

## **APPENDIX F: ENVIRONMENTAL MANAGEMENT PROGRAMME**

# ENVIRONMENTAL MANAGEMENT PROGRAMME FOR A PROSPECTING RIGHT APPLICATION FOR SOUTH AFRICAN SEA AREAS 4C AND 5C, WEST COAST, SOUTH AFRICA

Prepared for: De Beers Marine (Pty) Ltd on behalf of  
De Beers Consolidated Mines (Pty) Ltd

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## ACRONYMS AND ABBREVIATIONS

Acronym / Abbreviation	Definition
BA	Basic Assessment
CITES	Convention on International Trade of Wild Fauna and Flora Endangered Species
EA	Environmental Authorisation
EAP	Environmental Assessment Practitioner
EIA	Environmental Impact Assessment
EMPr	Environmental Management Programme
DBCM	De Beers Consolidated Mines (Pty) Ltd
DBM	De Beers Marine (Pty) Ltd
DFFE	Department of Forestry, Fisheries and Environment
DMRE	Department of Mineral Resources and Energy
GHG	Greenhouse Gas
IAEA	International Atomic Energy Agency
IAIASa	International Association for Impact Assessments South Africa
ICRP	International Commission on Radiological Protection
MARPOL	The International Convention for the Prevention of Pollution from Ships
MMO	Marine Mammal Observer
MoU	Memorandum of Understanding
MPRDA	Mineral and Petroleum Resources Development Act, 2002 (No. 28 of 2002)
NEMA	National Environmental Management Act, 1998 (No. 107 of 1998)
P&I	Protection and Indemnity
PAM	Passive Acoustic Monitoring
PASA	Petroleum Agency of South Africa
Pr. Sci. Nat.	Professional Natural Scientist
SAHRA	South African Heritage Resources Agency
SAMSA	South African Maritime Safety Authority
SAN	South African Navy
SMME	Small, Medium and Micro-Enterprise
SOPEP	Shipboard Oil Pollution Emergency Plan
SLR	SLR Consulting (South Africa) (Pty) Ltd
UNCLOS	The United Nations Convention on the Law of the Sea

## 1. INTRODUCTION

### 1.1 PROJECT BACKGROUND

On 22 November 2022, the Department of Mineral Resources and Energy (DMRE) accepted an application lodged by De Beers Consolidated Mines (Pty) Ltd (DBCM) for a prospecting right to undertake offshore diamond prospecting activities in South African Sea Areas 4C and 5C, off the West Coast of South Africa (see Figure 1-1). The application was lodged in terms of Section 16 of the Mineral and Petroleum Resources Development Act, 2002 (No. 28 of 2002; MPRDA) (as amended).

In terms of the Environmental Impact Assessment (EIA) Regulations, 2014 (as amended), promulgated in terms of the National Environmental Management Act (No. 107 of 1998; NEMA), an application for a prospecting right requires Environmental Authorisation (EA) from the competent authority, the Minister of Mineral Resources and Energy (or delegated authority), to carry out the proposed prospecting activities. An application for EA, in terms of NEMA, was submitted to the DMRE at the same time as the prospecting right application. In order for DMRE to consider an application for EA, a Basic Assessment (BA) process must be undertaken and an Environmental Management Programme (EMPr) must be compiled.

SLR Consulting (South Africa) (Pty) Ltd (SLR) has been appointed as the independent environmental assessment practitioner (EAP) to undertake the BA process and compile the EMPr for the proposed project.

### 1.2 PROJECT DESCRIPTION

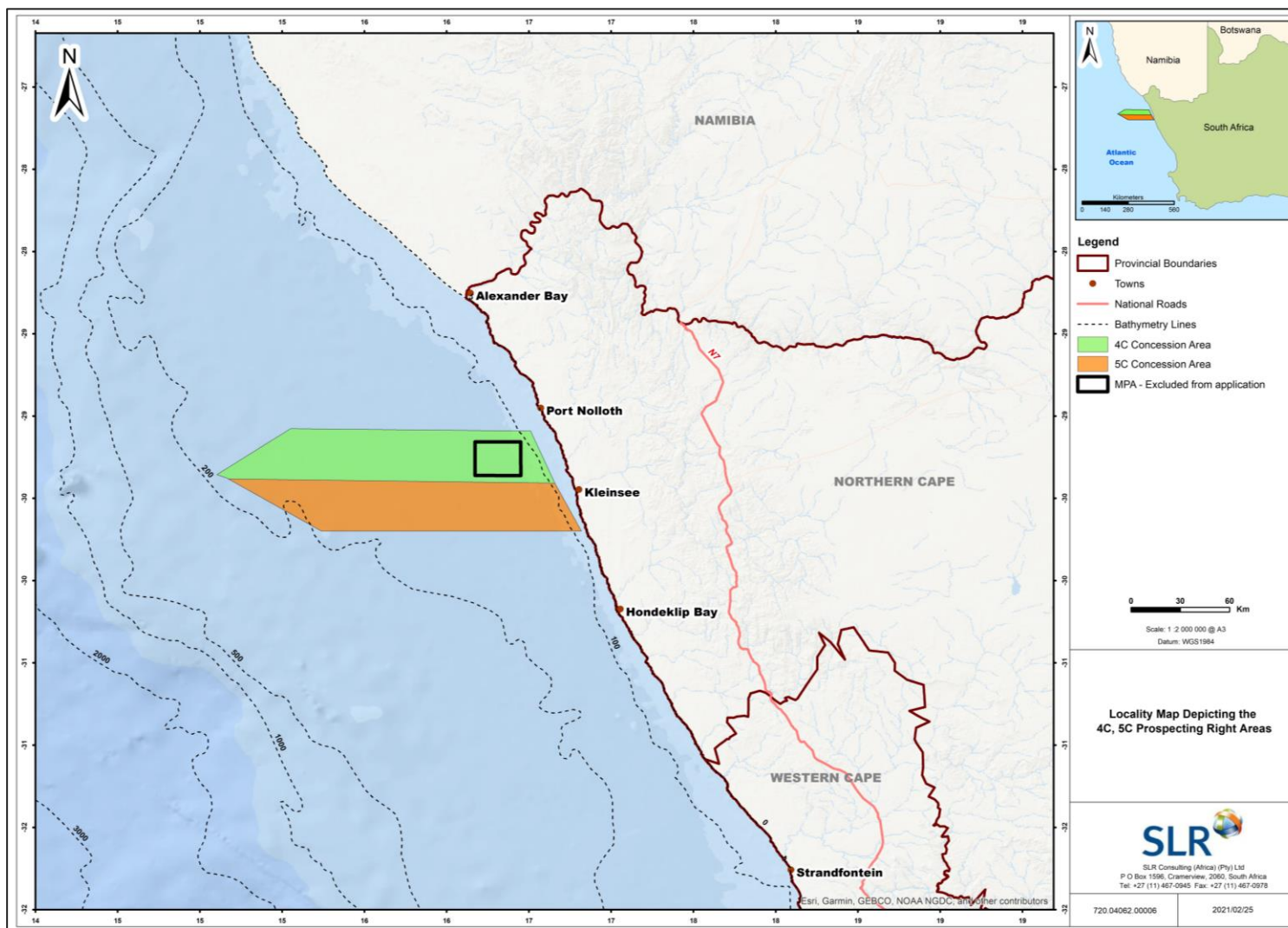
The target mineral for the prospecting activities is marine diamonds. The prospecting activities would be conducted in a phased approach, with each phase dependant on results of the previous phase. The phases planned and the planned timeframe to complete the proposed prospecting operation are provided in TABLE 1-1.

**TABLE 1-1: PROPOSED WORK PROGRAMME**

Activity	Timeframe
Phase I – Survey, Sampling and Desktop Studies	36 – 54 months (Years 1 - 5)
Phase II – Economic Assessment	12 – 36 months (Years 1 – 5)

The proposed prospecting activities include offshore survey and sampling campaigns ongoing throughout Phase 1 of the Prospecting Work Programme. The key activities to be managed by this EMPr include geophysical surveys (utilising various technologies) and exploration sampling (e.g. coring and / or wide spaced sampling) in target features of interest, enabling refinement of the definition of the target features. Should the result of the survey(s) / exploration sampling indicate potential exists, then further follow-up sampling and infill survey may be undertaken to establish the distribution of the diamondiferous material.

Due to the dynamic nature of prospecting and evaluation, the work programme may have to be modified, extended or curtailed as data and results become available. The proposed prospecting activities in Sea Areas 4C and 5C will be undertaken in conjunction with proposed activities in other DBCM prospecting rights within the South African Sea Areas. Results obtained from these prospecting activities will be used to develop the regional geological framework that will guide the prospecting work programme.



**FIGURE 1-1: LOCALITY MAP DEPICTING THE 4C AND 5C PROSPECTING RIGHT AREAS, SHOWING EXCLUSION OF THE NAMAQUA FOSSIL FOREST MARINE PROTECTED AREA.**



### 1.3 SOUTH AFRICAN LEGAL REQUIREMENT OF THE EMPR

The purpose of the EMPr is to ensure that potential negative impacts associated with the proposed project are avoided or kept to a minimum and that potential positive impacts are enhanced, where possible. In particular, the EMPr sets out environmental outcomes and actions for DBCM and De Beers Marine (Pty) Ltd (DBM) (and any nominated or selected Sub-contractors) and associated indicators against which the DBCM’s and DBM’s performance can be measured during the planning, establishment, operational and end of prospecting phases of the proposed project.

This document will form the basis for the environmental specifications that DBCM and DBM will be obliged to adhere to during the duration of the proposed project.

This EMPr has been prepared in compliance with Appendix 4 of the EIA Regulations, 2014 (as amended), the contents of which are outlined in Table 1-2 below.

**TABLE 1-2: REQUIREMENTS OF AN EMPR IN TERMS OF THE EIA REGULATIONS, 2014 (AS AMENDED).**

ITEM	CONTENT OF CONSOLIDATED EMPR	COMPLETED (Y/N or N/A)	LOCATION IN CONSOLIDATED EMPR
1 a)	i) Details of the EAP who prepared the EMPr;	Y	Section 2
	ii) Details of the expertise of that EAP to prepare an EMPr, including a curriculum vitae;	Y	Section 2 and Appendix A
b)	A detailed description of the aspects of the activity that are covered by the EMPr as identified by the project description;	Y	Sections 1.1, 1.2 and 4
c)	A map at an appropriate scale which superimposes the proposed activity, its associated infrastructure, and infrastructure on the environmental sensitivities of the preferred site, indicating any areas that should be avoided, including buffers;	Y	Appendix B
d)	A description of the impact management outcomes, including management statements, identifying the impacts and risks that need to be avoided, managed and mitigated as identified through the environmental impact assessment process for all phases of the development including –	Y	Table 4-1 - Table 4-4
	i) planning and design;		
	ii) pre-construction activities;		
	iii) construction activities;		
	iv) rehabilitation of the environment after construction and where applicable post closure; and		
v) where relevant, operation activities;			
e)	[Deleted by amendments to the EIA Regulations, 2014]		
f)	A description of proposed impact management actions, identifying the manner in which the impact management outcomes contemplated in paragraphs (d) will be achieved, and must, where applicable, include actions to -	Y	Table 4-1 - Table 4-4

ITEM	CONTENT OF CONSOLIDATED EMPR	COMPLETED (Y/N or N/A)	LOCATION IN CONSOLIDATED EMPR
	i) avoid, modify, remedy, control or stop any action, activity or process which causes pollution or environmental degradation;		
	ii) comply with any prescribed environmental management standards or practices; and		
	iii) comply with any applicable provisions of the Act regarding closure, in the case of a closure activity.		
g)	The method of monitoring the implementation of the impact management actions contemplated in paragraph (f);	Y	Table 4-1 - Table 4-4
h)	The frequency of monitoring the implementation of the impact management actions contemplated in paragraph (f);	Y	Section 4
i)	An indication of the persons who will be responsible for the implementation of the impact management actions;	Y	Table 4-1 - Table 4-4
j)	The time periods within which the impact management actions contemplated in paragraph (f) must be implemented;	Y	Table 4-1 - Table 4-4
k)	The mechanism for monitoring compliance with the impact management actions contemplated in paragraph (f);	Y	Table 4-1 - Table 4-4
l)	A program for reporting on compliance, taking into account the requirements as prescribed by the Regulations;	Y	Table 4-1 - Table 4-4
m)	An environmental awareness plan describing the manner in which -		
	i) the applicant intends to inform his or her employees of any environmental risk which may result from their work; and	Y	Section 3.4
	ii) risk must be dealt with in order to avoid pollution or the degradation of the environment;	Y	
n)	Any specific information that may be required by the competent authority;		N/A
2)	Where a government notice gazetted by the Minister provides for a generic EMPr, such generic EMPr as indicated in such notice will apply.		N/A

## 1.4 INTERNATIONAL OBLIGATIONS

### 1.4.1 The United Nations Convention on the Law of the Sea

The United Nations Convention on the Law of the Sea (UNCLOS) of 1982 requires member states to adopt legislation to reduce marine pollution from sea-bed activities in the Exclusive Economic Zone and on the continental shelf (Articles 208 and 214) and from land based sources (Articles 194 and 207). It also contains provisions relating to marine pollution resulting from dumping of waste at sea (Articles 210 and 216). The convention deals with the prevention of marine pollution and the compensation for damage caused by this pollution. It contains provisions relating to the prescription and enforcement of pollution standards and provides for contingency plans against pollution.

### 1.4.2 The International Convention for Prevention of Marine Pollution for Ships

The International Convention for the Prevention of Pollution from Ships, 1973 was adopted in 1973 (MARPOL 73) and subsequently modified by the Protocol of 1978 (MARPOL 78). It is therefore referred to as MARPOL 73 / 78. It provides regulations covering the various sources of ship-generated pollution (IMO, 1992). South Africa acceded to MARPOL 73/78 and to all the Annexes I, II, III, IV, V and VI of MARPOL 73/78. The various Annexes are applicable to the proposed survey and sampling activities. Guidance on the various provisions of the MARPOL 73/78 with respect to the proposed exploration activities are summarised as follows:

- Annex I: Regulation for prevention of pollution by oil (October 1983). Regulations for the Prevention of Pollution by Oil, Regulation 9 (1) (b) Control of discharge of oil. Any discharge into the sea of oil or oily mixtures from ships to which this Annex applies shall be prohibited except when all the following conditions are satisfied.
- Annex II: Regulations for control of pollution by Noxious Liquid Substance in bulk (April 1987).
- Annex III: Regulation for prevention of pollution by harmful substance carried at sea in packaged form (July 1992).
- Annex IV: Regulation for prevention of pollution by sewage from ships (Sep 2003). Regulations for the Prevention of Pollution by Sewage from ships, Regulation 8 Discharge of sewage. Refer to the Recommendation on International Performance and Test Specifications for Oily-Water Separating Equipment and Oil Content Meters adopted by the Organization by resolution A.393 (X).
- Annex V: Regulation for prevention of pollution by Garbage from ships (Dec 1998). Regulations for the Prevention of Pollution by Garbage from Ships, Regulation 3(1)(b), (1)(b)(ii) and (1)(c) Disposal of garbage outside special areas;
- Annex VI: Regulation for prevention of Air pollution from ships (May 2005). Regulations for the Prevention of Air Pollution from Ships Regulation 12: Ozone Depleting Substances.

