing, the local households and tourism, which were assessed to be VERY LOW. These are expected to be reduced to INSIGNIFICANT after the implementation of appropriate mitigation measures. Despite this very low impact rating, the poor economic performance of the coastal communities should still be taken into consideration due to their high dependence on marine resources to support their household income and livelihoods. Potential positive impacts from the prospecting activities include the generation of local and regional economic opportunities, although the benefits of these are expected to be INSIGNIFICANT.

3.2.4 Noise impacts associated with prospecting

The proposed sampling via coring and drilling is not expected to create significant noise as the sound is largely restricted to the seabed material (sand/rock) and environmentally significant sound propagation in the water column is not anticipated. It is also unlikely that any noise would be heard from the shoreline or from Doringbaai which is situated approximately 5 km to the east of the concession area. The potential noise impacts will be localised, of short-duration, low intensity and are therefore expected to be INSIGNIFICANT without the need for mitigation measures.

3.2.5 Safety surrounding materials prospected (radioactivity)

The natural maximum values of raw mineral radiation from any materials extracted during prospecting are not expected to exceed safety guidelines. All regulations and standards as set out by the South African Maritime Safety Authority (SAMSA), International Maritime Organization (IMO), the International Maritime Dangerous Goods (IMDG) Code and International Atomic Energy Agency Safety Standards (IMDG) should be complied with when prospecting, extracting, working with, storing and transporting any minerals. This should ensure that any impacts associated with radioactive material be INSIGNIFICANT.

3.2.6 Potential interference with commercial shipping traffic

The majority of shipping traffic is located on the outer edge of the continental shelf, which is well offshore of the outer edge of Concession Area 14C. The impacts of prospecting activities within concession area 14C on shipping activities are therefore considered to be INSIGNIFICANT.

3.2.7 Impact on visual integrity of the area

The town closest to Concession Area 14C, Doringbaai, is situated approximately 5 km east of this concession area. It is unlikely that the survey vessel will be visible from the shoreline. The vessel is will not be considered more conspicuous than any other vessel (such as fishing vessels) already visiting the area. As the entire survey phase is also expected to only take approximately two months (over the next 5 years) to complete, the vessel and activity in Concession Area are expected to have negligible impacts on the visual integrity of the area.

3.2.8 Contribution to science and research

Soil and biological samples will be collected during the prospecting activities using a clamshell bucket instrument called a Van Veen Grab. These samples will then be sent to an independent environmental consultancy for analysis to establish a baseline of environmental data. This comprises analysing sediment composition and determining the composition and abundance of benthic species in the sediment. Data collected during the acoustic survey can be used to map important features such as reefs that may be present in the area. Should artefacts, fossils or any other heritage resources be discovered during the prospecting, these will be donated to scientific institutions and can make an invaluable contribution to the palaeontological knowledge and potential of the continental shelf. The contribution of information to science collected during prospecting will be positive but was assessed to be of LOW significance.

3.2.9 Cumulative impacts

There has been a recent increase in applications for prospecting and exploration rights along the west coast and increased prospecting/survey activity in the short term and marine mining in the long-term is anticipated. Cumulative impacts of marine prospecting and mining must be considered at a broader spatial scale in a strategic manner for each potential impact identified. Obtaining detailed information on the scale, extent, methodology (and hence intensity) of various current and pending applications is, however, not possible within the prescribed timeframes of a Basic Assessment Process for a single application (such as this one). This requires and it is recommended that a revised strategic level EIA process based on marine spatial planning principles be undertaken to assess and manage potential cumulative impacts in a holistic manner with a medium to high level of confidence and to identify and implement regional level mitigation measures. The decision-making authority (DMRE) must take cognisance of this recommendation to do a strategic level Environmental Impact Assessment (EIA) in order for Specialists and Environmental Assessment Practitioners to accurately assess cumulative impacts.

It is, however, logical and reasonable, to anticipate that many of the potential impacts assessed for this project would continue together with other projects that are ongoing or scheduled to come on-line. The result is that the spatial extent of many impacts would change from “local” to “regional”, whilst the duration would change from short-term (<2 years) to at least medium term (2-15 years) or even long-term (>15 years, mostly reversible in the case of prospecting, but not always for mining). The intensity of impacts is anticipated to remain as they are assessed here for operations of this nature but may be higher for other sea-based mineral and energy projects in different areas with different objectives. The cumulative effect of each of the identified impacts were assessed after mitigation and used a precautionary approach (assumption of simultaneous/consecutive prospecting and mining activities in the region) and ranged from MEDIUM to VERY LOW significance. The assessment of cumulative impacts has a low confidence rating due to the uncertainty of the timing and location of other anthropogenic activities in the region.

Cumulative impact could not be assessed for heritage resources. The value and significance of heritage resources is a highly emotive and subjective field. Certain sites are deemed significant due to their age, or the activity they were engaged in at the time of the event, these include slave and war ships, others may be unique in respect of their construction and rarity in the archaeological record. Some wrecks are not unique or even very old but may have spiritual significance to a local fishing community due to fatalities at the time of wrecking. While some wrecks are not necessarily deemed important now, destruction without due diligence can have a negative future impact. The wreck databases are built on reported wrecks. It is not possible to assess cumulative impacts with any level of confidence due to the unknown nature of the heritage resources in the region. Each wreck must be assessed as it is found, and if it is treated with the knowledge that we do not always know if is significant, whether locally or internationally, we can mitigate against high, negative cumulative impacts.

3.2.10 No-go option

Both positive and negative impacts are related to not continuing with the prospecting activities. These include lost opportunities in terms of collecting baseline environmental data, determining the presence of offshore mining resources and socio-economic benefits. The impacts, are, however, all considered to be of LOW significance. The positive implications of the no-go option, on the other hand, is that there would be no effects on the biophysical environment in the proposed area. This was also assessed to be of LOW significance considering the lost opportunity in terms of scientific data and economic opportunities.

3.3 Decommissioning Phase

The decommissioning phase is not associated with any environmental impacts.

4 ROLES AND RESPONSIBILITIES FOR ENVIRONMENTAL MANAGEMENT PROGRAMME IMPLEMENTATION

Table 5. Roles and responsibilities for EMPr implementation.

FUNCTION	ROLE
<p>Project Manager/ Applicant</p>	<p>Role</p> <p>The Project Manager is accountable for ensuring compliance with the EMPr and any conditions of approval from the competent authority (CA). An independent environmental control officer (ECO) must be contracted by the Project Manager to objectively monitor the implementation of the EMPr according to relevant environmental legislation, and the conditions of environmental authorization (EA). The Project Manager is further responsible for providing and giving mandate to enable the ECO to perform responsibilities, and he must ensure that the ECO is integrated as part of the project team while remaining independent.</p> <p>Responsibilities</p> <ul style="list-style-type: none"> • Be fully aware of the conditions of the EA; • Overall management of the project and EMPr implementation; • Ensure that all stipulations within the EMPr are communicated and adhered to by the Applicant, Sampling Contractor(s) and any crew on board the vessel; • Monitor the implementation of the EMPr throughout the project; • Ensure that periodic environmental performance audits are undertaken on the project implementation; and • Provide updated information to the public.
<p>Scientific Officer (Internal monitoring)</p>	<p>Role</p> <p>The Scientific Officer reports directly to the Project Manager, oversees site works, liaises with the contractor(s) and the ECO. The Scientific Officer is responsible for the day to day implementation of the EMPr, environmental monitoring and reporting, providing environmental input to the Project Manager and for ensuring the compliance of all contractors with the conditions and requirements stipulated</p> <p>Responsibilities</p> <ul style="list-style-type: none"> • Oversees site works, liaison with Contractor, Project Manager and ECO; • Will issue all non-compliances to contractors; and - Ratify the Monthly Environmental Reporting the EMPr. • Be familiar with the recommendations and mitigation measures of this EMPr, and implement these measures; • Conduct environmental awareness training on site together with ECO and contractors; • Ensure that the necessary legal permits and / or licenses are in place and up to date

