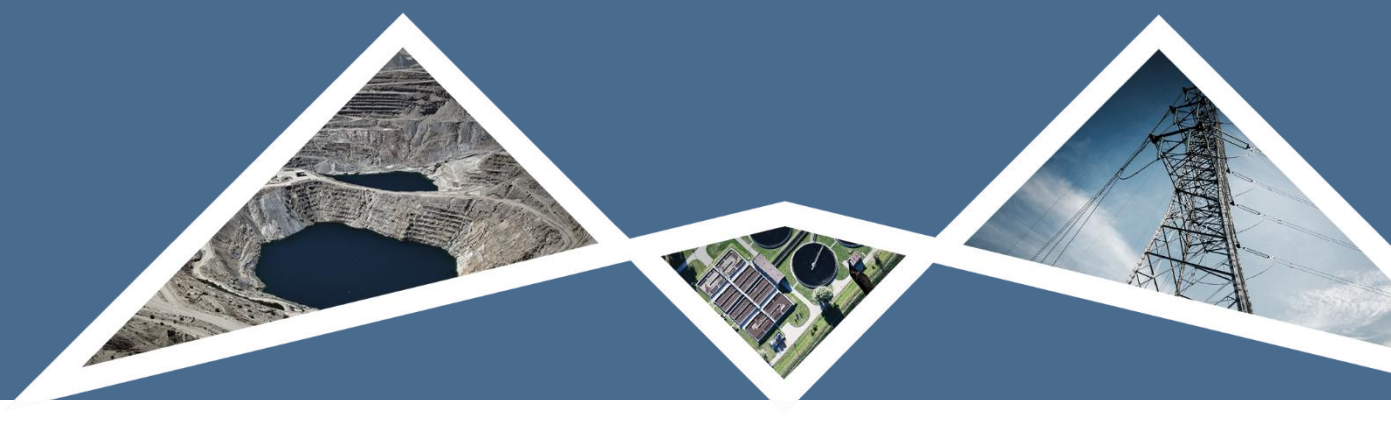
EIMS | ENVIRONMENTAL IMPACT MANAGEMENT SERVICES

T 011 789 7170 E info@eims.co.za W www.eims.co.za

ENVIRONMENTAL AUDIT REPORT

OFFSHORE EXPLORATION RIGHT 0061ER: BLOCK 9 AND BLOCK 11A



DOCUMENT DETAILS

EIMS REFERENCE:	1688-1
DOCUMENT TITLE:	Environmental Audit Report for Offshore Exploration Right ER0061: Block 9 and Block 11A

DOCUMENT CONTROL

	NAME	SIGNATURE	DATE
COMPILED:	Liam Whitlow		2025/04/10
CHECKED:	John von Mayer		2025/04/10
AUTHORIZED:	Liam Whitlow		2025/04/10

REVISION AND AMENDMENTS

REVISION DATE:	REV #	DESCRIPTION
2025/05/13	ORIGINAL DOCUMENT	Environmental Audit Report- Block 9 and 11A

Table of Contents

List of Figures

List of Tables

List of Abbreviations

Abbreviation	Item
CCA	Crowther Campbell & Associates
CSIR	Council for Scientific and Industrial Research
DAFF	Department of Agriculture, Forestry and Fisheries
DEA	Department of Environmental Affairs
DFFE	Department of Forestry, Fisheries and the Environment
DNV	Det Norske Veritas
DOT	Department of Transport
EA	Environmental Authorisation
EAP	Environmental Assessment Practitioner
ECO	Environmental Control Officer
EIA	Environmental Impact Assessment
EIMS	Environmental Impact Management Services (Pty) Ltd
EMPr	Environmental Management Programme Report
ER	Exploration Right
ERM	Environmental Resources Management
EWP	Exploration Works Programme
FLO	Fisheries Liaison Officer
GIIP	Good International Industry Practice
HSE	Health, Safety, and Environment
I&AP	Interested and Affected Party
IFC	International Finance Corporation
IMO	International Maritime Organization
JNCC	Joint Nature Conservation Committee
MBES	Multibeam Echosounder
MMO	Marine Mammal Observer

Abbreviation	Item
MPRDA	Mineral and Petroleum Resources Development Act, Act 28 of 2002
NADF	Non-Aqueous Drilling Fluid
NEMA	National Environmental Management Act, Act 107 of 1998
OGP	Oil and Gas Producers
OSCP	Oil Spill Contingency Plan
OSRL	Oil Spill Response
OWCP	Oiled Wildlife Contingency Plan
PAM	Passive Acoustic Monitoring
PASA	Petroleum Agency of South Africa
PetroSA	Petroleum Oil and Gas Corporation of South Africa (Pty) Ltd
ROV	Remote Operated Vehicle
SAHRA	South African Heritage Resources Agency
SANBI	South African National Biodiversity Institute
SANHO	South African Hydrographic Office
SAR	Synthetic Aperture Radar
SADSTIA	South African Deep Sea Trawling Industry Association
SAMSA	South African Maritime Safety Authority
SOPEP	Shipboard Oil Pollution Emergency Plan
STLM	Sound Transmission Loss Modelling
VMS	Vessel Monitoring System
VSP	Vertical Seismic Profiling

EXECUTIVE SUMMARY

Environmental Impact Management Services (Pty) Ltd (EIMS) was appointed by the Petroleum Oil and Gas Corporation of South Africa SOC LTD (hereafter referred to as PetroSA) to undertake an Environmental Audit of the Environmental Management Programme for the Block 9 and 11A Exploration Right (30/5/2/3/2/61 ER) off the South Coast of South Africa.