All ships flagged under countries that are signatories to MARPOL are subject to its requirements, regardless of where they sail, and member nations are responsible for vessels registered on their national ship registry.

### 1.4.3 Other

**TABLE 1-3: OTHER CONVENTIONS / AGREEMENTS APPLICABLE TO THE PROPOSED PROJECT**

NO.	TITLE	DESCRIPTION
<b>International Marine Pollution Conventions</b>		
1	International Convention on Oil Pollution Preparedness, Response and Co-operation, 1990 (OPRC Convention)	OPRC Convention is an international maritime convention establishing measures for dealing with marine oil pollution incidents nationally and in co-operation with other countries.

NO.	TITLE	DESCRIPTION
2	Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, 1972 (the London Convention) and the 1996 Protocol (the Protocol)	The London Convention is an agreement to control pollution of the sea from dumping and to encourage regional agreements supplementary to the Convention. It covers the deliberate disposal at sea of wastes or other matter from vessels, aircraft and platforms. It does not cover discharges from land-based sources, such as pipes and outfalls, wastes generated incidental to normal operation of vessels, or placement of materials for purposes other than mere disposal, providing such disposal is not contrary to aims of the Convention.
3	International Convention relating to Intervention on the High Seas in case of Oil Pollution Casualties (1969) and Protocol on the Intervention on the High Seas in Cases of Marine Pollution by substances other than oil, 1973	This Convention is an international maritime convention affirming the right of a coastal State to "take such measures on the high seas as may be necessary to prevent, mitigate or eliminate grave and imminent danger to their coastline or related interests from pollution or threat of pollution of the sea by oil, following upon a maritime casualty or acts related to such a casualty".
4	International Convention for the Control and Management of Ships' Ballast Water and Sediments, 2017 (BWM)	This Convention aims to prevent the spread of harmful aquatic organisms from one region to another, by establishing standards and procedures for the management and control of ships' ballast water and sediments.
5	Basel Convention on the Control of Trans-boundary Movements of Hazardous Wastes and their Disposal, 1989	This Convention is an international treaty that was designed to reduce the movements of hazardous waste between nations, and specifically to prevent transfer of hazardous waste from developed to less developed countries. It does not, however, address the movement of radioactive waste.
6	International Convention on the Control of Harmful Anti-fouling Systems on Ships, 2001	The Convention prohibits the use of harmful compounds in anti-fouling paints used on ships and rigs and establishes a mechanism to prevent the potential future use of other harmful substances in anti-fouling systems.
<b>Air and Atmosphere</b>		
7	Kyoto Protocol on the Framework Convention on Climate Change, 1997	This Protocol was the key instrument on which the 1992 United National Framework Convention on Climate Change is based. It is the first legally binding global agreement setting out specific obligations for the reduction of the amount of greenhouse gases (GHG).
8	Montreal Protocol on Substances that Deplete the Ozone Layer, 1987	This Protocol lays down a timetable for the reduction of controlled substances that deplete the ozone layer and have adverse effects on health and the environment.
9	Vienna Convention for the Protection of the Ozone Layer, 1985	The Convention is the first global agreement that recognised that the ozone was a serious enough problem to warrant international regulation.
10	United Nations Framework Convention on Climate Change, 1992	The objective of the Convention is to "stabilise GHG concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system".

NO.	TITLE	DESCRIPTION
11	Paris Agreement (United Nations Framework Convention on Climate Change), 2016	South Africa signed the Paris Agreement on 22 April 2016. This Agreement aims to strengthen the global response to the threat of climate change by limiting the increase in the global average temperature to well below 2°C above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5°C above pre-industrial levels. Parties aim to reach global peaking of GHG emissions as soon as possible, recognising that peaking will take longer for developing country Parties, and to undertake rapid reductions thereafter in accordance with best available science, so as to achieve a balance between anthropogenic emissions by sources and removals by sinks of GHGs in the second half of this century.
<b>Flora, Fauna and Protected Areas</b>		
12	Revised African Convention for the Conservation of Nature and Natural Resources, 2017	The objectives of this Convention are to enhance environmental protection, to foster the conservation and sustainable use of natural resources, and to harmonise and coordinate policies in these fields.
13	United Nations Convention on Biological Diversity, 1992	This Convention has three main goals: (1) conservation of biological diversity (or biodiversity); (2) sustainable use of its components; and (3) fair and equitable sharing of benefits arising from genetic resources. Its objective is to develop national strategies for the conservation and sustainable use of biological diversity.
14	Convention on the Conservation of Migratory Species of Wild Animals, 1983 (Bonn Convention)	This Convention aims to conserve terrestrial, marine and avian migratory species throughout their range.
15	Memorandum of Understanding (MoU) on the Conservation of Migratory Sharks, 2010	The MoU was founded under the auspices of the Bonn Convention and serves as an international instrument for the conservation of migratory shark species, including species occurring off the South Coast of South Africa.
16	The MoU on the Conservation and Management of Marine Turtles and their Habitats of the Indian Ocean and South-East Asia, 2001	The MoU is an intergovernmental agreement that aims to protect, conserve, replenish and recover sea turtles and their habitats in the Indian Ocean and South-East Asian region.
17	Agreement on the Conservation of Albatrosses and Petrels, 2004 (ACAP)	The Agreement protects all the world's albatross species, seven southern hemisphere petrel and two shearwater species. A number of these occur off the South Coast of South Africa.
18	International Convention for the Conservation of Atlantic Tunas (ICCAT)	This Convention provides for the management and conservation of tuna and tuna-like species in the Atlantic Ocean and adjacent seas.
19	Convention on International Trade of Wild Fauna and Flora Endangered Species, 1973 (CITES)	CITES is a multilateral treaty to protect endangered plants and animals.

NO.	TITLE	DESCRIPTION
<b>Archaeology and Cultural Heritage</b>		
20	Convention concerning the Protection of the World Cultural and Natural Heritage (Paris, 1972)	This Convention provides for the identification, protection and conservation of the cultural and natural heritage for future generations.
21	United Nations Educational, Scientific and Cultural Organization (UNESCO) Convention on the Protection of the Underwater Cultural Heritage, 2001	This Convention is intended to protect all traces of human existence having a cultural, historical or archaeological character, which have been under water for over 100 years. This extends to the protection of shipwrecks, sunken cities, prehistoric artwork, treasures that may be looted, sacrificial and burial sites, and old ports that cover the oceans' floors.
22	<u>United Nations Educational, Scientific and Cultural Organization (UNESCO) Convention for the Safeguarding of the Intangible Cultural Heritage, 2003</u>	<u>This Convention provides for the safeguarding of intangible cultural heritage and to ensure intangible cultural heritage of communities is respected. SAHRA has indicated that, although a process has been initiated recently, South Africa is currently not a signatory to this convention.</u>
<b>Marine Safety</b>		
23	Convention on the International Regulations for Preventing Collisions at Sea, 1972 (COLREGS)	This Convention sets an international standard for shipping and navigation. It deals with safety at sea issues and prescribes international standards for shipping, particularly to reduce the risk of collisions at sea. The rules for the prevention of collisions at sea apply to all vessels using the high seas.
24	International Convention for the Safety of Life at Sea, 1974 (SOLAS) with its protocol of 1978	This Convention is an international maritime treaty which requires signatory flag states to ensure that ships flagged by them comply with minimum safety standards in construction, equipment and operation.
25	The International Convention on Load Lines, 1966 and its protocol of 1988	This Protocol was adopted to harmonise the survey and certification requirement of the 1966 Convention with those contained in SOLAS and MARPOL 73/78. All assigned load lines must be marked amidships on each side of the ships engaged in international voyages.
26	International Commission on Radiological Protection (ICRP)	ICRP is an independent, international non-governmental organisation providing recommendations and guidance on radiation protection.
27	International Atomic Energy Agency (IAEA) Regulations for the Safe Transport of Radioactive Material, 1984	IAEA is an international organisation that seeks to promote the peaceful use of nuclear energy, and to inhibit its use for any military purpose, including nuclear weapons. These regulations provide international standards and approaches to safety promote consistency, help to provide assurance that nuclear and radiation related technologies are used safely, and facilitate international technical cooperation and trade.
<b>Human Rights and Labour</b>		
28	International Labour Organisation Conventions	C029 - Forced Labour Convention, 1930 (No. 29) - 05 Mar 1997 C087 - Freedom of Association and Protection of the Right to Organise Convention, 1948 (No. 87)

NO.	TITLE	DESCRIPTION
		C098 - Right to Organise and Collective Bargaining Convention, 1949 (No. 98) C100 - Equal Remuneration Convention, 1951 (No. 100) C105 - Abolition of Forced Labour Convention, 1957 (No. 105) C111 - Discrimination (Employment and Occupation) Convention, 1958 (No. 111) C138 - Minimum Age Convention, 1973 (No. 138) C182 - Worst Forms of Child Labour Convention, 1999 (No. 182) C081 - Labour Inspection Convention, 1947 (No. 81) C144 - Tripartite Consultation (International Labour Standards) Convention, 1976 (No. 144) C002 - Unemployment Convention, 1919 (No. 2) C004 - Night Work (Women) Convention, 1919 (No. 4) C019 - Equality of Treatment (Accident Compensation) Convention, 1925 (No. 19) C026 - Minimum Wage-Fixing Machinery Convention, 1928 (No. 26) C027 - Marking of Weight (Packages Transported by Vessels) Convention, 1929 (No. 27) C041 - Night Work (Women) Convention (Revised), 1934 (No. 41) C042 - Workmen's Compensation (Occupational Diseases) Convention (Revised), 1934 (No. 42) C045 - Underground Work (Women) Convention, 1935 (No. 45) C063 - Convention concerning Statistics of Wages and Hours of Work, 1938 (No. 63) C080 - Final Articles Revision Convention, 1946 (No. 80) C089 - Night Work (Women) Convention (Revised), 1948 (No. 89) C116 - Final Articles Revision Convention, 1961 (No. 116) C155 - Occupational Safety and Health Convention, 1981 (No. 155) C176 - Safety and Health in Mines Convention, 1995 (No. 176) MLC 2006 - Maritime Labour Convention, 2006 (MLC 2006) C188 - Work in Fishing Convention, 2007 (No. 188) C189 - Domestic Workers Convention, 2011 (No. 189)

## 2. EXPERTISE OF THE EAP

The details and roles of the EAPs who were involved in the preparation of this EMPr are provided in Table 2-1 below. Curricula Vitae of the Project Team are attached as Appendix A.

SLR has no interest in the proposed project other than fair remuneration for consulting services rendered as part of the BA process.

**TABLE 2-1: EXPERTISE OF THE EAP.**

Edward Perry	
<b>Responsibility</b>	Project director, reviewer and quality control
<b>Qualification</b>	M.Sc. (Applied Hydrobiology), Cardiff University B.Sc. Hons (Environmental Science), Plymouth University
<b>Professional Registration</b>	Registered EAP
<b>Experience in years</b>	28
<b>Experience</b>	Edward Perry is the Operations Manager for the SLR Environmental Management, Planning and Approvals team in Africa. Edward is a registered Environmental Auditor and has over 28 years of consulting experience for a wide range of projects including the oil and gas, mining, renewables and water storage. He is a registered South African Environmental Assessment Practitioner with the Environmental Assessment Practitioners Association of South Africa.
Nicholas Arnott	
<b>Responsibility</b>	Project Manager
<b>Qualification</b>	Hons (Earth & Geog. Sci.)
<b>Professional Registration</b>	Professional Natural Scientist (Pri.Sci.Nat.); Registered EAP
<b>Experience in years</b>	16
<b>Experience</b>	Nicholas Arnott has worked as an environmental assessment practitioner since 2006 and has been involved in a number of projects covering a range of environmental disciplines, including Basic Assessments, Environmental Impact Assessments and Environmental Management Programmes. He has gained experience in a wide range of projects relating to mining, infrastructure projects (e.g. roads), housing and industrial developments.



### 3. PROJECT GOVERNANCE

#### 3.1 ENVIRONMENTAL GOVERNANCE

The governance structure for environmental management is presented below. All official communication and reporting lines including instructions, directives and information shall be channelled according to the organisational structure presented in Figure 3-1 below.

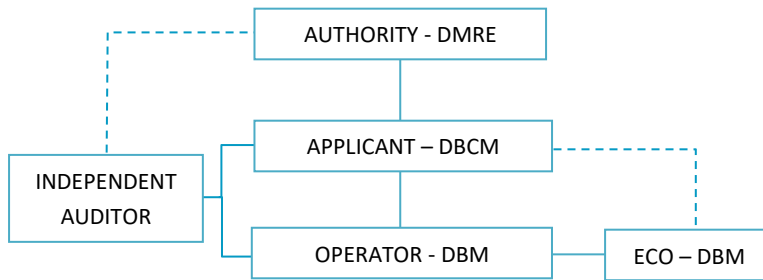


FIGURE 3-1: CONSOLIDATED EMPr IMPLEMENTATION GOVERNANCE STRUCTURE.

#### 3.2 ROLES AND RESPONSIBILITIES

The implementation of this EMPr requires the involvement of several role players, each fulfilling a different but vital role to ensure sound environmental management during the implementation of the proposed project.

##### 3.2.1 Department of Mineral Resources and Energy (DMRE)

DMRE is the designated authority responsible for authorising this EMPr. DMRE has the authority to enforce legal action if DBCM does not comply with the relevant legislation, conditions of the EA, prospecting right permits, and this EMPr.

DMRE would need to approve any amendments that may be required to the management outcomes of the EMPr and may also perform inspections to assess compliance with the relevant legislation, the EA, prospecting right permits and the EMPr.

##### 3.2.2 De Beers Consolidated Mines (Pty) Ltd (DBCM)

DBCM, as the Applicant, has overall environmental accountability to ensure compliance with the relevant legislation, the EA, prospecting right permits, and this EMPr. DBCM is also accountable for the financial cost of all environmental management measures. DBCM must ensure that any person acting on their behalf complies with the relevant legislation, the EA, prospecting rights permits, and this EMPr.

DBCM is accountable for the appointment of the independent auditor.

DBCM is accountable for designing a system to ensure compliance with the relevant legislation, the EA, prospecting right permits, and this EMPr.