FUNCTION	ROLE
	<ul style="list-style-type: none"> • Ensure that all stipulations within the EMPr are communicated and adhered to by the Employees, Contractor(s) and its sub-contractor(s); • Conduct environmental internal audits with regards to EMPr. • Assist the contractors in addressing environmental challenges • Reporting environmental incidents to developer and ensuring that corrective action is taken, and lessons learnt shared; • Assist the contractor in investigating environmental incidents and compile investigation reports; • Monitor the implementation of the EMPr throughout the project by means of weekly checklists and regular meetings;
<p>Environmental Control Officer (ECO) (External or Independent monitoring)</p>	<p>Role</p> <p>The ECO should be employed by the applicant/ project manager for the duration of the project. The ECO should have appropriate training and experience in the implementation of environmental management specifications. The primary role of the ECO is to act as an independent quality controller that monitors all environmental concerns and associated environmental impacts. The ECO conducts site inspections, manages problems and suggest mitigation and be available to advise on incidental issues that arise. The ECO is also required to conduct compliance audits, verifying the monitoring reports submitted by the Scientific Officer. The ECO provides feedback to the Scientific Officer and Project Manager regarding all environmental matters. All role players answer to the Environmental Control Officer for non- compliance. The ECO must also report to the relevant CA as and when required.</p> <p>Responsibilities</p> <ul style="list-style-type: none"> • Be conversant with relevant environmental legislation, policies and procedures, and ensure compliance with them; • Undertake regular site inspections / audits of the activities according to the EMPr, including any non-compliance issues as well as satisfactory or exceptional compliance with the EMPr; • Monitoring the performance of the Contractors and ensuring compliance with the EMPr and associated Method Statements; • Liaison between the Project manager, Scientific Officer, Contractors, authorities and other stakeholders; • Issuing of site instructions to the Contractor for corrective actions required; • Reviewing all documents submitted by the Scientific Officer (method statements, incident reports, complaints register, etc.) • Facilitate environmental awareness training; • In case of non-compliances, the ECO must first communicate this to the Scientific Officer, who must address this matter. Should no action or insufficient action be taken, the ECO may report this matter to the authorities as non-compliance;

FUNCTION	ROLE
	<ul style="list-style-type: none"> • Maintenance, update and review of the EMPr; • Communication of all modifications to the EMPr to the relevant stakeholders.
<p>Sampling Contractor/ Employees on vessel</p>	<p>Role</p> <p>The contractors are required to provide Method Statements detailing the equipment, materials, labour and method(s) that will be used by them to conducting the sampling/ work and also setting out in detail how the management actions contained in the EMPr will be implemented during activities.</p> <p>The Contractor has overall responsibility for ensuring that all work, activities, are in line with the Environmental Management Programme and that Method Statements are implemented as described. All instructions relating to the EMPr will be given to contractors via the scientific officer. Contractors will report issues of concern to the scientific officer, who in turn will report on progress to the TAD.</p> <p>Contractors include the captain on the vessel, the crew handling the equipment and doing sampling, geologist, etc.</p> <p>Responsibilities</p> <ul style="list-style-type: none"> • Preparing method statements of work that will be done; • Conducting the sampling activities as per the method statements and EMPr; • Ensure that safe, environmentally acceptable working methods and practices are implemented and that equipment is properly; operated and maintained, to facilitate proper access and enable any operation to be carried out safely; and • Attend on site meeting(s) prior to the commencement of activities to confirm the procedure and designated activity zones.
<p>Fisheries Liaison Officer (FLO)</p>	<p>Role</p> <p>A fisheries liaison officer (FLO) should be appointed to facilitate communication with affected fishing sectors. The FLO should report daily on vessel activity and respond and advise on action to be taken in the event of encountering fishing gear in the survey area.</p> <p>Responsibilities</p> <ul style="list-style-type: none"> • Liaison between fishing sectors and Project Manager and Scientific Officer
<p>Marine Mammal Observer (MMSO)</p>	<p>Role</p> <p>A designated onboard Marine Mammal and Seabird Observer (MMSO) keeps watch for marine megafauna in the path of the vessel during all vessel activity, including the geophysical surveying. Marine megafauna will include, but are not limited</p>

FUNCTION	ROLE
	<p>to, all marine mammals (whales, cetaceans, seals, etc.), sea turtles, fish and seabirds. They are also in charge of managing the passive acoustic monitoring (PAM) system during the survey activity to detect marine mammals that could be at risk.</p> <p>Responsibilities</p> <ul style="list-style-type: none"> • Keeps watch for marine megafauna to prevent collision and impact due to acoustic survey. • Records all sightings and incidents with marine megafauna and fish, including behaviour.
<p>Passive Acoustic Monitoring (PAM) Observer</p>	<p>Role</p> <p>A designated onboard Passive Acoustic Monitoring (PAM) Observer uses passive acoustic hydrophones to detect the vocalisations of marine species. This person can also be a MMSO, but must not be the designated MMSO.</p> <p>Responsibilities</p> <ul style="list-style-type: none"> • Managing the PAM system • Listens out for underwater marine megafauna to prevent collision and impact due to acoustic survey.

5 DOCUMENTATION, REPORTING AND COMPLIANCE

The completed EMPr must be signed and dated by the holder of the EA prior to commencement of the activity. The method statements prepared and agreed to by the holder of the EA must be appended to the EMPr. Each method statement must be signed and dated on each page by the holder of the EA. This EMPr, once signed and dated, is legally binding. The holder of the EA will remain responsible for its implementation. Once completed and signed, the Applicant must make this EMPr available to the public in accordance with regulation 26 (h) of the Environmental Impact Assessment Regulations, 2014.

To ensure accountable and demonstrated implementation of the EMPr, a number of reporting systems, documentation controls and compliance mechanisms must be in place for this prospecting activity, as a minimum requirement. These are listed/described below.

5.1 Document control/Filing system

The holder of the EA is responsible for the management of the EMPr file in which all documentation detailed below must be filed. An electronic copy must also be kept as back-up. The filing system must be updated, and relevant documents added as required. The EMPr file must be made available at all times on request by the CA or other relevant authorities. The EMPr file will form part of any environmental audits undertaken as prescribed in the EIA Regulations.

5.2 Documentation to be available

The following documents must be placed in the filing system and be accessible at all times:

- Full copy of the signed EA from the Competent Authority in terms of NEMA, granting approval for the development or expansion;
- Copy of the EMPr as well as any amendments thereof;
- A map of the Concession area indicating proposed sampling sites within the concession area, sensitive habitats and reefs and buffers.
- Copy of declaration of implementing generic EMPr and subsequent approval of site specific EMPr and amendments thereof;
- All method statements;
- Completed environmental checklists;
- Minutes and attendance register of environmental site meetings;
- An up-to-date environmental incident log;
- A copy of all instructions or directives issued;
- A copy of all corrective actions signed off.
- Complaints register.

5.2.1 Weekly Environmental Checklist

The Scientific Officer is required to complete a Weekly Environmental Checklist, to ensure conditions, as set out in the EMPr, are implemented and adhered to. Checklists must be dated and signed, and a copy submitted to the Environmental Control Officer on a weekly basis. The checklists will form the basis for the Monthly Environmental Reports and be attached to the Environmental Audit Report as required in terms of the EIA regulations, 2014.