Regulation 54(a)(2) of the Environmental Impact Assessment (EIA) Regulations (GNR982- EIA Regulations) requires all rights and permits issued in terms of the Mineral and Petroleum Resources Development Act, Act 28 of 2002 (MPRDA) and associated Environmental Management Plans to be subjected to the audit requirements stipulated in Part 3 of Chapter 5 of the Regulations. Part 3, Chapter 5 of the EIA Regulations in turn requires that compliance with the conditions of the environmental authorisation, and the EMPr is audited and an environmental audit report be submitted to the relevant competent authority.

The scope of the audit is to assess compliance with the requirements of the EMPr for Block 9 and 11A currently held by PetroSA, and to confirm the continued adequacy of the EMPr. The purpose of the audit is to determine and report on:

- The level of performance against and compliance of the conditions with the provisions of the requisite EMPr; and
- The ability of the measures contained in the EMPr, to sufficiently provide for the avoidance, management and mitigation of environmental impacts associated with the undertaking of the applicable exploration activities.

The period of assessment for this audit is defined by the most recent activities undertaken within the Blocks, namely seismic surveys undertaken in 2011 and 2012.

Compliance with the requirements was evaluated using the pre-determined scoring criteria (described in Section 6.2) and the results of the audit are described in detail in Section 7 of this report. A total of 13 conditions (commitments) were identified in the EMPr[1]. Four of these conditions were considered not applicable to the current phase of the project. Of the applicable conditions 3 were regarded as being fully compliant, and the remaining 6 as partially complaint. Utilising this scoring system, a total straight compliance score of 33% was obtained for the EMPr (3/9) and a weighted compliance score of 100% (9/9).

The Auditor also undertook an evaluation of the adequacy of the EMPr's[2] to determine the ability of the EMPr's, to sufficiently provide for the avoidance, management and mitigation of environmental impacts associated with the undertaking of the activity on an ongoing basis. It is the auditor's opinion that the 2014 EMPr's offer generic, sometimes outdated impact management actions and do not address specific activity and site impacts adequately. Whilst these generic impact management outcomes and actions may be adequate for the purposes of the current exploration work programme (i.e. reprocessing of existing data), they are not adequate for any other future physical exploration activities (including the potential contingent exploration activities). Further assessment is needed when specific location details and technical specifications for future exploration activities are available, likely necessitating amendments and supplements to the current EMPr.

[1] The applicable EMPr for the most recent exploration activities (2011-2012 seismic survey) is dated December 1997, compiled by CCA and CSIR.

[2] Most recent EMPr's refer to the 2014 EMPr for seismic activities and the 2014 EMPr for drilling activities (Environmental Resources Management, 2014).

1 INTRODUCTION

The Petroleum Oil and Gas Corporation of South Africa (Pty) Ltd (PetroSA) is the holder of an Exploration Right for petroleum issued in accordance with the Minerals and Petroleum Resources Development Act (Act 28 of 2002-MPRDA). PetroSA is required to implement the exploration activities in accordance with the requirements of the approved Environmental Management Programme (EMPr). Regulation 34 of the National Environmental Management Act (Act 107 of 1998-NEMA), Environmental Impact Assessment Regulations (GNR982)(EIMS Regulations) requires that the holder of an approved EMPr must, for the period during which the EMPr remains valid, ensure that the compliance with the conditions of the EMPr is audited.

This report aims to comply with these obligations to audit compliance with the EMPR and submit the findings of the audit to the relevant competent authority, in this case the Department of Mineral Resources (DMR).

2 ACTIVITY DESCRIPTION

PetroSA is the holder of an exploration right over offshore areas Block 9 and Block 11A. Figure 1 provides a locality map showing the location and extent of the exploration right.

PetroSA's Block 9 license area covers a surface area of 22,756 km^2 and is located 140 km south of Mossel Bay. Block 11a covers 1270 km^2, is located 60 km from shore and has water depths ranging from 100 to 140 m. The northern part of Block 9 can be said to be maturely explored and developed, containing other existing Production Rights together with associated established sub-sea infrastructure which includes pipelines and a production platform.