### 3.2.3 De Beers Marine (Pty) Ltd (DBM)

DBM shall have the following responsibilities:

- To adhere to the provisions of the EA, prospecting right permits and EMPr (if DBM encounters difficulties with specifications, they must discuss alternative approaches with DBCM prior to proceeding);
- To ensure that relevant staff are familiar with the EA, prospecting right permits and EMPr requirements;
- To ensure that the relevant environmental requirements are addressed as part of the process of contracting service providers;
- To monitor and verify that potential negative environmental impacts are avoided or where it cannot be avoided, minimized;
- To make personnel aware of environmental issues and ensure they show adequate consideration of the environmental aspects of the project;
- To report any incidents of non-compliance with the EA, prospecting right permits and EMPr to DBCM;
- To ensure appropriate corrective actions are implemented immediately to rectify identified incidents of non-compliance; and
- To, where possible, rehabilitate any environmental damage arising from unplanned events (this shall be done to the satisfaction of DBCM).

Failure to comply with the EA, prospecting right permits and EMPr may result in suspending the operation causing the non-compliance.

### 3.2.4 DBM Environmental Manager

The DBM Environmental Manager is responsible for ensuring adherence to the conditions of the EA and prospecting right permits and any additional environmental licences or permits issued for the project, and the requirements of the approved EMPr. The DBM Environmental Manager shall perform monitoring for the full duration of the proposed project (i.e. off-vessel monitoring). The DBM Environmental Manager's duties shall include, *inter alia*, the following:

- Verifying that all the required environmental licences and permits have been obtained, as appropriate;
- Monitoring environmental performance within the defined project area;
- Conducting environmental awareness training sessions with the relevant management staff;
- Keeping a record of progress from an environmental perspective;
- Keeping a record / log of all environmental incidents and non-compliances;
- Providing a report back on the environmental issues at meetings (if required); and
- Compiling environmental reports on compliance with the relevant conditions of the EA, prospecting right permits and any additional environmental licences or permits issued for the project, and the requirements of the EMPr after every sampling / survey campaign. The DBM Environmental Manager shall submit the reports to DMRE, if requested.

At the conclusion of the prospecting right validity period, a final close-out report shall be compiled and submitted to DMRE. This report shall be compiled by the DBM Environmental Manager. The close-out report will outline the implementation and associated level of compliance with the requirements of the conditions of the EA, prospecting right conditions the EMPr, as well as provide comment on the state of disturbed areas, provide

assurance that there are no outstanding issues relevant to the project and identify any environmental issues which will need ongoing monitoring / auditing and action during the End of Prospecting Phase.

### 3.2.5 Independent Auditor

The independent auditor will be an environmental consultant appointed by DBCM to compile an Environmental Audit Report in compliance with Section 54(A)(2) of the EIA Regulations, 2014 (as amended), promulgated under NEMA. The terms of reference of the Environmental Audit Report are provided in Appendix 7 of the EIA Regulations, 2014 (as amended) and are to consider the following:

- Report on the level of compliance with the conditions of the EMPr;
- Report on the extent to which the avoidance, management and mitigation measures provided for in the EMPr achieve the objectives and outcomes of the EMPr;
- Identify and assess any new impacts and risks as a result of undertaking the activity;
- Evaluate the effectiveness of the EMPr;
- Identify shortcomings in the EMPr;
- Identify the need for any changes to the avoidance, management and mitigation measures provided for in the EMPr; and
- Report on any changes to the mitigation measures / actions contained in the EMPr.

The independent auditor shall undertake audits at the end of the prospecting right validity period, and the Environmental Audit Report will be submitted to the DMRE, as the competent authority.

### 3.3 EMPr ADMINISTRATION

Copies of the EA, prospecting permits and this EMPr shall be kept onboard any vessel undertaking work in the prospecting rights area. All relevant personnel shall be required to familiarise themselves with the contents of this document.

Any recommended amendments to the EMPr outcomes must be approved by DMRE and communicated to the relevant stakeholders, as per the EIA Regulations, 2014 (as amended) before the amendments to the EMPr are implemented. The DBM Environmental Manager shall identify the need for any amendments to the EMPr document. Records will be kept in the document indicating changes that have been made.

### 3.4 ENVIRONMENTAL AWARENESS TRAINING

Before the commencement of the mobilisation phase of the proposed project, DBM's Mineral Resources Unit management and the project team shall attend an environmental awareness training course, presented by DBM's Environmental Manager.

Prior to commencement of a survey or sampling campaign, an environmental awareness training course shall be presented by DBM's Environmental Manager to the subcontractors onboard the vessel who are responsible for compliance with activities identified in the EMPr, including any new employees coming onto the vessel after the initial training course. As a minimum, training shall include:

- Explanation of the importance of complying with the EA, prospecting right permits and EMPr;
- Discussion of the potential environmental impacts of the proposed project;

- Explanation of the management structure for the administration and regulation of the environmental obligations associated with the project;
- Explanation of the requirements of the EA, prospecting right permits and EMPr
- Employees' roles and responsibilities, including emergency preparedness; and
- Explanation of the mitigation measures that must be implemented when carrying out their activities.

The DBM Environmental Manager shall keep records of all environmental training sessions, including names of attendees, dates of their attendance and the information presented to them. Documented records of environmental training sessions shall be kept.

### 3.5 INSPECTION PROCEDURES

The day-to-day monitoring and verification that the EA, prospecting right permits and EMPr are being adhered to shall be undertaken by the DBM Environmental Manager and/or the manager responsible for the operational activities at the time the activities are being conducted.

The DBM Environmental Manager shall ensure that adequate procedures are being developed and implemented and that DBM is complying with the EA, prospecting right permits and EMPr requirements. The DBM Environmental Manager shall address any queries to the DBM project team. If the queries cannot be resolved at this level, they will be referred to DBCM.

### 3.6 RECORD OF ACTIVITIES

The DBM Environmental Manager shall keep a record of activities on location, including but not limited to:

- Meetings attended;
- Internal audits;
- Monitoring results;
- Issues arising on location;
- Penalties / fines issued;
- Cases of non-compliance with the EA, prospecting right permits and EMPr;
- Complaints received and corrective action taken; and
- Environmental incidents / non-compliances and corrective actions taken.

### 3.7 MANAGING NON-COMPLIANCE

DBM/DBCM shall develop a procedure for dealing with non-compliance to the EMPr.

When non-compliances are identified, DBM/DBCM shall develop a Method Statement on how the non-compliances will be addressed and compliance achieved.

## 4. ENVIRONMENTAL MANAGEMENT OUTCOMES AND ACTIONS

Various activities / aspects associated with the planning, establishment, operation and end of prospecting phases of the proposed project have been identified. For each activity / aspect, a set of impact management outcomes and associated management actions have been prescribed (see Table 4-1 - Table 4-4).

In order to facilitate monitoring and auditing, the tables have been structured to indicate the identified environmental outcomes, management actions to be implemented, responsible parties for implementation, timing of implementation, records / indicators of compliance to be obtained and the monitoring requirements associated with the various activities / aspects, as appropriate.

Project activities / aspects covered by this EMPr include the following:

- Preparation of subsidiary plans;
- Stakeholder consultation and notification;
- Permits / exemptions;
- Financial provisions;
- Compliance with the EMPr;
- Environmental awareness training;
- Notifying other users of the sea;
- Onboard observers;
- Adherence to the EMPr and environmental awareness;
- Prevention of emergencies;
- Communication with other users of the sea and resource managers;
- Dealing with emergencies including major oil spills;
- Survey activities;
- Sampling activities;
- Pollution control and waste management;
- Equipment loss;
- Oil bunkering / refuelling at sea;
- Acoustic emissions;
- Vessel lighting;
- Monitoring and auditing;
- Survey / sampling vessel to leave area;
- Inform key stakeholders of survey completion;
- Final waste disposal;
- Rehabilitation and closure; and
- Information sharing.

## 4.1 ENVIRONMENTAL OUTCOMES AND ACTIONS APPLICABLE TO THE PLANNING PHASE

**TABLE 4-1: ENVIRONMENTAL OUTCOMES AND ACTIONS APPLICABLE TO THE PLANNING PHASE**

Project activities:	Aspect	Environmental and Social Performance Objectives:	Impact Management Outcomes or Targets	Mitigation and Impact Management Actions	Responsibility	Frequency / timing:	Monitoring and record keeping requirements
<b>4.1.1 PREPARATION OF SUBSIDIARY PLANS</b>	Mobilisation	Preparation for any emergency that could result in an environmental impact	All plans to be finalised before start of mobilisation	<p>Ensure the following plans are prepared and in place for any vessel contracted to undertake a campaign:</p> <ul style="list-style-type: none"> <li>• Certificate of Registry.</li> <li>• Certificate of Class.</li> <li>• Document of Compliance.</li> <li>• Shipboard Oil Pollution Emergency Plan (SOPEP) as required by MARPOL;</li> <li>• Emergency Response Plan (including MEDIVAC plan);</li> <li>• Waste Management Plan as required by MARPOL (see contents in Section 4.3.7).</li> </ul>	DBCM / DBM	Prior to commencement of operation	<p>A copy of all plans</p> <p>Confirm compliance and justify and omissions</p>
<b>4.1.2 FINALISATION OF SAMPLING AREA</b>	Disturbance of sensitive features	Protection of sensitive features	No disturbance of sensitive features	<ul style="list-style-type: none"> <li>• Remote sensing data should be used to conduct a pre-sampling analysis of the seabed to identify high-profile, rocky-outcrop areas without a sediment veneer. Exploration sampling targets gravel bodies in unconsolidated sediments and does not target these high-profile rocky-outcrops without a sediment veneer.</li> <li>• Exclude any areas where shipwrecks are identified (during geophysical surveys) from a planned sampling area.</li> </ul>	DBCM / DBM	Prior to commencement of sampling	<p>Geophysical survey data</p> <p>Mapping of completed sampling footprints</p>
<b>4.1.3 STAKEHOLDER CONSULTATION AND NOTIFICATION</b>	Interaction, engagement and communication with key stakeholders	DMRE notification	Notify authority of upcoming activities	<p>Compile the specific details of the prospecting operations into a Notification and submit to the DMRE. The notification should provide, <i>inter alia</i>, the details on the following:</p> <ul style="list-style-type: none"> <li>• Prospecting programme (timing, co-ordinates and duration); and</li> <li>• DBM details.</li> </ul>	DBCM / DBM	30 days prior to commencement of operations or as required by DMRE	Provide copies of all correspondence
		Stakeholder notification	Minimise disruption to the survey and other users of the sea	<ul style="list-style-type: none"> <li>• Consult with the managers of the Department of Forestry, Fisheries and Environment (DFFE) research survey programmes to discuss their respective programmes and the possibility of altering the prospecting programme in order to minimise or avoid disruptions to both parties, where required.</li> </ul>	DBCM / DBM	30 days prior to commencement of operations	Provide copy of notification and list of those to whom it was sent

Project activities:	Aspect	Environmental and Social Performance Objectives:	Impact Management Outcomes or Targets	Mitigation and Impact Management Actions	Responsibility	Frequency / timing:	Monitoring and record keeping requirements
				<ul style="list-style-type: none"> <li>• Notify relevant government departments and other key stakeholders of the commencement of survey or sampling operations (including navigational co-ordinates, timing and duration of proposed activities) and the restrictions related to the operation. Stakeholders include:                             <ul style="list-style-type: none"> <li>– Fishing industry / associations:                                     <ul style="list-style-type: none"> <li>&gt; South African Tuna Association;</li> <li>&gt; South African Tuna Longline Association;</li> <li>&gt; South African Deepsea Trawling Industry Association (SADSTIA);</li> <li>&gt; South African Linefish Associations;</li> <li>&gt; SA Marine Linefish Management Association (SAMLMA);</li> <li>&gt; Hake Longline Association;</li> <li>&gt; National Small, Medium and Micro-Enterprise (SMME) Fishing Forum; and</li> <li>&gt; West Coast Rock Lobster Sea Management Association (if any activities are activated within the 100 m contour line).</li> </ul> </li> <li>– Representatives of small-scale local fishing co-operatives;</li> <li>– South African Maritime Safety Authority (SAMSA);</li> <li>– DFFE, including the fisheries research managers and the Vessel Monitoring, Control and Surveillance (VMS) Unit;</li> <li>– Transnet National Ports Authority (ports of Cape Town or Saldanha Bay, as may be applicable); and</li> <li>– Prior to the commencement of activities, notify overlapping and neighbouring petroleum rights holders, as well as any neighbouring mineral prospecting or mining rights holders, to ensure that there is no overlapping of activities in the same area over the same time period.</li> </ul> </li> <li>• Any dispute arising with adjacent prospecting / exploration right holders should be referred to the DMRE or Petroleum Agency of South Africa (PASA) for resolution.</li> <li>• Ensure that the vessel master is aware of the requirement to record sightings of and interactions with other vessels to note</li> </ul>			

Project activities:	Aspect	Environmental and Social Performance Objectives:	Impact Management Outcomes or Targets	Mitigation and Impact Management Actions	Responsibility	Frequency / timing:	Monitoring and record keeping requirements
				potential conflicts over right of passage and access to resources.			
<b>4.1.4 FINANCIAL PROVISION</b>	Permitting	Compliance with legislative requirements	Confirmation of Financial Provision from DMRE	<ul style="list-style-type: none"> <li>Ensure that the requirements of NEMA in terms of financial provision for remediation of environmental damage are met by:                             <ul style="list-style-type: none"> <li>Allocating operational costs to meet EMPr requirements;</li> <li>Ensure that the survey / sampling vessels maintain adequate Protection and Indemnity (P&amp;I) Insurance Cover to allow for clean-ups in the event of a hydrocarbon spill and other eventualities; and</li> <li>Providing sufficient funds to execute the EMPr in the event of premature closure or in the event that, on closure, the EMPr has not been successfully executed.</li> </ul> </li> </ul>	DBCM / DBM	Prior to commencement of operations	Provide copies of relevant documentation/ correspondence from DMRE

## 4.2 ENVIRONMENTAL OUTCOMES AND ACTIONS APPLICABLE TO THE MOBILISATION PHASE

**TABLE 4-2: ENVIRONMENTAL OUTCOMES AND ACTIONS APPLICABLE TO THE MOBILISATION PHASE**

Project activities:	Aspect	Environmental and Social Performance Objectives:	Impact Management Outcomes or Targets	Mitigation and Impact Management Actions	Responsibility	Frequency / timing:	Monitoring and record keeping requirements
<b>4.2.1 COMPLIANCE WITH EMPR</b>	Training and allocation of responsibilities	DBM to commit to adherence to EMPr	Applicable staff receive training as part of their induction, refresher training and an ongoing	<ul style="list-style-type: none"> <li>Verify that a copy of the approved EMPr is supplied to DBM and is on board the survey and sampling vessels during the operation.</li> <li>Verify procedures and systems for compliance are in place.</li> <li>Verify correct equipment and personnel are available to meet the requirements of the EMPr.</li> <li>Ensure compliance with the International Maritime Organisation's International Safety Management Code developed for the proper development, implementation and assessment of safety and pollution prevention management in accordance with good practice.</li> </ul>	DBCM / DBM	Prior to commencement of operation	Provide copies of relevant documentation