5.2.2 Required Method Statements

Method Statement means a written statement detailing the equipment, materials, labour, and method(s) that will be used by the Contractors conducting the sampling/ work and also setting out in detail how the management actions contained in the EMPr will be implemented during activities. A statement should be prepared for each phase of the prospecting activities (e.g. acoustic survey, grab sampling, core sampling, drill sampling, tailings disposal, resource development, or any other activity that could result in environmental impacts). These should be prepared in consideration of the mitigation measures. These method statements should be submitted and reviewed by the Project Manager, Scientific Officer and Environmental Control Officer. The Environmental Control Officer and Scientific officer shall ensure that the contractors perform in accordance with these method statements. They are not required to be submitted to the CA. These statements must be prepared in such detail that the Project Manager, Scientific Officer and Environmental Control Officer are able to assess whether the Contractor's proposal is in accordance with this specification and/or will produce results in accordance with this specification. Method statements are to be prepared by the contractor prior to commencement of the activity.

The Method Statement must cover applicable details with regard to:

- Prospecting procedures;
- Materials and equipment to be used;
- How and where samples/ material/ equipment will be stored;
- Waste management system that will be implemented;
- Timing and location of activities;
- Emergency preparedness – Spills, training, other environmental emergencies;
- Compliance/ non-compliance; and
- Any other information deemed necessary by the Project Manager/ Scientific Officer or Environmental Control Officer.
- Fauna interaction and risk management – only if the risk was identified – wildlife interaction especially on game farms; and
- Heritage and palaeontology management.

5.2.3 Environmental Incident Log

The Scientific Officer is required to maintain an up-to-date and current Environmental Incident Log to record all environmental incidents and/or all non-compliance notices. These must be reported to the

Project Manager and ECO. An environmental incident is defined as:

- Any deviation from the listed impact management actions (listed in this EMPr)
- Any environmental impact resulting from an action or activity by a contractor in contravention of the environmental stipulations and guidelines listed in the EMPr (e.g. injury to marine megafauna or accidental spill)

It includes, amongst other, the following information:

- The date, time and description of the incident;
- The name of the Contractor responsible;
- The incident must be listed as significant or minor;
- If the incident is listed as significant, a non-compliance notice must be issued, and recorded in the log; and
- Remedial or corrective action taken to mitigate the incident.

5.2.4 Non-compliance

Non-compliance means the contractor/ applicant deviated from the environmental conditions, management outcomes and actions activities. A non-compliance notice will be issued in writing to the responsible contractor by the Scientific Officer. For each non-compliance notice issued, a documented corrective action must be recorded. The contractors must take action to correct the matter within the stipulated timeframe. Any non-compliance with the agreed procedures of the EMPr is a transgression of the law. Failure to comply shall be reported to the relevant CA.

Note that any cost incurred by a Government Department or Municipality due to non-compliance to any relevant environmental legislation by the applicant, will be charged to the developer/ applicant.

5.2.5 Corrective action records

Corrective action is a critical component of the implementation–review–corrective action–implementation cycle and it is through corrective action that continued improvement can be achieved. Where repeated non-compliance is recorded, procedures may need to be altered accordingly to avoid the need for repeated corrective action.

If environmental compliance monitoring indicates non-conformance with the EMPr, The Project Manager will formally notify the operator through a Corrective Action Request. The Corrective Action Request documents:

- The nature of the non-conformance / environmental damage;
- The actions or outcomes required to correct the situation; and
- The date by which each corrective or preventive action must be completed.

For each non-compliance notice issued, a documented corrective action must be recorded. The contractors must take action to correct the matter within the stipulated timeframe. On completion of the corrective action the Scientific Officer must issue a Corrective Action Report to the ECO. Upon

receipt of the Corrective Action Request, the operator will be required to report in the annual audit as to how the required actions were implemented and the success or failure of the corrective action. Should proposed standards or targets be regularly exceeded, an independent committee or service provider should investigate and objectively assess the effectiveness of mitigation measures. If satisfied that the corrective action has been completed, the ECOs are to sign-off on the Corrective Action Report, and this has to be included with the non-compliance notice in the EMPr file. A corrective action is considered complete once the report has signed off by the ECO.

5.2.6 Photographic record

A digital photographic record must be kept if possible. The photographic record will be used to show the progress of the work.

5.2.7 Complaints register

The ECO shall keep a complaints register to record of all complaints received from communities, stakeholders and individuals. The Complaints Register must:

- Record the name and contact details of the complainant;
- Record the time and date of the complaint;
- Contain a detailed description of the complaint;
- Where relevant and appropriate, contain photographic evidence of the complaint or damage (ECOs to take relevant photographs); and
- Contain a copy of the ECOs written response to each complaint received and keep a record of any further correspondence with the complainant. The ECO's written response will include a description of any corrective action to be taken and must be signed by the Contractor, ECO and affected party.

5.2.8 Claims for damages

In the unlikely event that a Claim for Damages is submitted by a community, landowner or individual, this must be submitted to the ECO who must record the full detail of the complaint. The ECOs will evaluate the claim and associated damage and submit the evaluation to the Project Manager / Trans Atlantic Diamonds for consideration. Following consideration by the Project Manager, the DMRE and other relevant authorities will be contacted to determine the course of action.

5.2.9 Interactions with affected parties

Consultation with stakeholders should continue throughout the project to ensure successful management and mitigation of environmental impacts.

5.2.10 Environmental audits

In accordance with Section 34 of the EIA Regulations, 2014 (as amended in 2017), compliance with the conditions of the EA and the EMPr must be audited at intervals indicated in the EA and an audit report must be submitted to the DMRE. This should alternate between an internal auditor (Scientific officer) and an independent Environmental Control Officer (ECO). Environmental audit reports must comply with the specifications in Section 34 and Appendix 7 of the EIA Regulations, 2014 (as amended in 2017). Audits should also consider the overall progress and achievement of the objectives and milestones related to the specified targets of employment, enterprise development, preferential procurement and socio-economic development.

5.2.10.1 Internal environmental audits

Internal Environmental Audits of the activity and implementation of the EMPr will be undertaken by the Scientific Officer. The findings and outcomes of these audits will be recorded in the EMPr file. The environmental audits and associated reports must be conducted and submitted to the ECO and CA at intervals as indicated in the EA. The Scientific Officer must prepare a monthly Environmental Auditing Report. As a minimum the Monthly report should include:

- Weekly Environmental Checklists;
- Deviations and non-compliances with the checklists;
- Non-compliances issued;
- Completed and reported corrective actions;
- Environmental Monitoring;
- General environmental findings and actions; and
- Minutes of the Environmental Site Meetings.

5.2.10.2 External Environmental audits

An external audit should be conducted by the ECO at intervals indicated in the EA. The report is to be submitted to the CA for acceptance and approval. On final completion of the entire activity, the ECO must do a final external environmental audit and prepare a final Environmental Auditing Report. The report is to be submitted to the CA for acceptance and approval. The environmental report must comply with Appendix 7 of the EIA Regulations, 2014.

- Details of the independent person who prepared the report;
- Details of the expertise of independent person that compiled the report;
- A declaration that the independent auditor is independent in a form as may be specified by the CA;
- An indication of the scope of, and the purpose for which, the environmental audit report was prepared;
- A description of the methodology adopted in preparing the environmental audit report;
- An indication of the ability of the EMPr, and where applicable, the closure plan to-
 - Sufficiently provide for the avoidance, management and mitigation of environmental impacts associated with the undertaking of the activity on an on-going basis;

- Sufficiently provide for the avoidance, management and mitigation of environmental impacts associated with the closure of the facility; and
- Ensure compliance with the provisions of EA, EMPr, and where applicable, the closure plan;
- A description of any assumptions made, and any uncertainties or gaps in knowledge;
- A description of any consultation process that was undertaken during the course of carrying out the EAR;
- A summary and copies of any comments that were received during any consultation process; and
- Any other information requested by the CA.

5.2.10.3 Amendments of the impact management outcomes and actions

Once the activity has commenced, the holder of an EA may make amendments to the impact management outcomes and actions in the following manner:

- Amendment of the impact management outcomes – in line with regulation 37 of the EIA Regulation, 2014
- Amendment of the impact management actions – in line with regulation 36 of the EIA Regulations, 2014

If any specific environmental sensitivities/attributes are present on the site which require more specific impact management outcomes and actions not included in the EMPr to manage impacts, the EMPr must be updated to include those impact management outcomes and actions. The amended EMPr must be submitted to the CA for approval prior to commencement of the activity.