A brief overview of exploration activities undertaken in the blocks is provided below (Environmental Resources Management, 2014):

- Block 9
    - This right was acquired by virtue of a cession by SOEKOR (PTY) Ltd. to SOEKOR E and P (PTY) Ltd. PetroSA inherited the exploration rights through the merger of Mossgas (Pty) Limited, SOEKOR (Pty) Limited, and parts of the Strategic Fuel Fund Association.
    - SOEKOR E and P (PTY) Ltd. obtained authorisation for seismic surveys within Blocks 9 offshore through Section 39 (4) Mineral Act 1991 (50 of 1991). The authorisation for seismic surveys was converted to exploration rights under the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002).
    - PetroSA submitted an application for new order rights in 2007. The existing EMPr was submitted along with the new order right in 2007. PetroSA then applied for renewal of these rights in 2010.
    - In 2009 the E-DT2 vertical exploration borehole was drilled to a total depth of 1495m in Block 9. E-DT2 was classified as a dry well and was plugged and abandoned.
    - A number of seismic surveys were undertaken in Block 9 prior to the approval of the EMPr in 1997. Since then 3D seismic surveys were conducted in 1998, 2000 and most recently in 2011.
- Block 11a
    - 12 exploration wells have been drilled in Block 11a between 1968 and 1990.
    - 2D and 3D seismic surveys have been undertaken.
    - No wells are under production in Block 11a.

Table 1 provides a breakdown of the mineral tenure progression over time for the exploration blocks. The relevant EMPr's are identified together with the activities approved and undertaken.

Table 1: Mineral tenure and EMPr progression.

Tenure	Validity	EMPr	Scope / Activities
Minerals Act (Act 50 of 1991)- Mining Licence. Lease OP26		EMPr October 1997- Approved in terms of Section 39(4) of the Minerals Act. EMPr provides for 1 exploration drill with option for 3 additional wells. Addendum to EMPr for Prospect Well Drilling for seismic surveys (Crowther Campbell & Associates and CSIR Environmentek, 1997)	Seismic 1998, 2000
Original Converted Exploration Right Period- 0061ER	Completed. Applied for new order right in 2007. Executed 4 October 2007.	EMPr October 1997. EMPr provides for 1 exploration drill with option for 3 additional wells (Crowther Campbell & Associates and CSIR Environmentek, 1997).	Drilled E-DT2- 2009
1st Exploration Right Renewal Period	Completed. Applied in 2010. Issued: 23 November 2012 (date executed). Ended: 22 November 2014	Seismic EMPr (Environmental Resources Management, 2011). EMPr provides for 2D / 3D Seismic as well as Controlled Source Electromagnetic (CSEM) survey.	Seismic Survey: 24 November 2011 to 21 April 2012. Relevant EMPr was the 1997 EMPr Seismic Addendum (Crowther Campbell & Associates and CSIR Environmentek, 1997)
2nd Exploration Right Renewal Period	Completed. Applied: 2 September 2014. Issued: 4 August 2015.	Seismic EMPr (Environmental Resources Management, 2014) Seismic EMPr provides for 2D / 3D Seismic as well as Controlled Source Electromagnetic (CSEM) survey. Drilling EMPr (Environmental Resources Management, 2014). Drilling EMPr provides for generic drilling environmental controls. This EMPr supersedes the previous EMPr (1997).	No invasive activities undertaken.
3rd Exploration Right Renewal Period	Pending: Applied 2019. Currently pending decision.	Seismic EMPr (Environmental Resources Management, 2014) Seismic EMPr provides for 2D / 3D Seismic as well as Controlled Source Electromagnetic (CSEM) survey.	The renewal period exploration works programme makes provision for the following activities: • Reprocessing of 1500 line-km of 2D Seismic. • Contingent well drilling.

Tenure	Validity	EMPr	Scope / Activities
		Drilling EMPr (Environmental Resources Management, 2014). Drilling EMPr provides for generic drilling environmental controls. This EMPr the supersedes previous EMPr (1997).	

The current approved EMPr's (Environmental Resources Management, 2014) cater for the impact management outcomes and actions applicable to generic seismic surveys and exploration drilling activities. The EMPR's do not provide a detailed description of exploration activities or locations (besides falling within Block 9 and 11A).