Project activities:	Aspect	Environmental and Social Performance Objectives:	Impact Management Outcomes or Targets	Mitigation and Impact Management Actions	Responsibility	Frequency / timing:	Monitoring and record keeping requirements
<b>4.2.2 ENVIRONMENTAL AWARENESS TRAINING</b>		Ensure personnel are appropriated trained	awareness and behaviour system	<ul style="list-style-type: none"> <li>Undertake Environmental Awareness Training to ensure the relevant vessel's personnel are appropriately informed of the purpose and requirements of the EMPr.</li> <li>Verify responsibilities are allocated to the relevant personnel.</li> </ul>	DBCM/DBM	Before new staff commence with the start of work on the project	Copy of attendance register and training records
<b>4.2.3 NOTIFYING OTHER USERS OF THE SEA</b>	Presence of survey / sampling vessel	Ensure that other users are aware of the survey / sampling programme	Zero maritime incidents	<ul style="list-style-type: none"> <li>Request, in writing, the SAN Hydrographic office to release Radio Navigation Warnings and Notices to Mariners throughout the survey / sampling period. The Notice to Mariners should give notice of (1) the co-ordinates of the surveying / sampling, (2) an indication of the proposed surveying / sampling timeframes, (3) an indication of the required safety zone around the sampling vessel, and (4) provide details on the movements of support vessels servicing the operation.</li> </ul>	DBCM / DBM	7 days prior to start	Provide copies of written notices and list of those to whom it was sent
<b>4.2.4 ONBOARD OBSERVER OR MMO AND PAM OPERATOR, WHERE REQUIRED</b>	Increase in underwater noise levels	Protect offshore marine fauna	Zero disturbance to cetaceans	<ul style="list-style-type: none"> <li>A designated onboard Marine Mammal Observer (MMO) shall ensure compliance with mitigation measures during geophysical surveying.</li> <li>Appoint a Passive Acoustic Monitoring (PAM) operator for any surveying taking place between June and November.</li> </ul>	DBCM / DBM	Prior to commencement of operations	MMO (and PAM, when used) operator reports
<b>4.2.5 EMPr AMENDMENTS</b>	EMPr documentation	Ensure adequate / appropriate management actions and outcomes	Zero redundant / inappropriate management actions and outcomes	<ul style="list-style-type: none"> <li>On an ongoing basis, identify and address new activities and remove obsolete ones, particularly when new or changed surveying and prospecting method and / or equipment are used. Amend the EMPr as required and submit to DMRE for approval.</li> </ul>	DBCM / DBM	As applicable	Reflected in Environmental Audit Reports

### 4.3 ENVIRONMENTAL OUTCOMES AND ACTIONS APPLICABLE TO THE OPERATIONAL PHASE

**TABLE 4-3: ENVIRONMENTAL OUTCOMES AND ACTIONS APPLICABLE TO THE OPERATIONAL PHASE**

Project activities:	Aspect	Environmental and Social Performance Objectives:	Impact Management Outcomes or Targets	Mitigation and Impact Management Actions	Responsibility	Frequency / timing:	Monitoring and record keeping requirements
<b>4.3.1 ADHERENCE TO THE EMPr AND ENVIRONMENTAL AWARENESS</b>	Implementation of EMPr	Operate in an environmentally responsible manner	Compliance with EMPr	<ul style="list-style-type: none"> <li>Undertake Environmental Awareness Training (including spill management) to ensure the relevant vessel’s personnel are appropriately informed of the purpose and requirements of the EMPr.</li> <li>Ensure the onboard DBCM / DBM representative undergoes a short induction on archaeological site and artefact recognition, as well as the procedure to follow should archaeological material be encountered during sampling.</li> <li>Comply fully with the EMPr (compliance would mean that all activities were undertaken successfully, and details recorded).</li> </ul>	DBCM and DBM	Prior to and throughout operation	Provision of environmental training records and attendance registers
<b>4.3.2 PREVENTION OF EMERGENCIES</b>	Presence of survey / sampling vessel	Minimise the chance of emergency and subsequent damage to the environment occurring	Zero maritime incidents	<ul style="list-style-type: none"> <li>Prevent collisions by ensuring that the survey and sampling vessels display correct signals by day and lights by night (including twilight), by visual radar watch and standby vessel(s).</li> <li>Maintain the required safety zone around sampling/survey vessels through Notices to Mariners and Navigation Warnings.</li> <li>Call any vessels that are deemed to be a risk to the survey/sampling and / or survey/sampling vessel via radio and inform them of the navigational safety requirements.</li> <li>Ensure all hazardous materials are correctly labelled, stored, packed and sealed with proper markings for shipping.</li> </ul>	DBM	Throughout operation	Provide record of any incidents and interaction with other vessels
				<ul style="list-style-type: none"> <li>Establish lines of communication with the following emergency response agencies / facilities: SAMSA, SAN Hydrographic Office (Silvermine), DFFE (Directorate of Marine Pollution) and DMRE.</li> </ul>	DBM	During operations as required	Provide record of any communications
<b>4.3.3 CONTINUE TO COMMUNICATE WITH OTHER USERS OF THE SEA AND</b>	Interaction, engagement and communication with key stakeholders	Promote co-operation and successful multiple use of the sea, including	Zero maritime incidents	<ul style="list-style-type: none"> <li>Through normal communication channels, Radio Navigation Warnings and Notices to Mariners, keep relevant government departments and other key stakeholders (see Section 7.1.2) updated on the prospecting programme.</li> </ul>	DBM	During operations as required	Provide record of any communications
				<ul style="list-style-type: none"> <li>Co-operate with other legitimate users of the sea to minimise disruption to other marine activities.</li> </ul>	DBM	During operations as required	

Project activities:	Aspect	Environmental and Social Performance Objectives:	Impact Management Outcomes or Targets	Mitigation and Impact Management Actions	Responsibility	Frequency / timing:	Monitoring and record keeping requirements
<b>RESOURCE MANAGERS</b>		promotion of safe navigation		<ul style="list-style-type: none"> <li>Keep constant watch for approaching vessels during the prospecting operation and warn by radio and support vessel, if required.</li> <li>Keep a record of any interaction with other vessels.</li> </ul>			
<b>4.3.4 DEALING WITH EMERGENCIES INCLUDING OIL SPILLS (OWING TO COLLISION, VESSEL BREAK-UP, REFUELLING ETC.)</b>	Diesel spills from refuelling or from tank rupture (e.g. vessel collision)	Minimise damage to the environment by implementing response procedures efficiently	Zero spills or leaks	<ul style="list-style-type: none"> <li>Adhere to obligations regarding other vessels in distress.</li> <li>Maintain all emergency procedures as legally required.</li> <li>Notify SAMSA about wrecked vessels (safety and pollution) and the Department of Finance with regard to salvage, customs and royalties. Provide location details to SAN hydrographer.</li> <li>In the event of an oil spill immediately implement emergency plans (see Section 4.1.1). In the case of an oil spill to sea with serious potential consequences to marine and human life notify (a) the Principal Officer of the nearest SAMSA office, (b) the DFFE Chief Directorate of Marine &amp; Coastal Pollution Management in Cape Town, and (c) PASA. Information that should be supplied when reporting a spill includes:                             <ul style="list-style-type: none"> <li>Name and contact details of person reporting the incident;</li> <li>The type and circumstances of incident, ship type, port of registry, nearest agent representing the ships company;</li> <li>Date and time of spill;</li> <li>Location (co-ordinates), source and cause of pollution;</li> <li>Type and estimated quantity of oil spilled and the potential and probability of further pollution;</li> <li>Weather and sea conditions;</li> <li>Action taken or intended to respond to the incident;</li> <li>Persons already informed of the spill; and</li> <li>Supply vessels must have the necessary spill response capability to deal with accidental spills in a safe, rapid, effective and efficient manner.</li> </ul> </li> <li>Where diesel, which evaporates relatively quickly, has been spilled, the water should be agitated or mixed using a propeller boat / dinghy to aid dispersal and evaporation. This is only to be undertaken where it does not pose a health and safety risk.</li> <li>In the event of an emergency including fire, grounding or sinking, or collision, ensure that approved Shipboard Oil</li> </ul>	DBCM / DBM	In event of spill	Record of all spills (Spill Record Book), including spill reports; emergency exercise reports; audit reports. Incident log

Project activities:	Aspect	Environmental and Social Performance Objectives:	Impact Management Outcomes or Targets	Mitigation and Impact Management Actions	Responsibility	Frequency / timing:	Monitoring and record keeping requirements
				<p>Pollution Emergency Plan and Emergency Response Manuals are followed, which include:</p> <ul style="list-style-type: none"> <li>– Ensure safety of personnel onboard;</li> <li>– Stabilisation the ship and limit damages;</li> <li>– Containing the spill, if possible; and</li> <li>– Immediately reporting accidental spills to the relevant authorities and professional bodies providing full details of the incident.</li> </ul> <ul style="list-style-type: none"> <li>• Notification to neighbouring rights holders of the occurrence of any Moderate to Major overboard spills during prospecting activities.</li> </ul>			
<b>4.3.5 SURVEY ACTIVITIES</b>	Increased ambient underwater noise levels	Reduce disturbance of marine fauna, particularly cetaceans (whales and dolphins).	<p>Minimise disturbance to cetaceans</p> <p>Zero fatalities or injury of cetaceans</p>	<ul style="list-style-type: none"> <li>• Ensure that geophysical survey activities are conducted in compliance with the following:                             <ul style="list-style-type: none"> <li>– Where possible, avoid planning geophysical 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 survey operations. As no seasonal patterns of abundance are known for odontocetes occupying the proposed exploration area, a precautionary approach to avoiding impacts throughout the year is recommended.</li> <li>– The MMO should conduct visual scans for the presence of cetaceans around the survey vessel prior to the initiation of any acoustic impulses.</li> <li>– Pre-survey visual scans should be of least a 15-minute duration prior to the start of survey equipment.</li> <li>– Terminate the survey if any marine mammals show affected behaviour within 500 m of the survey vessel or equipment until the mammal has vacated the area.</li> <li>– “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. Equipment of source levels greater than 210 dB re 1 µPa at 1 m not capable of “soft starts” would be run</li> </ul> </li> </ul>	DBM	Throughout surveying operations	<p>MMO / PAM Operator Reports</p> <p>Record information on faunal observations, survey activities and any mitigation actions taken</p>

Project activities:	Aspect	Environmental and Social Performance Objectives:	Impact Management Outcomes or Targets	Mitigation and Impact Management Actions	Responsibility	Frequency / timing:	Monitoring and record keeping requirements
				<p>concurrently with equipment that can be soft started and only switched on once the soft-start has been completed.</p> <ul style="list-style-type: none"> <li>– Ensure that PAM is incorporated into any surveying taking place between June and November.</li> </ul>			
				<ul style="list-style-type: none"> <li>• All vessel operators should keep watch for marine mammals and turtles in the path of the vessel.</li> <li>• Ensure vessel transit speed is reduced to 10 knots (18 km/hr) when sensitive marine fauna are present in the immediate vicinity of the survey/sampling vessel.</li> <li>• A non-dedicated marine mammal observer (MMO) must keep watch for marine mammals behind the vessel when tension is lost on the towed equipment. Either retrieve or regain tension on towed gear as rapidly as possible.</li> <li>• Should a cetacean become entangled in towed gear, contact the South African Whale Disentanglement Network (SAWDN) formed under the auspices of DFE to provide specialist assistance in releasing entangled animals.</li> <li>• Report any collisions with large whales to the International Whaling Commission (IWC) database to assist in the identification of species most affected, vessels involved in collisions, and correlations between vessel speed and collision risk.</li> </ul>	DBM	Throughout surveying operations	<p>MMO / PAM Operator Reports</p> <p>Record information on faunal observations, survey activities and any mitigation actions taken</p>
<b>4.3.6 ELECTRICAL, MAGNETIC AND/OR ELECTRO-MAGNETIC SURVEYS</b>	Generation of electric and magnetic fields	Reduce disturbance of marine fauna	<p>Minimise disturbance to cetaceans</p> <p>Zero fatalities or injury of cetaceans</p>	<ul style="list-style-type: none"> <li>• Use standard operational procedure to warm up the electromagnetic source transmitter (i.e. equivalent to ramp-up of current in electric source). It is recommended that the electromagnetic source should be ramped up over a minimum period of 20 minutes.</li> <li>• Turn off electromagnetic source when not collecting data.</li> <li>• Use lowest field strengths required to successfully complete the survey</li> </ul>	DBM	Throughout surveying operations	<p>MMO / PAM Operator Reports</p> <p>Record information on faunal observations, survey activities and any mitigation actions taken</p>
<b>4.3.7 SAMPLING ACTIVITIES</b>	Impact of sampling operations	Reduce disturbance of sampling activities on	No impact on sensitive habitats in rocky-outcrop areas	<ul style="list-style-type: none"> <li>• As per section 4.1.2 utilise remote sensing data to avoid sampling of sensitive habitats in high profile rocky outcrop areas without a sediment veneer where they can be identified.</li> </ul>	DBM	Throughout sampling operations	Geophysical survey data

Project activities:	Aspect	Environmental and Social Performance Objectives:	Impact Management Outcomes or Targets	Mitigation and Impact Management Actions	Responsibility	Frequency / timing:	Monitoring and record keeping requirements
		benthic biodiversity					
		Protection of heritage and cultural features	Limit disturbance of cultural heritage material	<ul style="list-style-type: none"> <li>Avoid sampling in any areas where identified shipwrecks (from geophysical data) are located.</li> <li><u>Objects of cultural significance, including fossils, recovered during sample processing will be recorded and addressed in accordance with the requirements of the National Heritage Resources Act, 1999.</u></li> <li>If shipwreck material is encountered during the course of sampling in the Sea Areas, the following mitigation measure will be apply:                             <ul style="list-style-type: none"> <li>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 DBM / DBCM has complied with any additional mitigation as specified by SAHRA; and</li> <li>Where possible, take photographs of artefacts found, noting the date, time, location and types. Under no circumstances may any artefacts be removed, destroyed or interfered with on the site, unless under permit from SAHRA.</li> </ul> </li> </ul>	DBCM / DBM	In the event a shipwreck is encountered	Records of interactions with SAHRA and identified shipwreck material
<b>4.3.8 POLLUTION CONTROL AND WASTE MANAGEMENT OF PRODUCTS DISPOSED OF: INTO THE AIR (EXHAUSTS, CFCS AND INCINERATORS), TO SEA (SEWAGE, FOOD, OILS), TO LAND (USED OILS ETC, METALS,</b>	Discharge of liquid and solid waste to sea	Minimise pollution, and maximise recycling by implementing and maintain pollution control and waste management procedures at all times	Compliance with MARPOL standards	<ul style="list-style-type: none"> <li>Ensure that the vessel implements a Waste Management Plan (see Section 7.1.1). The plan must comply with legal requirements (including MARPOL) for waste management and pollution control (for air and water quality levels at sea) and ensure "good housekeeping" and monitoring practices:                             <ul style="list-style-type: none"> <li>General solid waste:                                     <ul style="list-style-type: none"> <li>&gt; Initiate a waste minimisation system.</li> <li>&gt; No waste should be disposed overboard.</li> </ul> </li> <li>Ensure on-board solid waste storage is secure.</li> <li>Galley (food) waste:                                     <ul style="list-style-type: none"> <li>&gt; Ensure compliance with MARPOL Annex V standards.</li> <li>&gt; No disposal within 3 nm of the coast.</li> <li>&gt; Disposal between 3 nm and 12 nm of the coast shall to be comminuted to particle sizes smaller than 25 mm.</li> </ul> </li> </ul> </li> </ul>	DBM	Throughout prospecting operations	Provide summary of waste record book / schedule and receipts.  Manifest required for all shipments to shore.  Report occurrence of minor oil spills and destination of wastes.