6 IMPACT MANAGEMENT OBJECTIVES, OUTCOMES AND ACTIONS

Key Management Outcomes and Actions are presented in this section and includes recommendations for mitigation measures that must be implemented should the environmental authorisation for the proposed prospecting activities be granted. The applicant is reminded of the “duty of care” prescribed in section 28 of the NEMA, 1998 which states that “Every person who causes, has caused or may cause significant pollution or degradation of the environment must take reasonable measures to prevent such pollution or degradation from occurring, continuing or recurring, or, in so far as such harm to the environment is authorised by law or cannot reasonably be avoided or stopped, to minimise and rectify such pollution or degradation of the environment”.

It is the applicant’s duty to ensure that the EMPr and associated mitigation measures are implemented and that all relevant laws, legislation, regulations, guidelines and plans (see Table 6) are adhered to. This list is not complete and should be updated regularly. All phases of the proposed prospecting project must comply with the Environmental Management Programme. The applicant should appoint the appropriate individuals to implement the EMPr and adhere to relevant legislation.

The nature, intensity and extent of any potential impacts that have been identified, including those issues identified by I&APs during the consultation process, have been carefully assessed and incorporated into the BAR and specifically into the EMPr. This information was used to inform management actions (an impact management plan) that will form part of the EMPr. The objectives of the impact management plan are to anticipate and avoid risks and impacts. Each prospecting activity has been considered, together with its potential impacts on the environment, fisheries, socio-economic, heritage and other resources. Through the development of the EMPr, measures have been developed to avoid environmental, social and other risks and impacts, and to provide mitigation where possible. This will then be included in the impact management plan to be retained by the Environmental Control Officer (or such designated authority) who can oversee and report on the impact monitoring and mitigation measures.

The mitigation Hierarchy in terms of the Department of Environmental Affairs and Development Planning guideline should be followed and includes:

- In order of priority aim to avoid, minimise, or remedy disturbance of ecosystems and loss of biodiversity;
- Avoid degradation of the environment;
- Avoid jeopardizing ecosystem integrity;
- Pursue the best practicable environmental option by means of integrated environmental management;
- Protect the environment as the people’s common heritage;
- Control and minimise environmental damage; and
- Pay specific attention to management and planning procedures pertaining to sensitive, vulnerable, highly dynamic, or stressed ecosystems.

Table 6. The most important legislation applicable to prospecting in Concession Area 14C.

APPLICABLE LEGISLATION AND GUIDELINES USED TO COMPILE THE REPORT	REFERENCE WHERE APPLIED	HOW DOES THIS DEVELOPMENT COMPLY WITH AND RESPOND TO THE LEGISLATION AND POLICY CONTEXT.
<p>Mineral and Petroleum Resources Development Act, 2002.</p> <p>In terms of this Act, a Prospecting Right must be obtained before any prospecting activities may commence</p>	<p>Throughout the entire prospecting process</p>	<p>The applicant must submit a prospecting right application in terms of Section 16 (1) of this Act, along with an application for Environmental Authorisation (EA) to the Regional Manager. The prospecting right application must be accepted within 14 days, provided that no other entity or person holds a Prospecting Right, Mining Right, Mining Permit or Retention Permit for the same land and mineral. Once the application is accepted, a Basic Assessment Process, including stakeholder consultation and reporting, must be conducted as per Chapter 5 of the National Environmental Management Act, 1998 (NEMA).</p>
<p>National Environmental Management Act, 1998.</p> <p>NEMA sets out a number of governing environmental principles that should be taken into account and applied by all organs of state when making decisions that significantly affect the environment. It provides the minimum requirements for the procedures for investigating, assessing and communicating the potential impacts of activities on the environment and society and for the granting of Environmental Authorisation for any activity. It requires that any activity should not only be environmentally sustainable, but economically and socially as well. The cultural, social, economical, psychological, developmental and physical needs of people should be considered along with the environment.</p>	<p>Throughout the entire prospecting process</p>	<p>A Basic Assessment Process will be conducted and the appropriate environmental authorisation obtained before commencing with any activities. Measures will be taken to ensure that the activity preserves and promotes the environmental and socioeconomic integrity of the area. Interested and Affected Parties (I&APs) will be consulted and informed about the proposed activities and their potential impacts (both positive and negative). Comments received from I&APs will be communicated to the authorities for consideration as part of the Basic Assessment Report.</p>
<p>Environmental Impact Assessment (EIA) Regulations, 2014 (as amended).</p> <p>The EIA regulations, 2014 (as amended) promulgated in term of Chapter 5 of NEMA controls certain listed activities. These activities are published as Listing Notice (LN) 1 in Government Notice (GN) No. R983 (as amended) as LN 2 in GN No.R 984 (as amended) and as LN 3 in GN No. R985 (as amended). These activities are prohibited until Environmental Authorisation (EA) has been granted by the competent authority. Activities triggered under LN 1 and 3 requires that a Basic Assessment be</p>	<p>Throughout the entire prospecting process</p>	<p>The proposed project triggers Listing Notice (LN) 1. A Basic Assessment Process will be undertaken and a Basic Assessment Report and stakeholder consultation report submitted as part of the application for EA. No activity will commence before EA has been granted by the Competent Authority.</p>

APPLICABLE LEGISLATION AND GUIDELINES USED TO COMPILE THE REPORT	REFERENCE WHERE APPLIED	HOW DOES THIS DEVELOPMENT COMPLY WITH AND RESPOND TO THE LEGISLATION AND POLICY CONTEXT.
<p>conducted, while activities triggered under LN 2 requires that a Scoping and Environmental Impact Assessment Report be conducted.</p> <p>See the Department of Environmental Affairs and Development Planning. 2011. EIA guideline and Information document series: Information document on biodiversity offsets</p>		
<p>National Environmental Management: Air quality Act, 2004.</p> <p>The offshore area of activity and the South African Exclusive Economic Zone (EEZ) does not fall within any municipal or provincial jurisdiction. There is thus a no formal means by which an application can be made for incineration from vessels in the offshore area. This activity is, however, permitted in terms of the International Convention for the prevention of pollution from ships, 1973/1978 (MARPOL) to which South Africa is a signatory.</p>	<p>Throughout the entire prospecting process</p>	<p>South Africa is a signatory of the International Convention for the prevention of pollution from ships, 1973/1978 (MARPOL). As such, all vessels have the responsibility to ensure that they prevent, minimise and mitigate potential pollution by vessels. To manage the potential impact of air pollution by vessels, all contractors and employees will be subjected to an environmental awareness campaign.</p>
<p>National Environmental Management: Waste Act, 2008.</p>	<p>Throughout the entire prospecting process</p>	<p>The client must ensure that this act is adhered to throughout the entire process.</p>
<p>Convention for the prevention of pollution from ships, 1973/1978 (MARPOL).</p>	<p>Throughout the entire prospecting process</p>	<p>Convention for the prevention of pollution from ships, 1973/1978 (MARPOL). As such, all vessels have the responsibility to ensure that they prevent, minimise and mitigate potential pollution by vessels. While a waste management license is not required for offshore waste management activities, such as those related to sewage, the generation of potential waste will be minimised through ensuring employees are subjected to the appropriate environmental awareness campaigns before commencement. All waste generated will be disposed of in a responsible and legal manner.</p>
<p>National Heritage Resources Act, 25 of 1999.</p>	<p>During coring, drilling and grab sampling</p>	<p>A heritage impact assessment has been conducted to ensure that there are no substantial impacts on heritage sites. No prospecting activities shall take place within 50 m of any identified heritage resources such as shipwrecks.</p>