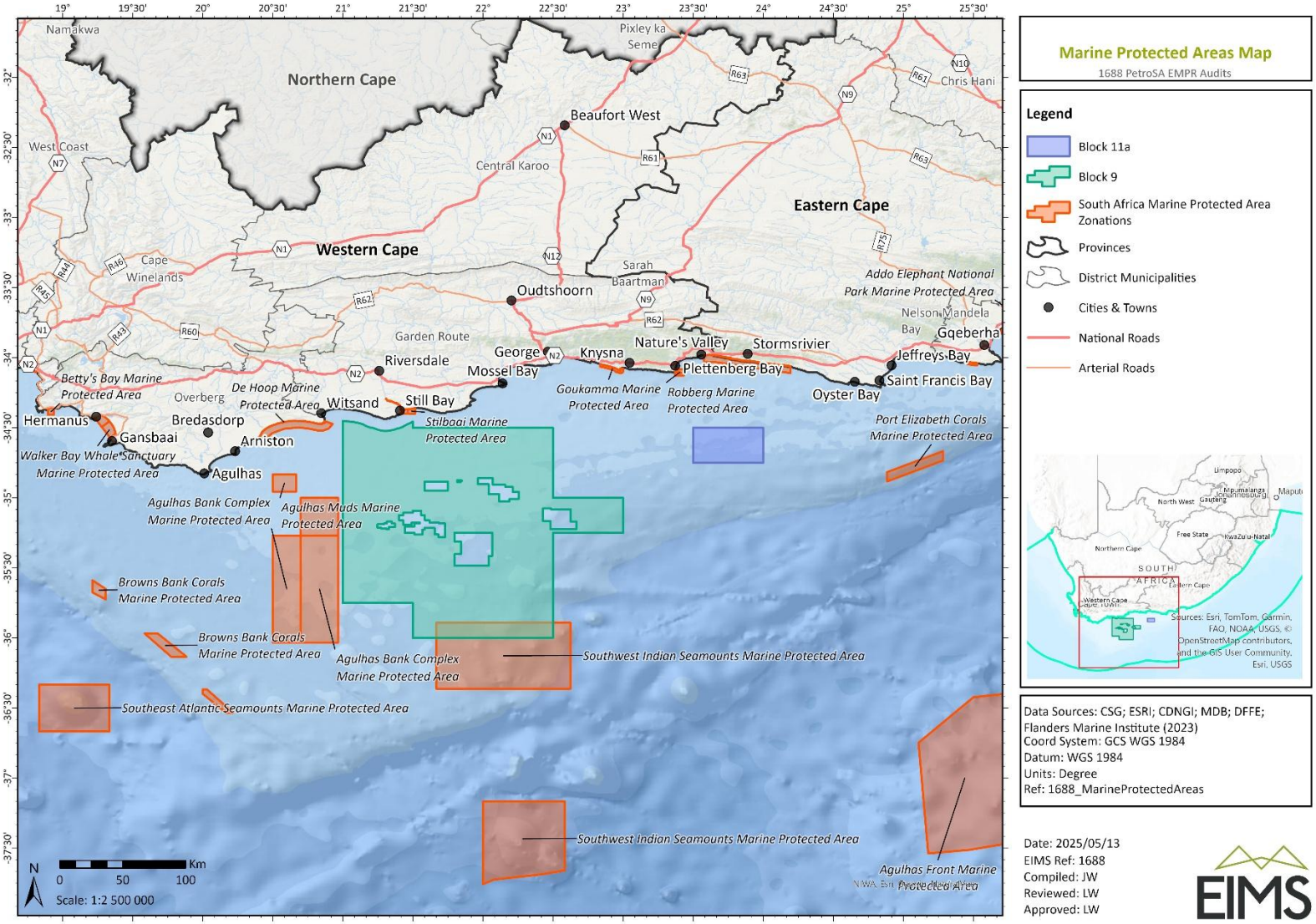


Figure 1: Locality map.

3 LEGISLATIVE FRAMEWORK

Regulation 54(a)(2) of the EIA Regulations requires all rights and permits issued in terms of the Mineral and Petroleum Resources Development Act, Act 28 of 2002 (MPRDA) and associated Environmental Management Plans/ programmes to be subjected to the audit requirements stipulated in Part 3 of Chapter 5 of the EIA Regulations.

Regulation 54 states that: *Where a right or permit issued in terms of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002) and the associated Environmental Management Programme or Environmental Management Plan approved in terms of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002) is still in effect after 8 December 2014, the requirements contained in Part 3 of Chapter 5 of these Regulations apply to such Environmental Management Programmes or Environmental Management Plans, and where-*

> *(a) the audit or performance assessment cycle of the Environmental Management Programme or Environmental Management Plan exceeds five years, an audit report will be required to be submitted at least every five years commencing from the date of submission of the last audit, for the period during which the right or permit remains in effect; or*
>
> *(b) no audit or performance assessment requirement was set in the Environmental Management Programme or Environmental Management Plan, an audit report will be required to be submitted to the competent authority no later than 7 December 2021 and at least every 5 years thereafter for the period during which the right or permit remains in effect.*

The EMPR's stipulate the requirements to undertake and submit performance assessments annually. Consequently PetroSA is required to undertake and submit NEMA Regulation 54 audits annually. Based on a requested from PetroSA the period of assessment for this audit is defined by the most recent activities undertaken within the Blocks, namely seismic surveys undertaken in 2011 and 2012.

Part 3 of Chapter 5 of the Regulations refers to requirements for auditing and amendment of an Environmental Authorisation or Environmental Management Programme. This audit was undertaken in line with these requirements.

4 DETAILS OF THE AUDITOR

The environmental audit was undertaken by Liam Whitlow from EIMS.