Project activities:	Aspect	Environmental and Social Performance Objectives:	Impact Management Outcomes or Targets	Mitigation and Impact Management Actions	Responsibility	Frequency / timing:	Monitoring and record keeping requirements
PLASTICS, GLASS, ETC.)				<ul style="list-style-type: none"> <li>&gt; Minimise the discharge of waste material should obvious attraction of fauna be observed.</li> <li>– Deck drainage:                             <ul style="list-style-type: none"> <li>&gt; Ensure that weather decks are kept free of spillage.</li> <li>&gt; Low-toxicity biodegradable detergents should be used in cleaning of all deck spillage.</li> <li>&gt; Ensure compliance with MARPOL standards.</li> </ul> </li> <li>– Machinery space drainage:                             <ul style="list-style-type: none"> <li>&gt; Vessels must comply with international agreed standards regulated under MARPOL. All machinery space drainage would pass through an oil / water filter to reduce the oil in water concentration to less than 15 ppm.</li> </ul> </li> <li>– Sewage:                             <ul style="list-style-type: none"> <li>&gt; Ensure compliance with MARPOL Annex IV standards.</li> <li>&gt; Use approved treatment plants to MARPOL standards, where applicable.</li> <li>&gt; No disposal within 4 nm of the coast.</li> <li>&gt; Disposal further than 4 nm of the coast needs to be comminuted and disinfected prior to disposal into the sea.</li> </ul> </li> <li>– Medical waste:                             <ul style="list-style-type: none"> <li>&gt; Seal in aseptic containers for appropriate disposal onshore.</li> </ul> </li> <li>– Metal:                             <ul style="list-style-type: none"> <li>&gt; Send to shore for recycling or disposal.</li> </ul> </li> <li>– Other waste:                             <ul style="list-style-type: none"> <li>&gt; Dispose of remaining solid waste at a licensed landfill facility or an alternative approved facility. Ensure waste disposal is carried out in accordance with appropriate laws and ordinances.</li> </ul> </li> <li>– Waste oil:                             <ul style="list-style-type: none"> <li>&gt; Return used oil to a port with a registered facility for processing or disposal.</li> </ul> </li> <li>– Minor oil spill:                             <ul style="list-style-type: none"> <li>&gt; Use oil absorbent.</li> </ul> </li> </ul>			

Project activities:	Aspect	Environmental and Social Performance Objectives:	Impact Management Outcomes or Targets	Mitigation and Impact Management Actions	Responsibility	Frequency / timing:	Monitoring and record keeping requirements
				<ul style="list-style-type: none"> <li>– Emissions to the atmosphere:                             <ul style="list-style-type: none"> <li>&gt; Ensure compliance with MARPOL Annex VI standards.</li> <li>&gt; Properly tune and maintain all engines, motors, generators and all auxiliary power to contain the minimum of soot and unburned diesel.</li> <li>&gt; Implement leak detection and repair programmes for valves, flanges, fittings, seals, etc.</li> </ul> </li> <li>– Other hazardous waste:                             <ul style="list-style-type: none"> <li>&gt; Ensure compliance with MARPOL Annex V standards.</li> <li>&gt; Record types and volumes of chemical and hazardous wastes (e.g. radioactive devices/materials, neon lights, fluorescent tubes, toner cartridges, batteries, etc.) and destination thereof.</li> <li>&gt; Send to designated onshore hazardous disposal site. Retain waste receipts.</li> </ul> </li> <li>• Ensure all crew is trained in spill management.</li> </ul>			
<b>4.3.9 EQUIPMENT LOSS</b>	Dropped or lost equipment	Minimise hazards left on the seabed or floating in the water column, and inform relevant parties	Zero loss and retrieval, where possible	<ul style="list-style-type: none"> <li>• Where possible, attempt the recovery of any items lost overboard. The benefits of retrieval of debris or equipment must first be weighed up against the potential environmental impacts, health and safety risks.</li> <li>• Keep a record of lost equipment and all items lost overboard and not recovered and provide to the relevant authority if requested.</li> <li>• When any items that constitute a seafloor or navigational hazard are lost on the seabed, or in the sea:                             <ul style="list-style-type: none"> <li>– Complete a standard form / record sheet, which records the location, date and cause of loss, details of equipment type, weather, sea state, etc.;</li> <li>– Notify SAMSA and SAN Hydrographer; and</li> <li>– Request that SAN Hydrographer send out a Notice to Mariners with this information.</li> </ul> </li> </ul>	DBM	Throughout sampling operation	Establish a hazards database listing: <ul style="list-style-type: none"> <li>• the type of gear lost</li> <li>• date of loss / HSE decision to leave equipment</li> <li>• location; and</li> <li>• where applicable, the dates of retrieval</li> </ul>
<b>4.3.10 USE OF HELICOPTERS FOR CREW</b>	Increased ambient noise levels	Minimise disturbance / damage to marine and coastal fauna.	Zero incidents of disturbance to bird and seal colonies and whale	<ul style="list-style-type: none"> <li>• Ensure all flight paths avoid coastal seal and penguin colonies.</li> <li>• Report deviations from set flight plans.</li> <li>• Avoid extensive low-altitude coastal flights (&lt;762 m or &lt;2 500 ft and within 1 nautical mile of the shore) by ensuring that the flight path is perpendicular to the coast, as far as possible.</li> </ul>	DBCM/DBM and aircraft / helicopter contractor	As required	Copy of flight path (including altitude).  Helicopter logs



Project activities:	Aspect	Environmental and Social Performance Objectives:	Impact Management Outcomes or Targets	Mitigation and Impact Management Actions	Responsibility	Frequency / timing:	Monitoring and record keeping requirements
<b>CHANGES, SERVICING, ETC.</b>			breeding areas	<ul style="list-style-type: none"> <li>Maintain a flight altitude &gt;1 000 m to be maintained at all times, except when taking off and landing or in a medical emergency.</li> <li>Maintain an altitude of at least 762 m or 2 500 ft above the highest point of a National Park or World Heritage Site.</li> <li>Brief all pilots on ecological risks (see Section 4.2.7 of the Marine Fauna Impact Assessment) associated with flying at a low level along the coast or above marine mammals.</li> <li>Comply with aviation and authority guidelines and rules.</li> </ul>			Records of any deviations from set flight paths
<b>4.3.11 OIL BUNKERING / REFUELLING AT SEA</b>	Spill of hydrocarbons to sea during bunkering	Minimise disturbance / damage to marine life.	Zero spills or leaks	<ul style="list-style-type: none"> <li>No discharge of any oil whatsoever is permitted.</li> <li>Offshore bunkering is not permitted within the economic zone (i.e. 200 nm from the coast) without permission from SAMSA.</li> <li>Submit an application in terms of Regulation 14 of GN R1276 under the Marine Pollution (Control and Civil Liability) Act, 1981 (No. 6 of 1981) to the Principal Officer at the port nearest to where the transfer is to take place.</li> <li>Inform SAMSA of location, supplier and timing, 5 days prior to refuelling at sea.</li> </ul>	DBM / Vessel Captain	As required, 5 days prior to refuelling	Copy of notice sent to SAMSA
<b>4.3.12 VESSEL LIGHTING</b>	Artificial lighting	Minimise attraction of marine fauna to sampling vessel.	No unnecessary visual impacts	<ul style="list-style-type: none"> <li>Lighting on-board prospecting vessels should be reduced to the minimum required for safety levels to minimise stranding of pelagic seabirds on the vessels at night. Light sources should, if possible and consistent with safe working practices, be positioned in places where emissions to the surrounding environment can be minimised.</li> <li>Keep disorientated, but otherwise unharmed, seabirds in dark containers for subsequent release during daylight hours. Ringed/banded birds should be reported to the appropriate ringing/banding scheme (details are provided on the ring).</li> <li><u>Where feasible and where such is not required for vessel safety reasons, vessels should:</u> <ul style="list-style-type: none"> <li>adjust the orientation of lights (e.g. not pointing directly out to sea).</li> <li>avoid operating extremely bright lights during foggy conditions (as this exacerbates the impact on seabirds).</li> <li>ensure that personnel are adequately trained to care for any downed seabirds.</li> </ul> </li> </ul>	DBM	As required	Records of any seabird strandings

Project activities:	Aspect	Environmental and Social Performance Objectives:	Impact Management Outcomes or Targets	Mitigation and Impact Management Actions	Responsibility	Frequency / timing:	Monitoring and record keeping requirements
<b>4.3.13 MONITORING AND AUDITING</b>	Compliance with authorisation conditions	Ensure compliance with monitoring and auditing requirements for prospecting operations.	No non-compliance	<ul style="list-style-type: none"> <li>Undertake internal audits at required intervals as part of the Company's ISO14001 Environmental Management System (EMS) to determine the level of compliance with the EMPr requirements and conditions of the environmental authorisation.</li> <li>Prepare an environmental audit report and submit to the DMRE at intervals as indicated in the environmental authorisation. The audit report must comply with legal requirements contained in Appendix 7 of the 2014 EIA Regulations, as amended (or any amendments thereto).</li> <li>Calculate and report on annual and cumulative sampled areas.</li> </ul>	DBCM /DBM must appoint an independent auditor to prepare the Environmental Audit Report	As documented in the EMS  Submit to DMRE at the end of prospecting operation.	Copies of Environmental Audit Reports

## 4.4 ENVIRONMENTAL OUTCOMES AND ACTIONS APPLICABLE TO THE END OF PROSPECTING PHASE

**TABLE 4-4: ENVIRONMENTAL OUTCOMES AND ACTIONS APPLICABLE TO THE END OF PROSPECTING PHASE**

Project activities:	Aspect	Environmental and Social Performance Objectives:	Impact Management Outcomes or Targets	Mitigation and Impact Management Actions	Frequency / Timing:	Timing:	Monitoring and record keeping requirements
<b>4.4.1 SURVEY/ SAMPLING VESSEL TO LEAVE AREA</b>	Presence of survey vessel	Ensure navigational safety	Zero maritime incidents	<ul style="list-style-type: none"> <li>Where possible, attempt the recovery of any items lost overboard during the operation phase that could not be recovered at the time. The benefits of retrieval of debris or equipment must first be weighed up against the potential environmental impacts, health and safety risks</li> <li>Prepare a final record of lost equipment that could not be recovered from the prospecting area.</li> <li>Where any items that could not be recovered constitute a seafloor or navigational hazard ensure that actions listed in 4.3.8 have been implemented:                             <ul style="list-style-type: none"> <li>Complete a standard form / record sheet, which records the location, date and cause of loss, details of equipment type, weather, sea state, etc.</li> <li>Notify SAMSA and SAN Hydrographer.</li> <li>Request that SAN Hydrographer send out a Notice to Mariners with this information..</li> </ul> </li> </ul>	DBM	On completion of surveying / sampling	Copy of hazards database (see Section 4.3.8)
<b>4.4.2 INFORM RELEVANT PARTIES OF PROSPECTING COMPLETION</b>		Ensure that relevant parties are aware that the prospecting operation is complete	All maritime stakeholders on project database notified	<ul style="list-style-type: none"> <li>Inform all key stakeholders that the vessel is off location as per normal maritime communication practice.</li> <li>Notify the SAN Hydrographic office when the campaign is complete so that the Navigational Warning can be cancelled.</li> </ul>	DBC / DBM	Within four weeks after completion of prospecting campaign	Copies of notifications

Project activities:	Aspect	Environmental and Social Performance Objectives:	Impact Management Outcomes or Targets	Mitigation and Impact Management Actions	Frequency / Timing:	Timing:	Monitoring and record keeping requirements
<b>4.4.3 REHABILITATION AND CLOSURE</b>	Seabed disturbance	Ensure compliance with EMPr	Issuing of a prospecting right closure certificate from DMRE	<ul style="list-style-type: none"> <li>Apply for closure, submit the following documentation to the DMRE:                             <ul style="list-style-type: none"> <li>– A final layout plan;</li> <li>– A Closure Plan;</li> <li>– An Environmental Risk Report;</li> <li>– A Final Audit Report; and</li> <li>– A completed application form to transfer environmental responsibilities and liabilities, if such transfer has been applied for.</li> </ul> </li> </ul>	DBC / DBM	On completion of prospecting	Copy of prospecting right closure certificate
<b>4.4.4 INFORMATION SHARING</b>	Increasing available information of benthic environment	Expand knowledge base	Increasing knowledge base of South Africa's benthic environment	<ul style="list-style-type: none"> <li>Where feasible share non-confidential data collected during the prospecting programme (e.g. ROV video footage of the benthic environment), if requested, to resource managers (including DFFE, South African National Biodiversity Institute and appropriate research institutes).</li> </ul>	DBC / DBM	On completion of prospecting	Records of relevant interactions



**Nicholas Arnott**  
(Report Author)



**Edward Perry**  
(Reviewer)

## APPENDIX A: CURRICULA VITAE OF THE PROJECT TEAM



## ED PERRY

### OPERATIONS MANAGER

Environmental Management Planning & Approvals,  
South Africa

#### QUALIFICATIONS

Postgrad Cert.	2016	Postgraduate Certificate in Occupational Health and Safety, University of Cape Town
Postgrad Cert.	2012	Postgraduate Certificate in Environmental Law, Centre for Environmental Management, Potchefstroom
Postgrad Cert.	2008	Postgraduate Certificate in Environmental Assessment, Oxford Brookes University
MSc	1994	MSc Applied Hydrobiology, Cardiff University
BSc (Hons)	1990	BSc (Hons) Environmental Science, Plymouth University

#### EXPERTISE

- Environmental and Social Impact Assessments
- EHSS Auditing
- Environmental Compliance
- Management Systems
- Due Diligence

Ed Perry joined SLR as the Operations Manager for the Environmental Management Planning and Approvals (EMPA) team in Africa (offices in South Africa, Namibia, and Ghana). He has worked in environmental consultancy for over twenty years for a wide range of public and private sector clients.