APPLICABLE LEGISLATION AND GUIDELINES USED TO COMPILE THE REPORT	REFERENCE WHERE APPLIED	HOW DOES THIS DEVELOPMENT COMPLY WITH AND RESPOND TO THE LEGISLATION AND POLICY CONTEXT.
<p>Companies Act 71 of 2008</p> <p>The aim of this act is to:</p> <ul style="list-style-type: none"> provide for the incorporation, registration, organisation and efficient management of companies, the capitalisation of profit companies, and the registration of offices of foreign companies carrying on business within the Republic; record-keeping and reporting by companies; 	<p>Throughout the entire prospecting process</p>	<p>The client must ensure that this act is adhered to throughout the entire process.</p>
<p>Restitution of Land Rights Act 22 of 1994</p> <p>The Act provides for the restitution of rights to land to persons or communities dispossessed of their rights after 19 June 1913 as a result of historical racially discriminatory laws and practices</p>	<p>N/A</p>	<p>As this is an offshore application, this act is not applicable to this application.</p>
<p>Climate Change – Carbon Tax Act 15 of 2019</p> <p>A taxpayer is liable to pay a carbon tax where it conducts any activities set out in Schedule 2 of the Carbon Tax Act and emits GHG emissions above the listed thresholds. Tax liability may be reduced through using the various allowances available and in some instances, the tax is only payable where the allowances are exceeded.</p>	<p>Throughout the entire prospecting process</p>	<p>The client has the responsibility to ensure that they pay carbon tax should they emit emissions above the listed thresholds or ensure that they reduce their emissions.</p>
<p>Climate Change – National Climate Change Response White Paper</p> <p>This paper provides guidance across all levels of government, sectors, and stakeholders in terms of climate change adaptation efforts in South Africa in the short to medium-term. Financial institutions must integrate environmental considerations into their decision-making frameworks and contribute to climate change mitigation and resilience. The paper acknowledges that financial institutions can play an important role in mobilizing finance to mitigate the impacts of climate change in South Africa and supporting a just transition to a low carbon economy.</p>	<p>Throughout the entire prospecting process</p>	<p>The client has the responsibility to ensure that they integrate environmental considerations and mitigation measures to reduce the impacts of climate change as a result of any operations they conduct into their decision-making frameworks and business plans.</p>

APPLICABLE LEGISLATION AND GUIDELINES USED TO COMPILE THE REPORT	REFERENCE WHERE APPLIED	HOW DOES THIS DEVELOPMENT COMPLY WITH AND RESPOND TO THE LEGISLATION AND POLICY CONTEXT.
<p>National Water Act 36 of 1998</p> <p>South Africa’s waters are governed by the Water Services Act of 1997 and the National Water Act (NWA) of 1998. The NWA requires that certain water users obtain a license with the Department of Water Affairs and follow specific requirements.</p> <p>Activities that typically require water use licenses are abstraction of water from dams or boreholes for irrigation, forestry operations, discharging waste water into water courses and altering the physical structures of rivers and streams.</p>	N/A	As this is an offshore prospecting activity that will not require any water uses, this act is not applicable to this activity.
<p>The Occupational Health and Safety Act No. 85 of 1993</p> <p>The Act governs health and safety at all workplaces. It is focused on the health and safety of persons at work and places the responsibility on employers “to do everything reasonably practical” to protect the welfare of their employees</p> <p>The Act requires that every company with more than 20 employees has to have a health and safety committee, which should be tasked with identifying potential hazards, examining the causes of any workplace incidents, investigating employee complaints and consulting with health and safety inspectors. The Act also directs employers to provide and establish precautionary measures and systems to prevent workplace injuries.</p>	Throughout the entire prospecting process	The client has to ensure that they adhere to the conditions set out in this act throughout the entire process. They also have to appoint a Health and Safety Officer to supervise the health and safety performance of the company, as well as to represent the employer and management at Health and Safety Committee meetings.
<p>National Environmental Management: Protected Areas Act</p> <p><i>"To provide for the protection and conservation of ecologically viable areas representative of South Africa’s biological diversity and its natural landscapes and seascapes"</i></p>	During coring, drilling and grab sampling	Results from the Screening Report and specialist marine impact assessments should be taken into consideration to avoid prospecting in a protected area or area of conservation concern.
<p>Maritime Zones Act (No 15 of 1994)</p> <p>The Act defines the maritime zones of South Africa which include the contiguous zone, territorial waters, the maritime cultural zone, the</p>	Throughout the entire prospecting process	Concession Area 14C lies within the territorial waters. Any offshore are subject to National law and should be adhered to.

APPLICABLE LEGISLATION AND GUIDELINES USED TO COMPILE THE REPORT	REFERENCE WHERE APPLIED	HOW DOES THIS DEVELOPMENT COMPLY WITH AND RESPOND TO THE LEGISLATION AND POLICY CONTEXT.
<p>exclusive economic zone and the continental shelf. South Africa has the right to exercise and implement all laws within the contiguous zone.</p>		
<p>Constitution of South Africa This is the supreme law that provides the legal framework for the existence of the Republic of South Africa.</p>	<p>Throughout the entire prospecting process</p>	<p>The conducting of prospecting activities in the area shall be done in such a manner that avoids significant environmental impacts. In instances where this cannot be avoided, impacts must be minimised or mitigated in order to protect the environmental rights of South Africans.</p>
<p>National Environmental Management: Biodiversity Act 10 of 2004. This act provides legal protection and management of South Africa's biodiversity within the context of the National Environmental Management Act and the sustainable use of biological resources.</p>	<p>Throughout the entire prospecting process</p>	<p>Strict compliance with the EMPr should be adhered to and mitigation measures implemented to reduce disturbance of biodiversity and aid in recovery.</p>
<p>Relevant specific environmental management Act (SEMA(s)) and their regulations. This refers to and includes subordinate regulations made in terms of section 1 of NEMA and specifically refers to the Protected Areas, Biodiversity, Air Quality, Integrated Coastal Management and Waste Acts.</p>	<p>Throughout the entire prospecting process</p>	<p>Applicable SEMA acts should be taken into account during the planning and design phase so that appropriate protocols are developed and maintained during the operational phase such as for waste management and protection of biodiversity areas.</p>
<p>CapeNature Western Cape Biodiversity Spatial Plan (WCBSP, 2017) A spatial assessment and biodiversity plan that is delineated on a Geographic Information System map that includes Critical Biodiversity, Ecological Support Areas to inform sustainable development in the Western Cape.</p>	<p>Planning and Design Phase</p>	<p>This spatial plan should be taken into account during the plan and design phase to inform areas for prospecting and activities should be adjusted accordingly.</p>
<p>The Western Cape Provincial Spatial Development Framework (2014) (Department of Environmental Affairs & Development Planning)8 This includes land development policies, strategies, objectives as well as growth and development strategies for the province, all of which are spatially represented.</p>	<p>Throughout the entire prospecting process</p>	<p>This legislative framework should be taken into account to promote growth and development of local communities and should be considered during the planning and design phase.</p>