4.1 EXPERTISE OF THE AUDITOR

Liam Whitlow is an experienced Environmental Scientist with a B.Sc. Honours in Environmental Management and over 23 years of professional experience. Liam is a registered Environmental Assessment Practitioner and Professional Natural Scientist. His expertise includes environmental impact assessments, project management, and environmental monitoring, with significant experience in the mining and infrastructure sectors. He has managed large-scale EIAs and conducted environmental due diligence and assessments in compliance with international standards.

4.2 DECLARATION OF INDEPENDENCE

*I, **Liam Whitlow**, declare that –*

- *I act as the independent Environmental Auditor;*
- *I will perform the work relating to the environmental audits in an objective manner, even if this results in views and findings that are not favourable to the Client;*
- *I declare that there are no circumstances that may compromise my objectivity in performing such work;*
- *I have expertise in conducting environmental audits, including knowledge of the environmental Acts, regulations and any guidelines that have relevance to the audited operations;*

- *I will comply with the relevant Acts, regulations, and all other applicable legislation;*
- *I have no, and will not engage in, conflicting interests in the audit process;*
- *I realise that a false declaration is an offence in terms of regulation 48 and is punishable in terms of section 24F of the NEMA; and*
- *I do not have and will not have any vested interest (either business, financial, personal, or other) in the audit other than remuneration for work performed.*

Signature of Auditor

5 SCOPE, PURPOSE AND OBJECTIVE OF THE AUDIT

The scope of the audit is to assess compliance with the conditions of the approved EMPr and to confirm the continued adequacy of the EMPr. The purpose of the audit is to ensure compliance with the requirement of the EMPr and the NEMA EIA Regulation 34 to undertake scheduled compliance audits. The objectives of the audit are to determine:

- The level of performance against and compliance with the provisions of the requisite EMPr; and
- The ability of the measures contained in the EMPr, to sufficiently provide for the avoidance, management and mitigation of environmental impacts associated with the authorised activities.

It is noted, in accordance with the relevant transitional provisions, that an Environmental Authorisation issued in terms of the National Environmental Management Act is not required for this exploration right. Consequently the audit will focus on the authorised EMPr only**. The period of assessment for this audit is defined by the most recent activities undertaken within the Exploration Blocks, namely seismic surveys undertaken in 2011 and 2012. Therefore this audit will consider the EMPr authorised at the time that these activities were undertaken, namely the 1997 EMPr** (Crowther Campbell & Associates and CSIR Environmentek, 1997) **for seismic activities.**

The scope of this audit is defined as follows:

- Compliance with the requirements of the approved EMPr's (Crowther Campbell & Associates and CSIR Environmentek, 1997) in so far as it relates to the following:
    - Previous completed exploration activities (consideration of rehabilitation, closure and post closure management actions). It is assumed that compliance with planning and operational aspects and actions associated with exploration activities undertaken during previous exploration periods (i.e. prior to 2011) would have been audited and reported on as part of the specified auditing requirements as well as in support of the exploration right renewal application[3]. Planning and operational activities undertaken prior to 2011 are therefore excluded from the scope of this audit. Albeit that the pre-2011 activities do not fall within the scope of this audit, it is noted that the most recent exploration well drilling took place in 2009. In 2009 the 2006 NEMA Regulations and associated listed activities were applicable. Activity 6 in GNR386 includes the excavation and deposition of material covering an area greater than 10m^2 in the sea. It is the auditors understanding that a typical exploration drill site would have triggered this activity and consequently an Environmental Authorisation may have been required at the time this well was drilled;

[3] Section 81(2)(c) of the MPRDA requires that the application for renewal of an exploration right must be accompanied by a report reflecting the extent of compliance with the conditions of the environmental authorisation.

- Exploration activities which were, or are presently being, undertaken during the current renewal exploration period (consideration of planning, operational, rehabilitation, closure and post closure management actions as applicable); and
- Future exploration activities, approved in the Exploration Work Programme (consideration of planning management actions) for the pending Renewal period.

6 AUDIT METHODOLOGY

6.1 PROCEDURE FOR THE AUDIT

Initial documentation was obtained and reviewed in preparation for the audit. A checklist was prepared based on the requirements of the EMPr. Compliance with the requirements was evaluated using the pre-determined scoring criteria as described in Section 6.2 and the results of the audit are described in Section 7 of this report.

The Environmental Audit is primarily a Compliance Audit against the conditions of the approved EMPr. Findings from the audit that did not relate to an EMPr condition did not contribute to the audit score. However, where deficiencies have been identified that do not necessarily correspond to specific EMPr conditions, these findings have been used to provide recommendations for improvement. Various documentation and records were required during the audit to confirm compliance with the requirements and were made available electronically for review.

There is wide variety of South African environmental legislation, and the organisation is required to comply with all relevant legislation. Whilst consideration was given to the relevant environmental legislation, a full comprehensive legal compliance audit is beyond the scope of this audit.