Ed is a registered Environmental Auditor with the Institute for Environmental Management and Assessment and a Lead Auditor with the International Cyanide Management Institute. Prior to moving to South Africa in 2011 Ed worked in the UK on a wide range of projects including EIAs and Integrated Pollution and Prevention Permits. This included permitting the first hazardous waste landfill in the UK under the new integrated permitting mechanism and undertaking a study for the European Commission on the implementation of the Landfill Directive in 15 European countries.

Since moving to South Africa, Ed has been involved with ESIA's and environmental authorisations throughout Africa. Ed has been Project Director / Partner in Charge of EIAs for a wide range of facilities including: New Mines and Extensions to Mines, Renewable Energy Facilities; Metal Extractive Industries; Large Water Storage Schemes, and Oil and Gas Projects;

Ed has also undertaken a wide range of environmental audits including; due diligence audits, EMPR audits, and over 20 international cyanide code audits of mines throughout Africa. These audits include assessing ESHIAs, RAPs and associated documentation against the requirements of the IFC Performance Standards. Ed is a registered Environmental Assessment Practitioner with the Environmental Assessment Practitioners Association of South Africa (EAPASA).

#### PROJECTS

A sample of Ed's project experience, summarised by sector, is provided below.

##### Total E&P South Africa - South Coast, South Africa

Ed is the Project Director for the EIA for additional exploration well drilling and associated exploration activities in Block 5/6/7, offshore South Coast, South Africa.

Shell – South Africa	Ed was the Project Manager for various environmental authorisations in South Africa associated with the Shell GUESS program. This program related to the closure and clean up of Shell service stations.
Vopak – Richards Bay, South Africa	Ed was the Project Manager for an ESIA for a new terminal operated by Vopak at Richards Bay for the handling and storage of Liquid Petroleum Gas and Clean Petroleum Products.
Vopak – Durban, South Africa	Ed was the Project Manager for an ESIA for the expansion of the Vopak terminal at Durban Docks for the handling and storage of Liquid Petroleum Gas and Clean Petroleum Products.
Bidvest – Durban South Africa	Ed was the Project Manager for an ESIA for the expansion of the Bidvest terminal at Durban Docks for the handling and storage of Liquid Petroleum Gas and Clean Petroleum Products.
ENI – East Coast, South Africa	Ed provided technical support for the EIA for regarding ENI's exploration activities off the KZN coast.
	<b>Mining</b>
Lucara Diamonds – Karowe Diamond Mine, Botswana	Ed is part of the SLR team acting as the Independent Technical Expert (ITE) on behalf of the lender to assess a project to expand the mine. Ed undertook the environmental and social assessment against the requirements of the Equator Principles and the IFC Performance Standards.
Kefi Minerals – Tulu Kapi Gold Mine, Ethiopia	Ed is the Technical Reviewer for an Environmental and Social Due Diligence review of the ESHIA and associated documents against the requirements of the IFC Performance Standards, local legislation, and best practice. This includes liaison with the Environmental Assessment Practitioners producing the ESHIA and the Lender's representatives.
Swakop Uranium – Heap Leach Project, Namibia	Ed is the Technical Reviewer and Project Director for the heap leach project, undertaking screening and subsequent ESIA for the location of a new heap leach.
Nampower – Biomass Power Plant, Namibia	Ed is the Project Director for an ESIA as part of a financing arrangement with the European Development Bank for Nampower to construct a new Power Plant using biomass from encroaching bush.
West Wits Gold Mine – South Africa	Ed is the Technical Reviewer and Project Director for an ESIA for a new gold mine in South Africa including open cast and underground mining. The application for a mining right was successful with an Environmental Authorisation being issued. A Water Use Licence is currently being applied for.
Maamba Collieries Limited – Maamba Coal Mine, Zambia	Ed was the lead auditor leading the creation and implementation of an integrated management system in accordance with the requirements of the IFC performance standards, ISO 14001, ISO 9001, and OHSAS 18001.
Eramet - Senegal	Lead Auditor for a due diligence audit of a mineral sands mining operation. The operation was the subject of a possible joint venture. The environmental audit, which included 3 days on site, was to establish if what environmental risks were involved with the project, which was just about to enter the construction phase.

<b>Continental Coal Limited – Penumbra, South Africa</b>	Ed was the Lead Auditor undertaking review of EIA, EMP and site procedures against the requirements of the IFC Procedures.
<b>Eurasian Natural Resources Corporation – Kakanda Mine, DRC</b>	Ed was the Project Manager for the review of a Safety, Health, Environment and Community Management System for Kakanda Mine in the DRC.
<b>Anglo-American – Polokwane Smelter, Polokwane</b>	Ed was the Project Manager responsible for undertaking an external compliance audit for the Anglo-American Polokwane Smelter as stipulated in the slag stockpile permit for the Polokwane Metallurgical Complex. This included a review of the permit for the temporary stockpile of ash as part of the expansion of the Complex.
<b>Ruighoek Mine, South Africa</b>	Ed was the Project Manager for an ESIA associated with the expansion of this chromium mine in South Africa.
<b>AngloGold Ashanti – Yatela, Sadiola, Siguri Gold Mines, Mali and Guinea</b>	Ed was the Lead Auditor and Project Manager undertaking a re-certification audit against the requirements of the International Cyanide Code for three gold mines.
<b>Freda Rebecca Gold Mine - Zimbabwe</b>	Ed was the Lead Auditor and Project Manager for a gap audit to ascertain the status of the gold mine with regards to its ability to comply with the International Cyanide Code
<b>Gold Fields Ghana – Tarkwa and Damang Gold Mines</b>	Ed was the Lead Auditor and Project Manager undertaking a re-certification audit against the requirements of the International Cyanide Code for the two gold mines.
<b>Goldfields, Harmony, AngloGold Ashanti – South Africa</b>	Ed was the Lead Auditor and Project Manager undertaking a re-certification audit against the requirements of the International Cyanide Code for 5 gold mines for AngloGold Ashanti, 4 gold mines for Harmony, and a gold mine for Gold Fields.
<b>Riversdale Capital – Zambeze Coal Mine, Zambia</b>	Ed was the Technical Reviewer for an ESHIA for the development of the Zambeze Coal Mine on behalf of Riversdale Capital.
<b>Confidential – proposed mine, South Africa</b>	Ed was the Project Manager for an ESIA for a new proposed iron ore mine in South Africa. This application was withdrawn following baseline studies by specialist showing the existence of fatal flaws with regards to water use and location of the TSF.
	<b>Industry</b>
<b>Dundee Precious Metals – Tsumeb Smelter, Namibia</b>	Ed is the Project Director of an Agricultural Assessment to provide a consolidated management plan for improved agricultural land management, long term monitoring and mitigation of potential impacts.
<b>Distell – South Africa</b>	Ed was Project Manager for a number of projects for Distell in order to obtain various environmental authorisations for their brewing facilities including the one for the siting of a new waste water treatment works.
<b>SPAR – South Africa</b>	Ed was Project Manager for a number of energy projects undertaken for SPAR in South Africa including looking at Science Based Targets, Internal Carbon Pricing, and an ISO 50001 Energy Management System.

<b>SCAW – South Africa.</b>	Ed was the Project Manager for a range of Environmental Authorisations, including ESIA's, Air Emissions Licences, Water Use Licences and contaminated land assessments. These studies were undertaken for SCAW at a number of their smelter sites in Gauteng over a 5 year period.
<b>Confidential – South Africa</b>	Ed lead an EHS audit of a cable tie manufacturer using plastic extrusion as part of a due diligence project.
<b>Pfizer – South Africa</b>	Ed was the Project Manager and Lead Auditor for an EHS audit of the head offices of Pfizer in South Africa.
<b>Sasol - Sasolburg</b>	Ed was the Project Manager and Lead Auditor for International Cyanide Code recertification audit for the Sasol cyanide production facility at Sasolburg.
<b>Sohar Aluminium - Oman</b>	Ed was the Lead Auditor of Sohar Aluminium's environmental management system auditing the system against the requirements of ISO 14001 and benchmarking this facility against international requirements.
<b>Confidential – KZN, South Africa</b>	Lead Auditor for a due diligence audit of a white goods manufacturing company in Kwa-Zulu Natal.
<b>Sasol – Secunda</b>	Ed was the Lead Auditor for a third party audit of waste contractors operating on behalf of Sasol. The audit investigated compliance with South African environmental legislation and environmental best practice.
<b>Confidential – South Africa, Kenya, UAE</b>	Ed was the project manager for a due diligence audit of a packaging company's facilities in South Africa, Kenya and UAE.
	<b>Infrastructure</b>
<b>Lesotho Highlands Development Agency - Lesotho</b>	Ed took over as Project Manager undertaking an ESIA for the Polihali Reservoir and Western Access Road in Lesotho on behalf of the Lesotho Highlands Development Agency.
<b>Freight Forwarders Group – Kenya and Tanzania</b>	Ed was the Lead Auditor undertaking a re-certification audit against the requirements of the International Cyanide Code for the Freight Forwarders transportation group of companies.
<b>Transnet Pipelines – South Africa</b>	Ed was the Project Manager responsible for the creation and implementation of an Energy Management System for all of the pumps stations, workshops and offices for Transnet Pipelines, who pump crude oil and petroleum products from Durban to Johannesburg.
<b>Interwaste – South Africa</b>	Ed was the Technical Reviewer for the EIA for a new integrated waste management facility including a new landfill in South Africa against the requirements of NEMA and NEM:WA.
	<b>Power</b>
<b>Nampower - Namibia</b>	Ed is the Technical Reviewer for an ESIA for a biomass power plant that will use wood from encroacher bush in Namibia. This project is being funded by the European Investment Bank and it is therefore required to comply with the IFC Performance Standards.



<p><b>Department for International Development</b> – UK Government</p>	<p>The UK Department for International Development is providing support to medium sized renewable energy facilities ( mainly hydroelectric power plants) in Uganda through the Global Energy Transfer Feed in Tariff programme (GET FIT). The project was to assess how local communities in the vicinity of these facilities could obtain power and how environmental and social safeguards for these types of facilities could be improved in the future. Ed was the lead environmental and social advisor undertaking a review of the environmental and social safeguards.</p>
<p><b>Confidential - Angola</b></p>	<p>Ed was Project Manager for a project undertaking a Strategic Environmental Assessment of locations for renewable energy facilities in Angola.</p>
<p><b>Confidential - Mozambique</b></p>	<p>Ed was the Project Manager for an ESIA to be submitted to the Mozambican authorities for the development of a unique renewable energy pilot facility.</p>
<p><b>MEMBERSHIPS</b></p>	
<p><b>IEMA</b></p>	<p>Practitioner for the Institute of Environmental Management and Assessment</p>
<p><b>IEMA</b></p>	<p>Registered Environmental Auditor</p>
<p><b>EAPSA</b></p>	<p>Registered Environmental Assessment Practitioner</p>
<p><b>PUBLICATIONS</b></p>	
	<ul style="list-style-type: none"> <li>• The Role of Socio-Economic Factors, Seasonality and Geographic Differences on Household Waste Generation and Composition in the City of Tshwane. 2016 (Wastcon).</li> </ul>
	<ul style="list-style-type: none"> <li>• EMS as a Tool for Integrated Business Risk Management. 2005 (various journals).</li> </ul>
	<ul style="list-style-type: none"> <li>• Golder Associates EMS Roadmap. 2004 (CD ROM).</li> </ul>
	<ul style="list-style-type: none"> <li>• Incentives to Encourage Recycling. 2002. Materials Recycling Week</li> </ul>
	<ul style="list-style-type: none"> <li>• Recycle of Life. 2002. Government Business</li> </ul>
	<ul style="list-style-type: none"> <li>• New Approaches to Management of Waste. 2002 (various journals)</li> </ul>
	<ul style="list-style-type: none"> <li>• Minimise the Waste – Maximise the Message. 2001</li> </ul>
	<ul style="list-style-type: none"> <li>• Guide to Waste Reduction on Construction Sites. 1999. Construction Confederation</li> </ul>





## NICHOLAS ARNOTT

### ASSOCIATE ENVIRONMENTAL CONSULTANT

Environmental Management, Planning and Approvals,  
South Africa

#### QUALIFICATIONS

BSc (Hons)	2005	Earth and Geographical Sciences (Environmental Management)
BSc	2004	Earth and Geographical Sciences, Zoology

#### EXPERTISE

- Environmental & Social Impact Assessment
- Environmental Legislation
- Environmental Management Programmes
- Stakeholder Engagement
- Environmental compliance & monitoring
- Environmental Control Officer

#### PROJECTS

During his time at SLR, Nicholas has been responsible for undertaking environmental assessment processes for various projects relating to the mining, oil & gas, roads and related infrastructure, housing and industrial sectors. He has been involved in a number of projects in South Africa and has experience working in the Democratic Republic of Congo (DRC), Zambia and Zimbabwe.

He has expertise in a wide range of environmental disciplines, including Environmental Impact Assessments (EIA), Environmental Management Plans / Programmes (EMP), Basic Assessment Reports, Maintenance Management Plans (MMP), Environmental Auditing & Monitoring, Section 24(G) Rectification Applications and Public Consultation & Facilitation.

##### Mining and Minerals

**De Beers Marine (Pty) Ltd – Basic Assessment for a Prospecting Right in Sea Areas 4C and 5C, West Coast, South Africa (Current)**

Basic Assessment process in support of a Prospecting Right application over Sea Areas 4C and 5C, off the West Coast of South Africa. Nicholas is the project manager and is responsible for the compilation of the Basic Assessment Report (BAR), undertaking of the required public participation process and management of the appointed specialists.

**Belton Park Trading 127 (Pty) Ltd – Prospecting Right application for Sea Concessions 13C, 15C, 16C, 17C & 18C, West Coast, South Africa (2020 -2022)**

Environmental Impact Assessment (EIA) process for the proposed offshore prospecting operations in Sea Concessions 13C, 15C, 16C, 17C and 18C, off the West Coast of South Africa. Nicholas was the project manager and is responsible for the compilation of the Scoping and Environmental Impact Reports, undertaking of the required public participation process and management of the appointed specialists.

**Belton Park Trading 127 (Pty) Ltd – Prospecting Right application for Sea Concessions 14B, 15B & 17B, West Coast, South Africa (2020 -2022)**

Environmental Impact Assessment (EIA) process for the proposed offshore prospecting operations in Sea Concessions 14B, 15B and 17B, off the West Coast of South Africa. Nicholas was the project manager and is responsible for the compilation of the Scoping and Environmental Impact Reports, undertaking of the required public participation process and management of the appointed specialists.

**De Beers Marine (Pty) Ltd – Environmental Impact Assessment for Bulk Sampling Activities for Offshore Marine Diamonds, West Coast, South Africa (2019 - 2022)**

EIA process for the proposed offshore Bulk Sampling operations in the Sea Concession 6C, off the West Coast of South Africa. Nicholas was the project manager and is responsible for the compilation of the Scoping and Environmental Impact Reports, undertaking of the required public participation process and management of the appointed specialists.