APPLICABLE LEGISLATION AND GUIDELINES USED TO COMPILE THE REPORT	REFERENCE WHERE APPLIED	HOW DOES THIS DEVELOPMENT COMPLY WITH AND RESPOND TO THE LEGISLATION AND POLICY CONTEXT.
<p>The Mining and Biodiversity Guideline (2013)</p> <p>Outlines six principles that should be applied during any stage of the mining for decision-making. The document uses biodiversity information for decision-making throughout the mining cycle</p>	<p>Throughout the entire prospecting process</p>	<p>This should be employed to provide a practical guideline when making decisions regarding impacts to biodiversity with respect to the prospecting activities.</p>
<p>The Western Cape Land Use Planning Guidelines: Rural Areas (2019)</p> <p>Aims at Safeguarding priority biodiversity areas and their functionality and ecological infrastructure and ensuring sustainable development in rural locations throughout the Western Cape</p>	<p>Throughout the entire prospecting process</p>	<p>This guideline will inform the planning and design of the prospecting survey and can be used to develop protocols for implementation in the operation phase.</p>
<p>Western Cape Guideline on Biodiversity Offsets</p> <p>DEA&DP 2015. Western Cape Guideline on Biodiversity Offsets. Prepared by Susie Brownlie and Mark Botha for DEA&DP, Cape Town12</p>	<p>Throughout the entire prospecting process</p>	<p>This guideline should be used during the planning and design phase such that residual impacts of the prospecting activity on biodiversity should be reduced.</p>
<p>National Environmental Management: Integrated Coastal Management Act, 2008 (Act No. 24 of 2008) (NEM: ICMA)</p> <p>ICMA governs the sustainable use of goods and services that are generated by coastal and marine ecosystems.</p>	<p>Throughout the entire prospecting process</p>	<p>The required discharge and dumping permits need to be obtained in terms of NEM: ICMA with reference to the discharge of sediment into the marine environment</p> <p>Implement the Provincial Coastal Management Programme (PCMP). Its purpose is to provide an integrated, coordinated and uniform approach to coastal management in accordance with the and the.</p>
<p>Marine Spatial Planning Act of 2019</p> <p>Makes provision for marine spatial planning system in South Africa so that the environment can be accessed by all users of the ocean, to facilitate responsible use of the ocean and conservation for future generations.</p>	<p>Planning and Design Phase</p>	<p>When planning the prospecting survey, areas of biological significance need to be taken into account and avoided.</p>
<p>National Estuarine Management Protocol (promulgated in GN No. 533 of 18 June 2021).</p> <p>This protocol was developed to determine a vision and objectives for integrated and effective management of South African estuaries.</p>	<p>Throughout the entire prospecting process</p>	<p>Relevant guidelines, Estuarine Management Plans and Mouth Management Plans need to be considered should activities impact the Olifants River Estuary</p>

APPLICABLE LEGISLATION AND GUIDELINES USED TO COMPILE THE REPORT	REFERENCE WHERE APPLIED	HOW DOES THIS DEVELOPMENT COMPLY WITH AND RESPOND TO THE LEGISLATION AND POLICY CONTEXT.
<p>International Regulations for Preventing Collisions at Sea (Colregs 1972)</p> <p>These regulations refer to navigational rules that need to be adhered to by maritime vessels to minimise the likelihood of collisions.</p>	<p>Operation Phase</p>	<p>To prevent collision with other maritime vessels during survey operations, the operation vessel should adhere to this regulation, implement a safety zone and effectively signal this to other vessels.</p>

6.1 Impact management outcomes and actions

6.1.1 Management Outcome: Environmental awareness training

All onsite staff are aware and understands the individual responsibilities in terms of this EMPr

Prospecting activity: N/A	Aspects affected: N/A	
MITIGATION MEASURE/ MANAGEMENT ACTION	Responsible person	Timeframe
<ul style="list-style-type: none"> • Contractor personnel and staff should undergo environmental awareness training prior to commencement of the activities which would include being briefed about the sensitivities pertaining to the environmental and sensitive species, archaeological, heritage, and palaeontological resources, the consequences of any damage/removal of such resources • All staff are aware of the conditions and controls linked to the EA and within the EMPr and made aware of their individual roles and responsibilities in achieving compliance with the EA and EMPr; • Discussion of the potential environmental impacts of prospecting activities. • The benefits of improved personal performance. • Employees' roles and responsibilities, including emergency preparedness (this should be combined with this induction, but presented by the contractors Health and Safety Representative). • Explanation of the mitigation measures that must be implemented when carrying out their activities. • Explanation of the specifics of this EMPr and its specification (no-go areas, etc.) • Explanation of the management structure of individuals responsible for matters pertaining to the EMPr. • A staff attendance register of all staff to have received environmental awareness training must be available Emergency preparedness and response procedures; • Course material must be available and presented in appropriate languages. 	Scientific Officer ECO Project manager	Before commencing with activities

6.1.2 Management Outcome: Stakeholder Consultation

Consultation with stakeholders should continue throughout the project to ensure successful management and mitigation of environmental impacts.

Prospecting activity: Throughout the project	Aspects affected: N/A	
MITIGATION MEASURE/ MANAGEMENT ACTION	Responsible person	Timeframe
<ul style="list-style-type: none"> • Consult with relevant government departments, fishing industry/associations and local communities to discuss important fishing grounds, harvesting times, other relevant information and the possibility of altering the prospecting programme so as to minimise disruptions to both parties as required. • Appoint a fisheries liaison officer (FLO) to facilitate communication with fishing sectors. The FLO should report daily on vessel activity and respond and advise on action to be taken in the event of encountering fishing gear in the survey area. • Landowners, land occupiers and affected stakeholders should be consulted at least 1 month after the start of the survey. • Key stakeholders that need to be notified of the commencement of operations (including navigational co-ordinates of the survey area, timing and duration of proposed activities) and the likely implications thereof: <ul style="list-style-type: none"> ○ SA Marine Linefish Management Association (SAMLMA); ○ South African Pelagic Fishing Industry Association (SAPFIA) ○ West Coast Rock Lobster Association; and ○ Local fishing communities in Doringbaai ○ DFFE; ○ SAMSA; ○ South African Navy Hydrographic office; and ○ Overlapping and neighbouring right holders 	Project Manager Scientific Officer Fishing Liaison Officer ECO	Throughout the project

6.1.3 Management Outcome: Prevent megafauna collision

Prevent injury or death of megafauna such as whales due to collision with survey vessels

Prospecting activity: Vessel operation	Aspects affected: Marine fauna, such as marine mammals, seabirds and sea turtles	
MITIGATION MEASURE/ MANAGEMENT ACTION	Responsible person	Timeframe
<ul style="list-style-type: none"> • Vessel operator must keep watch for marine megafauna in the path of the vessel during vessel operation. • At least two on-board independent Marine Mammal and Seabird observers (MMSOs) with experience in marine megafauna (including, but not limited to, all marine mammals (cetaceans and seals), sea turtles and seabirds) identification and observation techniques must be employed to carry out daylight observations and ensure compliance with mitigation measures during geophysical surveying. It must be ensured that there are sufficient MMOs on board the vessel to prevent fatigue and meet health and safety requirements, during the survey periods. • Activity must be restricted to specific areas or a time of year, this includes: <ul style="list-style-type: none"> ○ Avoid planning any surveys during the movement of migratory cetaceans (particularly baleen whales) from their southern feeding grounds into low latitude waters (beginning of June to end of November) and ensure that migration paths are not blocked by sonar operations; ○ Avoid planning any surveys during mating season (confirm these times with MMSOs); and ○ Confine surveys to seasons when cetaceans are scarce to ensure minimal disturbance (confirm these times with MMSOs). • MMSOs to conduct pre-survey visual scans of at least 30 minutes for the presence of megafauna around the survey vessel prior to any vessel movement. • Protocol must be followed to avoid mortalities and/or injuries to marine animals when they are encountered. • Passive Acoustic Monitoring (PAM) technology must be incorporated into any survey programme. A designated onboard PAM Observer uses the PAM technology to detect the vocalisations of marine species, particularly during periods of low visibility, such as at night or during adverse weather conditions and thick fog, to prevent collision and impact due to acoustic survey. . It must be ensured that there are sufficient PAM operators on board the vessel to prevent fatigue and meet health and safety requirements, during the survey periods. • Suspend operations if any obvious mortalities or injuries to marine life are observed. • Make marine mammal incidence data and sound source output data from surveys available on request to the Marine Mammal Institute (MMI), DFFE and DMRE. • Ensure that MMSOs compile a survey close-out report incorporating all recorded data to the relevant DFFE authorities. 	<p>MMSO</p> <p>PAM Operator</p> <p>Vessel operator</p> <p>Scientific Officer</p>	<p>During vessel operation</p>

Prospecting activity: Vessel operation	Aspects affected: Marine fauna, such as marine mammals, seabirds and sea turtles	
<ul style="list-style-type: none"> Record incidences of encounters with marine life (seabirds, turtles, seals, fish), their behaviour and response to vessel, including any attraction of predatory seabirds and incidents of feeding behaviour around the survey vessel; data on position, distance from the vessel, swimming speed and direction and obvious changes in behaviour (e.g. startle responses or changes in surfacing/diving frequencies, breathing patterns). If spotted, wait until all marine megafauna have cleared an area of 500 m radius of the centre of the vessel. Vessel transit speed to not exceed 12 knots (22 km/hr), except within 25 km of the coast where it should be kept to less than 10 knots (18 km/hr) as well as when sensitive marine fauna are present in the vicinity. 		