6.2 EVALUATION CRITERIA USED DURING THE AUDIT

Compliance scoring is based on a pre-determined system, with each EMPr condition weighted equally. The audit used the following compliance scoring criteria:

- Fully Compliant: Indicating that the condition was fully complied with and provided with a compliance rate score of 4.
- Partially Compliant: Indicating that the condition has not been fully complied with and that additional measures are required to obtain full compliance. Partial compliances were provided with a compliance rating score of 2.
- Non-Compliant: Indicting that the condition has not been complied with and provided with a compliance rating score of 0.
- Not Applicable (N/A): Indicating that the condition is not currently applicable. Not applicable conditions were removed from the total number of conditions from which the compliance score was calculated during this reporting period.

It is noted that the overall compliance is presented in both a straight compliance (i.e. strict compliant/ non-compliant) as well as the weighted compliance (i.e. where partial compliance is represented).

6.3 CONSULTATION PROCESS UNDERTAKEN

The findings of this assessment are based only on meetings / interviews and documentation reviewed. No site visit, physical testing or analysis was performed (or necessary) during the assessment and information provided by auditee employees was verified by review only.

As per Regulation 34 of the EIA Regulations, 2014, all potential and registered interested and affected parties should be notified of the submission of the report to the authorities and the report should be made available to anyone on request and it should be made available on a publicly accessible website, where the holder has such a website.

7 RESULTS OF THE AUDIT

This section of the report details the audit results. It comprises a summary of compliance with EMPr requirements, the compliance evaluation results, a summary of findings, and an analysis of the ongoing adequacy of the EMPr.

A total of 13 conditions (commitments) were identified in the EMPr. Four of these conditions were considered not applicable to the current phase of the project. Of the applicable conditions three were regarded as being compliant, and the remaining six as non-compliant. It is noted that all of the non-compliant conditions were rated as being partially compliant based on a weighted compliance approach.

The level of compliance for each commitment was calculated according to the methodology described in section 6.2. Utilising this scoring system, a total straight compliance score of 33% was obtained for the EMPr (3/9) and a weighted compliance score of 100% (9/9). This indicates that that all of the applicable conditions were either fully compliant or partially complaint.

7.1 COMPLIANCE EVALUATION

The compliance evaluation of the EMPr is provided in Table 2. The conditions were rated according to the compliance evaluation criteria described in 6.2.

Table 2: Compliance evaluation of the relevant EMPr conditions.

Ref #	Condition	Compliance Y/N	Compliance Rating	Comments/ Verification
4.1. Establishment Phase				
4.1.1.	SOEKOR E and P will notify the fishing industry, DOT, and any other relevant parties, of the location of the planned seismic area and expected track-lines	N	2	A notice to Interested and Affected Parties (including fishing stakeholders, SADSTIA, SAMSA) was distributed via email on the 11 November 2011. The Department of Transport was not included in the list of I&AP's. The notification included the location of the survey area.
4.1.2.	SOEKOR E and P are currently in the process of setting up a structure to facilitate consultation with the fishing industry on an ongoing basis.	Y	4	No compliance obligation. A basic stakeholder communications strategy was provided in the Marine Mammal Observer (MMO) Closeout report to facilitate engagements with the fishing industry. This included distribution of daily MMO reports and notices.
4.2 Operational Phase				
4.2.1.	The objective of undertaking visual surveys is to ensure that whales are not in the immediate proximity to the seismic vessel and airgun arrays, when the airgun "pops" commence. The surrounding areas must be searched in order to see if any whales are in the area. The presence of any animals and other required details must be recorded as is required on the relevant form (see Section C). As a rule of thumb, the airguns can only start up when whales are over 500m away from the nearest airgun. Searching the immediate area must take place on every occasion that seismic acquisition takes place, since animals may re-enter the area during periods of seismic inactivity.	Y	4	On this survey the MMO was required to “look out” do a 30 minutes pre watch prior to the 30 minute soft start. On this survey PetroSA employed the services of CapFish for their Marine Monitoring duties. CapFish provided full time MMO on each rotation that typically worked daylight hours and was always available for any daylight prewatches. The MMO closeout report confirms that 'at no time did whales or dolphins enter the 500 m mitigation zone during air gun operations and there was no survey downtime caused by the presence of cetaceans'. Based on the MMO reports provided guns were not initiated whilst there were observations within the mitigation zone. No instances of seismic firing being initiated prior to