**Bilboes Holdings (Pvt) – Proposed Isabella, McCays and Bubi Sulphide Gold Project, Zimbabwe (2018 - 2020)**

Environmental and Social Impact Assessment (ESIA) for the proposed expansion of an existing gold mine complex located in Zimbabwe. Nicholas is the project assistant and compiled the Scoping Report, assisted with the undertaking of the required public participation process and management of the appointed specialists.

**Zevocept (Pty) Ltd – Development of a borrow pit, Western Cape, South Africa (2019 - 2020)**

Basic Assessment process for the proposed development of a borrow pit on Farm Modder Rivier, Western Cape. Nicholas assisted in the compilation of the BAR, overseeing the required public participation process and the management of the appointed specialists.

**De Beers Marine (Pty) Ltd – Pre-Scope Environmental Input for Offshore Geophysical Survey, Greenland (2019)**

Undertake an initial evaluation of the anticipated impacts associated with planned geophysical surveys to be undertaken off the west coast of Greenland and compile environmental input to be included into a Pre-Scope submission to the Greenland Minerals Authority. Nicholas undertook the management of the appointed specialists.

**Copper Tree Minerals – Proposed Kitwe Tailings Retreatment Project, Zambia (2017 - 2019)**

ESIA for the proposed retreatment of historical tailings dumps located within the town of Kitwe, Zambia. Nicholas is the project manager for the ESIA phase and is responsible for the compilation of the ESIA Report, undertaking of the required public participation process and management of the appointed specialists.

**De Beers Marine (Pty) Ltd – Prospecting Right application for offshore marine Diamonds in Sea Concession 6C, West Coast, South Africa (2018)**

Basic Assessment process for the proposed offshore prospecting operations in the Sea Concession 6C, off the West Coast of South Africa. Nicholas compiled the Basic Assessment Report (including EMP), undertook the required public participation process and managed the appointed specialists.

**Velddrift Salt Company (Pty) Ltd –Salt mine, Velddrift, South Africa (2018)**

Update the Financial Provision for the salt mine on Portion 69 of Farm 110 near Velddrift, Western Cape, South Africa. Nicholas undertook the update of the existing financial provision and prepared the assessment report.

**Impala Platinum Limited Unincorporated Joint Venture – EMP Performance Assessment and Closure Liability Estimate for Prospecting Operations (2017)**

EMP Performance Assessment and Closure Liability Estimate for the Klippgatkop 115-JQ prospecting operations. Nicholas was the project manager and compiled the EMP Performance Assessment and Closure Liability Estimate reports.

<b>Belton Park Trading 127 (Pty) Ltd – Mining Right application for offshore marine Diamonds in Sea Concession 2C, West Coast, South Africa (2016 - 2017)</b>	EIA process for the proposed offshore mining of marine diamonds in the Sea Concession 2C, off the West Coast of South Africa. Nicholas compiled the Scoping and EIA Reports (including EMP), undertook the required public participation process and managed the appointed specialists.
<b>Belton Park Trading 127 (Pty) Ltd – Marine Sediment Sampling Activities in Sea Concessions 2C – 5C, West Coast (2014 - 2015)</b>	Basic Assessment process for the proposed drill and bulk sampling of marine sediments in Sea Concessions 2C, 3C, 4C and 5C, off the West Coast of South Africa. Nicholas compiled the BAR (including EMP), undertook the required public participation process and managed the appointed specialists.
<b>Aquarius Platinum (SA) (Pty) Ltd – Prospecting rights application on the Farms Chieftains Plain 46-JT and Walhalla 1-JT (2014)</b>	Environmental Management Programme (EMP) for the proposed prospecting activities to be undertaken on the Farm Chieftains Plain 46-JT and Walhalla 1-JT. Nicholas was the project manager and compiled the EMP for both projects.
<b>Aquarius Platinum (SA) (Pty) Ltd – Proposed Extension of the K5 Upper Underground Mining Area (2014)</b>	EIA amendment process for the existing K5 Upper Mining Right to provide for the extension of the K5 Upper underground mining area. Based on the strong public reaction to the project, AQPSA took the decision to place the project on hold. Nicholas was the project manager and undertook the initial public participation process.
<b>Banro Corporation - Proposed Namoya Gold Mining Project, Maniema, DRC (2013)</b>	ESIA for the proposed construction of a greenfield gold mine located in the DRC. Nicholas was the project manager and compiled the ESIA Report (including EMP), undertook the required public participation process and managed the appointed specialists.
<b>Aquarius Platinum (SA) (Pty) Ltd – Kroondal and Marikana EMP Consolidation (2013 - 2015)</b>	Consolidation of the existing approved EMPs for the Kroondal and Marikana Platinum Mines, located in the North West Province. Nicholas was the project manager and compiled of the Consolidated EIA Report (including EMP) for each operation and managed the appointed specialists.
<b>Aquarius Platinum (SA) (Pty) Ltd – WULA for the proposed extension of Everest Platinum Mine (2011 - 2012)</b>	Water Use License Application (WULA) process for the proposed expansion of the Everest Platinum Mine, located in Mpumalanga. Nicholas assisted in the compilation of the necessary WULA documentation, including the Integrated Water and Waste Management Plan (IWWMP) for the project.
<b>Aquarius Platinum (SA) (Pty) Ltd – Proposed Extension of Everest Platinum Mine (2011 - 2012)</b>	EIA process for the proposed expansion of the Everest Platinum Mine, located in Mpumalanga. Nicholas was the project manager and compiled of the Scoping and EIA Reports (including EMP), undertook the required public participation process and managed the appointed specialists.
<b>Afplats (Pty) Ltd – EMP Performance Assessment for Prospecting Operations (2011)</b>	EMP Performance Assessment for the Wolwekraal 408-JQ and Kareepoort 407-JQ prospecting operations. Nicholas was the project manager and compiled the EMP Performance Assessment reports.

<b>Aquarius Platinum (SA) (Pty) Ltd – Re-assessment of the Financial Provision for Closure for Everest Platinum Mine (2011)</b>	Annual re-assessment of the closure cost estimate for the Everest Platinum Mine. Nicholas was the project manager and compiled the annual review of the mines Financial Provision for Closure for 2011.
<b>Leeuw Mining and Exploration (Pty) Ltd – Proposed Underground Coal Mine (2011)</b>	EIA process for the proposed underground coal mine located near Utrecht, Kwa-Zulu Natal. Nicholas was the project manager and compiled of the Scoping and EIA Report (including EMP), undertook the required public participation process and managed the appointed specialists.
	<b>Oil and Gas</b>
<b>Rhino Oil &amp; Gas Exploration South Africa (Pty) Ltd – EIA for exploration well drilling in 318ER, Free State, South Africa (Current)</b>	EIA process for the proposed exploration well-drilling activities in ER318, Free State, South Africa. Nicholas is the project manager for the EIA Process and is responsible for compiling the Scoping and EIA Reports (including EMP), undertaking the required public participation process and managing the appointed specialists.
<b>ION Geophysical Corporation – Basic Assessment for a proposed 3D Seismic Survey, West Coast, South Africa (Current)</b>	Basic Assessment process in support of a Reconnaissance Permit Application for a 3D seismic survey off the West Coast of South Africa. Nicholas is the project manager for the Basic Assessment process and is responsible for compiling the BAR (including EMP), undertaking the required public participation process and managing the appointed specialists.
<b>Rhino Oil &amp; Gas Exploration South Africa (Pty) Ltd - Performance Assessment for Renewal of Exploration Right No. 294, Free State Province (2022)</b>	EMPr Performance Assessment of exploration activities in support of an Exploration Right Renewal Application over various farms in the Free State Province (Exploration Right No. 294). Nicholas was the project manager and compiled the EMP Performance Assessment report.
<b>Rhino Oil &amp; Gas Exploration South Africa (Pty) Ltd - Performance Assessment for Renewal of Exploration Right No. 318, Free State Province (2022)</b>	EMPr Performance Assessment of exploration activities in support of an Exploration Right Renewal Application over various farms in the Free State Province (Exploration Right No. 318). Nicholas was the project manager and compiled the EMP Performance Assessment report.
<b>Searcher Geodata UK Limited – Reconnaissance Permit Application for 2D and 3D seismic surveys off the West and South-West Coast South Africa (2021)</b>	EMP process for the proposal to undertake 2D and 3D speculative seismic surveys offshore of the West and South-West Coasts, South Africa. Nicholas was the project assistant and provided input into the EMP report, facilitated the required public participation process and managed the appointed specialists.

<b>Total E &amp; P (SA) (Pty) Ltd - Proposed Seismic Surveys and Additional Exploration Activities in Block Deep Western Orange Basin off the West Coast of South Africa (Current)</b>	EIA process for the proposed offshore exploration activities in the Block Deep Western Orange Basin, West Coast of South Africa. Nicholas is the project manager for the EIA Process and is responsible for compiling the Scoping and EIA Reports (including EMP), undertaking the required public participation process and managing the appointed specialists.
<b>New Age Energy Algoa (Pty) Ltd – Environmental Audit Algoa-Gamtoos Block, East Coast of South Africa (2020)</b>	Environmental Audit undertaken in compliance with Section 54 (A)(2) of the EIA Regulations, 2014 (as amended) for the exploration activities conducted in the Algoa-Gamtoos Block. Nicholas was the project manager and responsible for undertaking the required audit and compiling the audit report.
<b>PGS Exploration (UK) Limited – Reconnaissance Permit Application for 2D and 3D seismic surveys offshore West Coast South Africa (2018)</b>	EMP process for the proposal to undertake 2D and 3D speculative seismic surveys offshore of the West Coast, South Africa. Nicholas was the project manager and compiled the EMP report, undertook the required public participation process and managed the appointed specialists.
<b>PGS Exploration (UK) Ltd – 2D and 3D seismic surveys compliance, South and East Coasts, South Africa (2015-2016)</b>	EMP Compliance and audit services for speculative 2D and 3D seismic surveys off the South and East Coasts of South Africa. Nicholas' role included managing the audit process and compiling the survey close-out reports, which outlined the implementation of the EMP (compliance) and highlighted any problems and non-compliance issues that arose during each survey.
<b>PGS Exploration (UK) Limited – Reconnaissance Permit Application Amendment to undertake a 3D seismic survey offshore KwaZulu-Natal, South Africa (2018)</b>	EMP Amendment process for the proposal to undertake a 3D speculative seismic survey offshore of KwaZulu-Natal, South Africa. Nicholas was the project manager and compiled the Amended EMP report, undertook the required public participation process and managed the appointed specialists.
<b>PGS Exploration (UK) Limited – Reconnaissance Permit Application to undertake 2D and 3D seismic surveys, South Africa (2017)</b>	EMP process for a Reconnaissance Permit Application to undertake 2D and 3D speculative seismic surveys of the East Coast, South Africa. Nicholas was the project manager and compiled the EMP report, undertook the required public participation process and managed the appointed specialists.
<b>Rhino Oil &amp; Gas Exploration South Africa (Pty) Ltd – Proposed Exploration Activities in offshore Licence Blocks 3617 and 3717, South-West coast of South Africa (2015 -2016)</b>	EIA process for the proposed offshore exploration activities in Licence Blocks 3617 and 3717, South-West coast of South Africa. Nicholas assisted in the compilation of the Scoping and EIA Reports (including EMP), undertook the required public participation process and managed the appointed specialists.

<b>Rhino Oil &amp; Gas Exploration South Africa (Pty) Ltd – Proposed Exploration Activities in Various Inshore Licence Blocks, South-West coast of South Africa (2015 -2016)</b>	EIA process for the proposed exploration activities in various inshore Licence Blocks, South-West coast of South Africa. Nicholas assisted in the compilation of the Scoping and EIA Reports (including EMP), undertook the required public participation process and managed the appointed specialists.
<b>Total E &amp; P (SA) (Pty) Ltd - Proposed bathymetry survey and seabed sediment sampling in Block 11B/12B (2014 -2015)</b>	EMP Addendum for an application to undertake sonar surveys and seabed sediment sampling as part of the approved exploration programme for License Block 11B/12B. Nicholas was the project manager and compiled the EMP report, undertook the required public participation process and managed the appointed specialists.
<b>AECOM SA for Western Cape Government (WCG): Department of Transport &amp; Public Works - Upgrading of TR31/2 between Ashton and Montagu (2018 - 2019)</b>	<b>Infrastructure – Roads</b> ECO services for the upgrading of Trunk Road 31 Section 2, Cogmanskloof Pass, between Ashton and Montagu, including the main roads through the two towns. Nicholas served as the ECO during the interim contract phase and provided monthly ECO audit reports.
<b>GIBB (Pty) Ltd for WCG:DTPW – Construction of Erosion Protection Measures for the Swart River Bridge, South Africa (2016 - 2017)</b>	Basic Assessment process for the proposed implementation of erosion protection measures along a section of the Swart River which is traversed by the TR 34, approximately 7 km north of Prince Albert. Nicholas was the project manager and compiled the Basic Assessment Report (BAR), undertook the required public participation process and managed the appointed specialist.
<b>SMEC SA (Pty) Ltd for South African National Roads Agency SOC Ltd (SANRAL) - Proposed establishment of a Quarry, Eastern Cape (2016 - 2018)</b>	EIA process for the proposed development of a quarry for the extraction of material for the construction of the Mthentu and Msikaba Bridges for the N2 Wild Coast Toll Highway. Nicholas compiled the Scoping and EIA Reports (including EMP), and project managed the required public participation process.
<b>Hatch Goba (Pty) Ltd for WCG:DTPW- Maintenance Management Plan for flood damage repair of structures in the Ladismith West area (2016 - 2017)</b>	Maintenance Management Plan (MMP) for the proposed repairs to road infrastructure at fourteen different sites that were damaged during flood events in the Ladismith West area situated between Ladismith and Montagu. Nicholas was the project manager and compiled the MMP, undertook the required public participation process and managed the appointed specialist.
<b>ERO Engineers (Pty) Ltd for WCG:DTPW - Proposed Repair and Reseal of Main Road (MR) 233 to Langebaan (2015)</b>	MMP for the proposed rehabilitation works of the MR 233 between the R 27 (km 6.80) and north of Langebaan (km 12.84). Nicholas was the project manager and compiled the MMP, undertook the required public participation process and managed the appointed specialist.