6.1.4 Management Outcome: Protection of sensitive habitats and resources

Protection of sensitive habitats and marine ecological resources from invasive sampling

Prospecting activity: Grab, core and drill sampling, tailings disposal and resource estimation phase	Aspects affected: Benthic invertebrates, fish and any other species dependent on these habitats	
MITIGATION MEASURE/ MANAGEMENT ACTION	Responsible person	Timeframe
<ul style="list-style-type: none"> Should any ecologically sensitive features such as reefs be identified within the concession area during the initial acoustic survey, these must be avoided and suitably buffered. Appropriate buffers must be determined by a suitably qualified specialist. Once suitable buffers have been mapped it should be illustrated on a map and form part of the EMPr. Planning and management of potential discharges to ensure that tailings are not discarded onto potentially sensitive habitats Grab samples collected should be analysed as soon as possible to determine the benthic macrofaunal communities in the area. Results of this monitoring should be used to inform additional mitigation measures if required. This will also establish a baseline for comparison of any future surveys and sampling. Reassess the potential marine impacts after completion of the geophysical surveys and biological analysis as these might elucidate areas that would need to be avoided and species of conservation concern. 	Geologist Scientific Officer ECO Contractors	During invasive sampling activities

6.1.5 Management Outcome: Protection of marine fauna from noise pollution

Ensure that impact of noise on to marine fauna is minimised.

Prospecting activity: Acoustic Survey	Aspects affected: Marine fauna, especially marine mammals	
MITIGATION MEASURE/ MANAGEMENT ACTION	Responsible person	Timeframe
<ul style="list-style-type: none"> • Vessel operator must keep watch for marine megafauna in the path of the vessel during vessel operation; • Employ two on-board independent Marine Mammal and Seabird observers (MMSOs) with experience in marine megafauna (including, but not limited to, all marine mammals (cetaceans and seals), sea turtles and seabirds) identification and observation techniques to carry out daylight observations and ensure compliance with mitigation measures during geophysical surveying; • It is recommended that activity be restricted to specific areas or a time of year as far as possible, feasible and reasonable, and as per the recommendations from an MMSO and specialist. The following should be considered: <ul style="list-style-type: none"> ○ Avoid planning any surveys during the movement of migratory cetaceans (particularly baleen whales) from their southern feeding grounds into low latitude waters (beginning of June to end of November) and ensure that migration paths are not blocked by sonar operations; ○ Avoid planning any surveys during mating season (confirm these times with MMSOs); and ○ Confine surveys to seasons when cetaceans are scarce to ensure minimal disturbance (confirm these times with MMSOs). • MMSO to conduct pre-survey visual scans of at least 30 minutes for the presence of cetaceans around the survey vessel prior to the initiation of any acoustic impulses • Protocol must be followed to avoid mortalities and/or injuries to marine animals when they are encountered; • Passive Acoustic Monitoring (PAM) technology must be incorporated into any survey programme and used to detect cetaceans, particularly during periods of low visibility, such as at night or during adverse weather conditions and thick fog; • Suspend operations if any obvious mortalities or injuries to marine life are observed; • Make marine mammal incidence data and sound source output data from surveys available on request to the Marine Mammal Institute (MMI), DFFE and DMRE; • Ensure that MMSOs compile a survey close-out report incorporating all recorded data to the relevant DFFE authorities; • Record marine life (cetaceans, seabirds, turtles, seals, fish), incidences and responses to acoustic survey activity, including data on position, distance from the vessel, swimming speed and direction and obvious changes in behaviour (e.g. startle responses or changes in surfacing/diving frequencies, breathing patterns, feeding behaviour) along with noise levels. 	<p>MMSO</p> <p>PAM operator</p> <p>Vessel operator</p> <p>Scientific Officer</p>	<p>During Acoustic Survey</p>

Prospecting activity: Acoustic Survey	Aspects affected: Marine fauna, especially marine mammals	
<ul style="list-style-type: none"> • “Soft starts” should be carried out for equipment with source levels greater than 210 dB re 1 µPa at 1 m over a period of 20 minutes to give adequate time for marine mammals to leave the vicinity. Where this is not possible, the equipment should be turned on and off over a 20-minute period to act as a warning signal and allow cetaceans to move away from the sound source. • Wait until all marine megafauna have cleared an area of 500 m radius of the survey vessel (centre of the sound source) before resuming with acoustic survey. If, after a period of 30 minutes, megafauna are still within 500 m of the vessel, the normal “soft start” procedure should be allowed to commence for at least 20-minutes duration. Behaviour during “soft starts” must be monitored; and • Sound containment and improvement of current equipment used must be implemented. 		

6.1.6 Management Outcome: Protection of underwater cultural heritage

Ensure impact to heritage resources is minimised

Prospecting activity: Grab, core and drill sampling, tailings disposal and resource estimation phase	Aspects affected: Marine Heritage Resources	
MITIGATION MEASURE/ MANAGEMENT ACTION	Responsible person	Timeframe
<ul style="list-style-type: none"> • It is recommended that the onboard Trans Atlantic representative must undergo a short induction on archaeological site and artefact recognition, as well as the procedure to follow should archaeological material be encountered during sampling. • The contractor must be notified that archaeological sites could be exposed during sampling activities, as well as the procedure to follow should archaeological material be encountered during sampling. • Areas where shipwreck sites are identified during the geophysical surveys must be excluded prior to undertaking sampling activities. • Heritage sites or objects may not be disturbed without a permit from the relevant heritage resources authority. • Any core sample sections which contain alluvial material, particularly where organic remains are present, are retained and are subject to paleo-environmental assessment. • Any fossils found during the processing of cores must have the details of context recorded, must be kept for identification by an appropriate specialist and, if significant, be deposited in an appropriate institution. • If shipwreck material is encountered during the course of sampling in any of the concession areas, the following mitigation measure should be applied: 	<p>Trans Atlantic representative that underwent induction course</p> <p>Scientific Officer</p> <p>Contractors</p>	<p>During invasive sampling activities</p>

Prospecting activity: Grab, core and drill sampling, tailings disposal and resource estimation phase	Aspects affected: Marine Heritage Resources	
<ul style="list-style-type: none"> • Cease work in the directly affected area to avoid damage to the wreck until the South African Heritage Resources Agency (SAHRA) has been notified and the contractor has complied with any additional mitigation as specified by SAHRA; and • Where possible, take photographs of them, noting the date, time, location and types of artefacts found. • Under no circumstances may any artefacts be removed, destroyed or interfered on the site, unless under permit from SAHRA. • All updates and/or changes to the project, supporting documentation, correspondence, reports, or any other work relating to the project must be uploaded to the case on SAHRIS to provide SAHRA with the opportunity to comment. SAHRA does not accept emailed documents or hard-copy documents received via post. 		