Ref #	Condition	Compliance Y/N	Compliance Rating	Comments/ Verification
				obtaining the “all clear” from the MMO were recorded. The MMO reports record the details of the MMO, the detailed breakdown of observation/ watch periods, faunal sightings, soft starts, and all observations and sightings. The method of observation was not recorded in the daily MMO reports but is detailed in the MMO Closeout Report.
4.2.2.	Since there is a possibility of whale hearing damage at close range, seismic airgun arrays must start up gradually i.e. "soft-start", so as to give whales and any other cetaceans the opportunity to move away from the survey vessel and airgun array. This must occur on every occasion that testing takes place for the reasons indicated above. The period for pre-survey gradual build-up should be 0.5 hr before the airguns are operated at full level. The vessel operator is required to provide SOEKOR E and P with a breakdown of the actual sound pressure levels that will be reached at time intervals during the "soft start".	N	2	The Independent quality assurance report provided by PetroSA confirms that all periods of detonation were started with a gun ‘soft start’ to comply with industry standard. According to the MMO reports a soft start of 27 minutes was undertaken on the 8th of December 2011. All other recorded soft starts were at least 30 minutes.
4.2.3	Seismic Vessel			
4.2.3.1.	Chemicals Storage: The seismic vessel will comply with all international standards in this regard. Reference should also be made to the Prospect Well Drilling EMPR.	N/A	Not verified	The Prospect Well Drilling EMPr (1997) includes a list of impact management actions aimed at preventing accidental discharges of chemicals. These include actions related to storage locations, duration, handling, documentation, and maintenance and inspections. Proof of compliance would typically be done during the survey and not through documentation. This condition is therefore not currently verifiable.
4.2.3.2.	Fuel Storage: Fuel is stored in fuel tanks on the vessel.	N/A	Not verified	Proof of compliance would typically be done during the survey and not through documentation. This condition is therefore not currently verifiable.

Ref #	Condition	Compliance Y/N	Compliance Rating	Comments/ Verification
4.2.3.3.	Food and Galley Waste Disposal: Only putrescible kitchen waste will be discharged from the vessel. This will be macerated to aid dilution and dispersion and washed out with the grey water from the galley.	N/A	Not verified	Proof of compliance would typically be done during the survey and not through documentation. This condition is therefore not currently verifiable. The independent quality assurance report provided notes the following: "The objective of the waste segregation and recycling project was to minimise disposal into the sea. In fact, after having one suspected shark bite on the cable no food even ground up food was allowed to be disposed of overboard. All food waste was kept in a frozen storage containers that was taken off the vessel for disposal shore side in Mossel Bay via the Smit Madura".
4.2.3.4.	Waste Disposal: There will be no solid, non-biodegradable waste discharged to sea. All solid waste will be collected and disposed onshore after the completion of the survey campaign. Waste containers are supplied on the vessel for the storage of refuse. Waste disposal on shore will meet the requirements of the relevant authorities at the next port of call. The waste management procedure drawn up for the Prospect Well Drilling EMPR, will be made available to the seismic vessel operator. This will ensure that all personnel have clear instructions on the correct waste disposal procedure.	N	2	Records of wastes generated, transferred, collected and received were provided. These included general and hazardous (i.e. oils) wastes between the seismic vessel and the support vessels as well as between the support vessels and a waste contractor. Apart from a single disposal slip from the PetroSA General Waste site on the 8th December 2011, no further final disposal slips were provided. Waste registers from the support vessels were not provided. The SABS Class was also not recorded. Proof of compliance would typically be done during the survey and not through documentation. However, the MMO Reports do note that all waste (including sewage sludge) was transferred to supply vessel for disposal ashore. It is noted that the final destination of this sewage sludge waste is not clear from the waste records provided. The Prospect Well Drilling EMPr requires that a Waste Management Procedure is compiled and implemented. No waste management procedure was provided to the auditor.

Ref #	Condition	Compliance Y/N	Compliance Rating	Comments/ Verification
4.2.4.	Emergency Response: Details in this regard are given in Section 1.2.2 of the Prospect Well Drilling EMPR. Equipment to deal with any oil spills relating to seismic activities would be available from the ORIBI facility at short notice.	N/A	Not verified	Section 1.2.2. of the Prospect Well Drilling EMPr includes Emergency Response requirements. The actions include an update to the Soekor procedures, communications systems, the requirement to have the necessary equipment to address small spills on location, and the requirement for a standby vessel. The updated Soekor emergency response procedure was not provided. The provision of on-site spill prevention and control equipment is typically audited during site inspections and therefore compliance could not be verified retrospectively. The daily MMO reports included a section which reported on pollution observed. No spills were recorded in the MMO reports. No spills were recorded in the field data acquisition report or the annual Performance Assessment Report.
4.1 Decommissioning Phase and Post Closure				
4.3.1.	Closure Objectives: On completion of the seismic survey campaign, the airgun array equipment will be loaded back onto the seismic vessel, which will then leave the area. No equipment or infrastructure will be left in the areas that were surveyed. There will be no effect on existing infrastructure or risk to any other activities in the area once the seismic campaign is complete.	N	2	The Independent MMO Report for the 14 April 2012 notes that the survey was completed, and guns were retrieved at 03:30 (15/04/12). The MMO Report notes that 2 x Q – fins (streamer control device) were lost to sea. No further detail is provided on whether these were retrieved, or whether such posed a hazard and were reported accordingly.
4.4 Monitoring, Compliance Auditing and the Submission of Information				
4.4.1.	Monitoring and Ongoing Assessment of Impacts: The objectives of the monitoring programme are to check: • That equipment remains fully functional in accordance with required specifications; and • That the normal planned operations are maintained within acceptable limits of deviation.	Y	4	No proof of external DNV Certification prior to or during the survey was provided. Verif-i Limited United Kingdom, provided quality control services for both Seismic and Navigation. It was noted in the Supervision of Data Quality and HSE Report undertaken by an independent specialist (Verif-I Limited), that a DNV Inspection was undertaken in April 2012 at the end of the seismic survey.