<b>Ekurhuleni Metropolitan Municipality (Eastern Region) – Proposed Gauteng Road (P1894) (2007 - 2009)</b>	EIA for the construction of a new road between Sam Smith Road (Tsakane) and Viakfontein Road (Kwa-Thema), Ekurhuleni Metropolitan Municipality. Nicholas was the project manager and compiled the Scoping and EIA Report (including EMP), undertook the required public participation process and managed the appointed specialists.
	<b>Infrastructure – Water and Wastewater</b>
<b>BVI Consulting Engineers WC (Pty) Ltd for the City of Cape Town: Transport for Cape Town – Proposed upgrade of the Bayside Canal (2015 -Ongoing)</b>	Basic Assessment process for the upgrade of the Bayside Canal Outfall System located in Tableview, Cape Town. Nicholas is the project manager and is responsible for compiling the BAR, undertaking the required public participation process and managing the appointed specialists.
<b>Meerenhof Properties (Pty) Ltd - Expansion of dams, South Africa (2017 – 2022)</b>	Construction and expansion of irrigation dams on Uitsig Farm, Constantia, Cape Town. Nicholas is fulfilling the role of ECO and provides monthly ECO audit reports.
<b>Saldanha Bay Municipality - Maintenance Management Plans for the Bok and Mosselbank Rivers (2016 - 2017)</b>	MMP for the proposed maintenance activities to be undertaken within the Bok and Mosselbank Rivers. Nicholas was the project manager, compiled the MMPs and undertook the required public participation process.
<b>BVI Consulting Engineers WC (Pty) Ltd for the City of Cape Town – Proposed stormwater pipeline linking Sunningdale to the Big Bay stormwater outfall pipeline (2015 -2016)</b>	Basic Assessment process for the construction of a new stormwater pipeline to route runoff from Sunningdale Phases 12A, 13 and 14 to the existing Big Bay Outfall pipeline located at the eastern boundary of the suburb of Big Bay. Nicholas was the project manager and compiled the BAR, undertook the required public participation process and managed the appointed specialists.
<b>Arup - Proposed Sandspruit Rehabilitation for Stormwater Management of Melrose Arch, Sandton (2010)</b>	Basic Assessment for the rehabilitation of the Sandspruit to facilitate the management of stormwater runoff emanating from the Melrose Arch precinct. Nicholas was the project manager and compiled the BAR (including EMP), undertook the required public participation process and managed the appointed specialists.
	<b>Infrastructure – Solid Waste</b>
<b>Interwaste Environmental Solutions (Pty) Ltd – ESIA for the proposed Wesco Waste Management Facility, Western Cape (Current)</b>	ESIA for the construction of a new integrated waste management facility in the Western Cape. Nicholas is the project manager and will be responsible for compiling the Scoping and ESIA Report (including EMP), undertaking the required public participation process and managing the appointed specialists.
<b>Energy Omega Oils (Pty) Ltd – Audit of Blackheath Waste Storage Facility (2017)</b>	External audit of the Blackheath Waste Storage Facility in terms of the National Norms and Standards for the Storage of Waste (Government Notice No. 926 of 29 November 2013). Nicholas undertook and compiled the audit report.

<b>Impala Platinum (Pty) Ltd - Proposed Central Salvage Yard (2011 - 2012)</b>	Basic Assessment process and Waste Management License application for the proposed construction of a salvage yard, and associated activities, located at Impala Platinum's Rustenburg operations. Nicholas compiled the BAR (including EMP), undertook the required public participation and waste management license application processes and managed the appointed specialists.
	<b>Power - Solar</b>
<b>South Africa Mainstream Renewable Power Developments (Pty) Ltd – Proposed Scaffell Cluster Photovoltaic Plants, Free State Province (2021 - 2022)</b>	Four separate EIA processes for the proposed construction of Photovoltaic Plants with a combined generating capacity of up to 475 MW, located in the Free State Province. Nicholas is the project manager and is responsible for the review and compilation of the Scoping and EIA Reports (including EMP) for all projects, undertaking the required public participation processes and managed the appointed specialists.
<b>SolarReserve South Africa (Pty) Ltd – Proposed Kalkaar CSP and Photovoltaic Plants, Free State (2014 -2015)</b>	EIA process for the proposed construction of a Concentrated Solar Thermal Plant (CSP) and a Photovoltaic Plant, located in the Free State Province. Nicholas was the project manager and compiled of the Scoping and EIA Reports (including EMP) for both projects, undertook the required public participation process and managed the appointed specialists.
	<b>Built Environment – Residential</b>
<b>Luna Country Club Holdings - Proposed Subdivision of Erf 177476, St James (2017 – Ongoing)</b>	Basic Assessment process for the subdivision of Erf 177476 into five separate portions with the intent to sell four of the subdivided portions to third-parties for residential use. Nicholas is the project manager and is responsible for compiling the BAR, undertaking the required public participation process and managing the appointed specialists.
<b>Mountain View Estate Shareblock Company Limited - Proposed Mountain View Estate (2009 - 2010)</b>	EIA for a residential and aviation estate on the Farm Simonsview 490-JQ, and various portions of the Farms Kalkheuwel 493-JQ, Rhenosterspruit 495-JQ and Riverside 497-JQ, Gauteng and North West Province. Nicholas was the project manager and compiled of the Scoping and EIA Report (including EMP), undertook the required public participation process and managed the appointed specialists.
<b>Lead Wood Development Company (Pty) Ltd - Proposed Leadwood Nature Estate (2008)</b>	EIA for a residential and game estate on the Remainder of Portion 2 of The Farm Happyland 241-KT, Hoedspruit, Limpopo. Nicholas was the project manager and compiled of the Scoping and EIA Report (including EMP), undertook the required public participation process and managed the appointed specialists.
<b>Hayes Matkovich Developments (Pty) Ltd – Proposed Standerton Country Estate (2008)</b>	EIA for a golf estate on the Portions of the Farms Grootverlangen 409-IS and Langerwyl 410-IS, Standerton, Mpumalanga. Nicholas was the project manager and compiled of the Scoping and EIA Report (including EMP), undertook the required public participation process and managed the appointed specialists.
<b>Sugar Creek Trading 33 (Pty) Ltd - Proposed Development of Zandspruit Estate (2007 -2008)</b>	EIA for a residential, game and aviation estate on the Remainder of The Farm Happyland 241-KT, Hoedspruit, Limpopo. Nicholas was the project manager and compiled of the Scoping and EIA Report (including EMP), undertook the required public participation process and managed the appointed specialists.



<b>C.J.Irons CC - Taemane Residential Estate (2007)</b>	Basic Assessment for the proposed residential estate located on a Part of the Remainder of Portion 52 of the Farm Garstfontein 374-JR, Pretoria, Gauteng. Nicholas was the project manager and compiled the BAR (including EMP), undertook the required public participation process and managed the appointed specialists.
<b>Riverspray Lifestyle Estate (Pty) Ltd - Proposed Riverspray Lifestyle Estate (2006)</b>	EIA for a residential and lifestyle estate on bank of the Vaal River in Vanderbijlpark, Gauteng. Nicholas was the project manager and compiled of the Scoping and EIA Report (including EMP), undertook the required public participation process and managed the appointed specialists.
	<b>Built Environment – Recreation</b>
<b>South African National Parks (SANParks) - Proposed Preekstoel Boardwalk Within the West Coast National Park (2009)</b>	Basic Assessment for the establishment of boardwalks in the Preekstoel section of the West Coast National Park, (SANParks). Nicholas was the project manager and compiled the BAR (including EMP), undertook the required public participation process and managed the appointed specialists.
<b>SANParks - Construction of a Walkway and Suspension Bridges in the Tsitsikamma National Park (2008)</b>	Basic Assessment for the establishment of a walkway and additional suspension bridges in the Tsitsikamma National Park, South Africa. Nicholas was the project manager and compiled the BAR (including EMP), undertook the required public participation process and managed the appointed specialists.
	<b>Other</b>
<b>Richmond Park Development Company (Pty) Ltd - Proposed establishment of a fuel station on Erf 38333, Milnerton, Cape Town (2019 - 2022)</b>	Basic Assessment for the establishment of a fuel station on Erf 38333, Milnerton, Cape Town. Nicholas was the project manager and compiled the BAR (including EMP), undertook the required public participation process and managed the appointed specialists.
<b>We Buy Cars Properties (Pty) Ltd – The construction of a warehouse, Brackenfell (2019)</b>	ECO services for the construction of the We Buy Cars warehouse in Brackefell, Western Cape. Nicholas acted as the [project manager and was responsible for reviewing the monthly ECO reports.
<b>City of Tshwane Metropolitan Municipality (MM) - Expansion of the Winterveld Cemetery (2007 - 2010)</b>	Basic Assessment for the expansion of the existing Winterveld Cemetery located within the City of Tshwane Metropolitan Municipality. Nicholas was the project manager and compiled the BAR (including EMP), undertook the required public participation process and managed the appointed specialists.
<b>City of Tshwane MM - Expansion of the Klipkruisfontein Cemetery (2007 - 2010)</b>	Basic Assessment for the expansion of the existing Klipkruisfontein Cemetery located within the City of Tshwane Metropolitan Municipality. Nicholas was the project manager and compiled the BAR (including EMP), undertook the required public participation process and managed the appointed specialists.
<b>Tolplan (Pty) Ltd for SANRAL – Proposed Central Operations Centre (COC), Midrand (2009)</b>	Basic Assessment for the proposed construction of the SANRAL COC Building. Nicholas was the project manager and compiled the BAR (including EMP), undertook the required public participation process and managed the appointed specialists.

<b>Erf5 Melrose Estate CC - Section 24G Rectification for a Roof Signboard (2008)</b>	Rectification Application in terms of Section 24G (S24G) of the National Environmental Management Act, 1998 for the unlawful erection of a roof signboard on the corner of Juta and Eendracht Streets, Johannesburg. Nicholas was the project manager and compiled the Rectification Application (including EMP) and undertook the required public participation process.
<b>Wideopen Leasing (Pty) Ltd – S24G Rectification for a Sky Sign, 78 Fox Street (2007)</b>	Rectification Application in terms of S24G of the National Environmental Management Act, 1998 for the unlawful erection of a Sky Sign at 78 Fox Street, Johannesburg. Nicholas was the project manager and compiled the Rectification Application (including EMP) and undertook the required public participation process.
	<b>MEMBERSHIPS</b>
<b>EAPASA</b>	Registered Environmental Assessment Practitioner: Number 2019/1001
<b>Pr.Sci.Nat.</b>	Registered as a Professional Natural Scientist - Environmental Scientist (Reg. no. 113939)
<b>International Association for Impact Assessment – South Africa (IAIASa)</b>	Western Cape Branch Committee - Chairperson (Current) Western Cape Branch Committee - Secretary (2019 – 2021)
	<b>PUBLICATIONS</b>
	Rossouw, N. & Arnott, N. (Still in Review). Good Practice Environmental Guideline for Marine Minerals Activities in the Benguela Current Large Marine Ecosystem.



Registration No. 2019/1001

***Herewith certifies that***

Nicholas David Arnott

***is registered as an***

**Environmental Assessment Practitioner**

***Registered in accordance with the prescribed criteria of Regulation 15. (1)  
of the Section 24H Registration Authority Regulations  
(Regulation No. 849, Gazette No. 40154 of 22 July 2016, of the  
National Environmental Management Act (NEMA), Act No. 107 of 1998, as  
amended).***

Effective: 01 March 2021

Expires: 28 February 2022

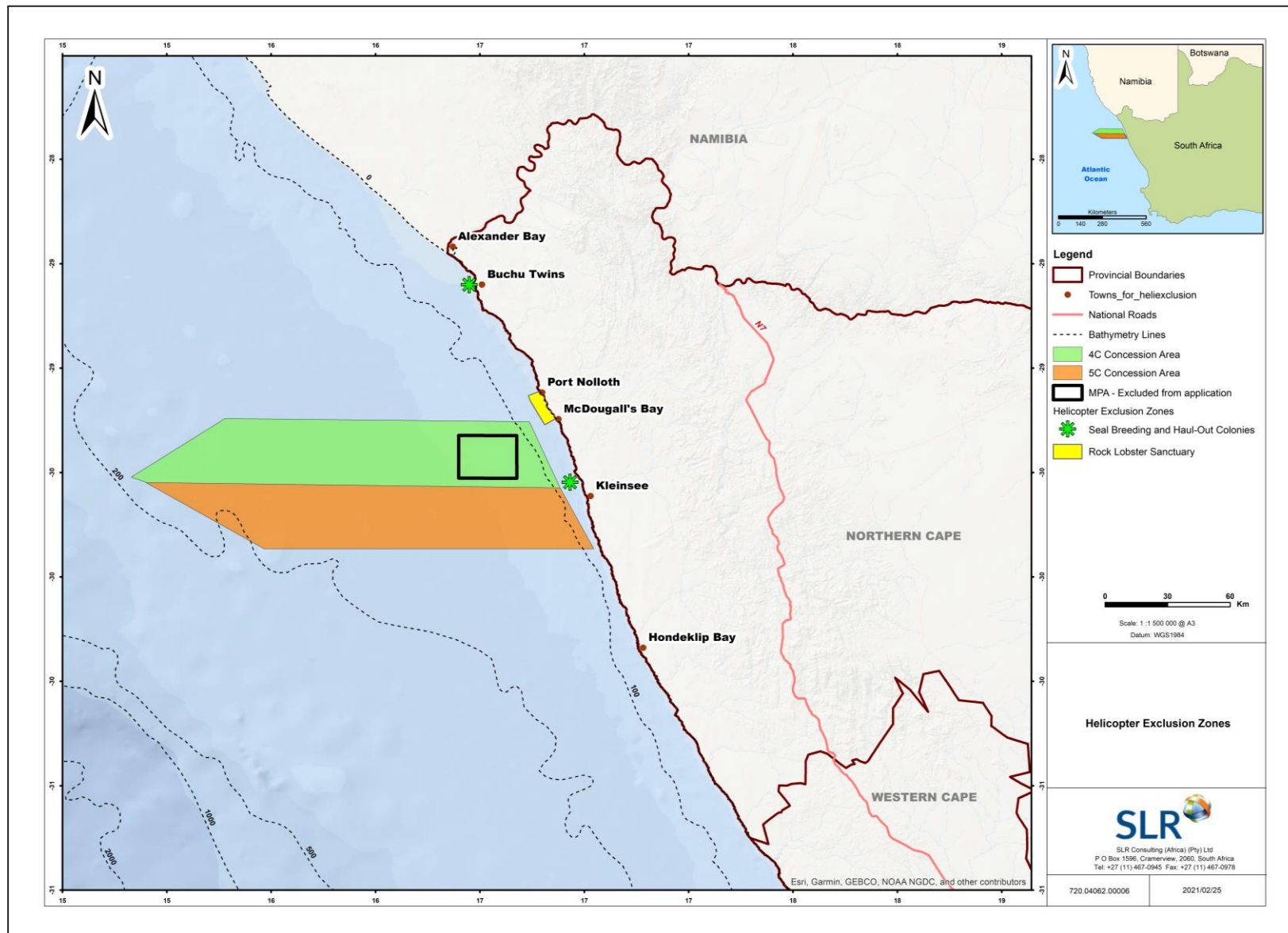
Chairperson

Registrar





## APPENDIX B: ENVIRONMENTAL SENSITIVITY MAP



## AFRICAN OFFICES

### South Africa

CAPE TOWN

T: +27 21 461 1118

JOHANNESBURG

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DURBAN

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