6.1.7 Management Outcome: Shipping safety and safety to the public:

Ensure safety of all members onboard, public safety, and safety of other vessels on sea

Prospecting activity: During vessel operation	Aspects affected: Members on board the survey, any other vessel and members of the public	
MITIGATION MEASURE/ MANAGEMENT ACTION	Responsible person	Timeframe
<ul style="list-style-type: none"> • Prior to the commencement of activities, key stakeholders should be consulted and informed of the proposed survey activity (including navigational co-ordinates of the survey area, timing and duration of proposed activities) and the likely implications thereof: <ul style="list-style-type: none"> ○ Mariners ○ DMRE ○ Relevant Port Captains ○ Marine Resources Management (MRM); ○ SA Marine Linefish Management Association (SAMLMA); ○ South African Pelagic Fishing Industry Association (SAPFIA); ○ South African Tuna Association (SATA); ○ South African Tuna Longline Association (SATLA); ○ Large Pelagic Small Medium & Micro Enterprises Association (LPSMME); ○ Local fishing communities; 	Vessel operator Scientific Officer Environmental Control Officer Health and Safety Officer	During all activities

Prospecting activity: During vessel operation

Aspects affected: Members on board the survey, any other vessel and members of the public

- DFFE;
- SAMSA;
- South African Navy Hydrographic office; and
- Overlapping and neighbouring right holders
- These stakeholders should again be notified at the completion of surveying when the survey vessel(s) is/are off location.
- A health and safety officer should be appointed and Health and Safety Regulations should be adhered to.
- The survey and sampling vessels must be certified for seaworthiness through an appropriate internationally recognised marine certification programme (e.g. Lloyds Register, Det Norske Veritas). The certification, as well as existing safety standards, requires that safety precautions should be taken to minimise the possibility of an offshore accident. Collision prevention equipment should include radar, multi-frequency radio, foghorns, etc. Safety equipment and training of personnel to ensure the safety and survival of the crew in the event of an accident is a further legal requirement.
- A buffer of 500 m in extent should be placed around the ship in terms of the International Regulations for Preventing Collisions at Sea (Colregs 1972). To avoid or minimise potential negative impacts on fisheries due to the exclusion from fishing grounds in the vicinity of the ship, mitigation measures as recommended under the fisheries section should be implemented.
- Ensure that necessary emergency procedures and protocols are in place such as:
 - Shipboard Oil Pollution Emergency Plan (SOPEP) in accordance with MARPOL
 - Emergency Response Plan
 - Waste Management Plan in accordance with MARPOL

6.1.8 Management Outcome: Socio-economic and fishing:

Ensure that impacts on fishing sectors and any resultant socio-economic impacts are minimised

Prospecting activity: During vessel operation	Aspects affected: Fishing sectors	
MITIGATION MEASURE/ MANAGEMENT ACTION	Responsible person	Timeframe
<p>Best Practice:</p> <ul style="list-style-type: none"> • Undertake surveys when fishing effort is lowest i.e., August to December. It is recommended that small pelagic peak fishing seasons (January-July) and snoek line fishing peak seasons (April-May) be avoided as far as possible, feasible and reasonable. Avoid designated fishing grounds and undertake surveys when fishing effort is lower • It is recommended that additional compensation and resource support measurements be introduced to households reliant on fishing for subsistence, should prospecting activities prove to negatively impact fishing success, income and livelihood. • Appoint a fisheries liaison officer (FLO) to facilitate communication with potentially affected fishing sectors. The FLO should report daily on vessel activity and respond and advise on action to be taken in the event of encountering fishing gear in the survey area • Key stakeholders should be consulted throughout the process and informed of the proposed survey activity (including navigational co-ordinates of the survey area, timing and duration of proposed activities) (contactable via liaison@fishsa.org): <ul style="list-style-type: none"> ○ SA Marine Linefish Management Association (SAMLMA); ○ South African Pelagic Fishing Industry Association (SAPFIA); ○ South African Tuna Association (SATA); ○ South African Tuna Longline Association (SATLA); ○ Large Pelagic Small Medium & Micro Enterprises Association (LPSMME); and ○ Local fishing communities. • Other associations and organs of state: <ul style="list-style-type: none"> ○ DFFE; ○ SAMSA; ○ South African Navy Hydrographic office; and ○ Overlapping and neighbouring right holders. • These stakeholders should again be notified at the completion of surveying when the survey vessel(s) is/are off location. 	<p>Fishing Liaison Officer</p> <p>Scientific Officer</p> <p>ECO</p>	<p>During all activities</p>

6.1.9 Management Outcome: Waste management and water pollution:

Prospecting activity: During vessel operation	Aspects affected: Marine environment and species	
MITIGATION MEASURE/ MANAGEMENT ACTION	Responsible person	Timeframe
<p>Hazardous Substances is a substance governed by the Hazardous Substances Act, 1973 (Act No. 15 of 1973) as well as the Hazardous Chemical and Substances Regulations, 1995;</p> <ul style="list-style-type: none"> • Solid waste means all solid waste, including construction debris, hazardous waste, wrapping materials, timber, cans, drums, wire, nails, cigarette buds, food and domestic waste (e.g. plastic packets and wrappers); • Contractor personnel and staff should undergo waste management and spill management training and be informed about sensitive marine species & suitable disposal of waste; • Ensure compliance with relevant MARPOL standards; • Develop a waste management plan using waste hierarchy; • A Shipboard Oil Pollution Emergency Plan (SOPEP) must be prepared for all vessels and should be in place at all times during operations; • Deck drainage should be routed to a separate drainage system (oily water catchment system) for treatment to ensure compliance with MARPOL (15 ppm); • All process areas should be bunded to ensure drainage water flows into the closed drainage system; • Drip trays should be used to collect run-off from equipment that is not contained within bunded areas and the contents routed to the closed drainage system; • Low-toxicity biodegradable detergents should be used in the cleaning of all deck spillages; • All hydraulic systems should be adequately maintained and hydraulic hoses should be frequently inspected; and • No waste or pollution in the environment is allowed. The applicant shall be liable for the cost of any remedial action which has to be carried in addition to a fine equal to the transgression. • Appropriate pollution control facilities necessary to prevent discharge of water containing polluting matter or visible suspended materials into watercourses or water bodies must be designed and implemented; • Runoff from the ship must be strictly controlled, and contaminated water must be collected, stored and either treated or disposed of off-site, at a location approved by the project manager; • All measures regarding waste management must be undertaken using an integrated waste management approach; • Sufficient, covered waste collection bins (scavenger and weatherproof) must be provided; • General waste produced onsite must be disposed of at recognised waste disposal sites/ recycling company; • Hazardous waste must be disposed of at a registered waste disposal site; • Certificates of safe disposal for general, hazardous and recycled waste must be maintained. 	All members on board the vessel	Throughout the project

Prospecting activity: During vessel operation	Aspects affected: Marine environment and species	
<ul style="list-style-type: none"> • The use and storage of hazardous substances to be minimised and non-hazardous and non-toxic alternatives substituted where possible; • All hazardous substances will be stored in suitable containers as defined in the Method Statement; • Containers will be clearly marked to indicate contents, quantities and safety requirements; • All storage areas will be bunded. The bunded area will be of sufficient capacity to contain a spill / leak from the stored containers; • An Alphabetical Hazardous Chemical Substance (HCS) control sheet will be drawn up and kept up to date on a continuous basis; • All hazardous chemicals that will be used on site will have Material Safety Data Sheets (MSDS); • Employees handling hazardous substances / materials must be aware of the potential impacts and follow appropriate safety measures. Appropriate personal protective equipment must be made available; • The Contractor must ensure that diesel and other liquid fuel, oil and hydraulic fluid is stored in appropriate storage tanks or in bowzers • No smoking must be allowed within the vicinity of the hazardous storage areas; • Adequate fire-fighting equipment must be made available at all hazardous storage areas; • An appropriately sized spill kit kept onsite relevant to the scale of the activity/s involving the use of hazardous substance must be available at all times; • The responsible operator must have the required training to make use of the spill kit in emergency situations; 		



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