Ref #	Condition	Compliance Y/N	Compliance Rating	Comments/ Verification
	To achieve these objectives the following features will be incorporated into the seismic survey campaign: • All critical equipment on the seismic vessel is subject to external certification by DNV; • All processes are closely monitored by the contractor and SOEKOR E and P through the operational control system that continuously monitors the operating conditions; • Monitoring arrangements for specific environmental aspects will be as defined in previous sections of this EMPR.			
4.4.2.	Compliance Auditing: The effectiveness of the EMP will be subjected to audit by SOEKOR E and P. A procedure and full programme for the audit will be prepared by SOEKOR E and P. For the duration of the seismic campaign, a SOEKOR E and P manager will be onboard the seismic vessel. This manager will be responsible for ensuring compliance with the EMP and for auditing the seismic operation.	N	2	An annual performance assessment report date June 2012 was provided. The report provides a summary of the assessment against the approved EMPr. The presence of a manager representing the Holder could not be verified.
4.4.3.	Submission of Information: The submission of information will take place as agreed to with the Regional Director.	N	2	An annual performance assessment report date June 2012 was provided. The performance assessment also notes that the daily MMO reports were also submitted. Proof of submission was not provided.

7.2 FINDINGS OF THE AUDIT

The key findings of the audit are presented in .

Table 3: Key audit findings.

Finding Ref #	EMPR Ref #'s	Findings	Recommendations
Documentation and record keeping	4.3.1.; 4.4.1.; 4.4.3.	Many of the recorded non-compliances were related to documentation and record keeping. The EMPr requires the preparation and in some cases maintenance of reports and records throughout the survey. In many instances these records could not be provided by the auditee.	It is recommended that a documentation and retention period requirement in the EMPr be added to provide for retention for a minimum of 5 years after the validity of the petroleum right ends.
Waste management and disposal responsibility	4.2.3.4.	Records of wastes generated, transferred, collected and received were provided. These included general and hazardous (i.e. oils) wastes between the seismic vessel and the support vessels as well as between the support vessels and a waste contractor. Apart from a single disposal slip from the PetroSA General Waste site on the 8th of December 2011 no further final disposal slips were provided. Waste registers from the support vessels were not provided.	No further recommendations. The existing EMPr conditions must be complied with.

Where applicable, recommendations presented in Table 3 above to address the key findings have been included in the recommended amendments and changes to the EMPr in Section 7.3.2.

7.3 CONTINUED ADEQUACY OF THE EMPR

As per the requirements of Regulation 34(3) of the EIA Regulations (GNR982), the environmental audit report contemplated in sub-regulation (1) must determine- the ability of the EMPr, to sufficiently provide for the avoidance, management and mitigation of environmental impacts associated with the undertaking of the activity on an ongoing basis. The continued adequacy of the EMPr is discussed in this section of the report.

The latest EMPr's (drilling and seismic) provided by PetroSA were evaluated (Environmental Resources Management, 2014).

7.3.1 EMPR EVALUATION

The evaluation of the adequacy of the EMPr considers the following:

1. Compliance with the EMPr content requirements defined in Appendix 4 of the EIA Regulations (GNR982);
2. Review of latest compliance audit findings;
3. Review of the authorised activities to confirm that all relevant impacts have been identified and adequately assessed, and that relevant impact management outcomes and actions are adequate.

4. Review of the EMPr to confirm adequate measures to ensure compliance with the provisions of the EMPr.

The remaining sub-sections present the evaluation and consequent recommendations.

7.3.1.1 COMPLIANCE WITH NEMA EMPR REQUIREMENTS

Appendix 4 of the NEMA EIA Regulations provides for the requirements of an EMPr in compliance with Section 24N of the NEMA. Table 4 below provides a breakdown of the prescribed requirements, an evaluation of compliance with the current EMPr, and recommendations to address shortcomings. Note that this evaluation aims to check whether the prescript of the regulations are included in the current EMPr and does not aim to evaluate the completeness or adequacy thereof. The adequacy of the EMPr impact management outcomes and actions are evaluated in Section 7.3.1.3.

Table 4: NEMA EIA Regulations Appendix 4 Evaluation.

Requirement		Evaluation EMPr's	Recommendations
NEMA Regulation 982 (2014) Appendix 4			
Appendix 4(1)(1)(a):	Details of – i. The EAP who prepared the EMPr; and ii. The expertise of that EAP to prepare an EMPr, including a curriculum vitae;	The EMPr's provide details on the authors (Henry Camp and Jessica Hughes) from ERM. The details include a summary of the authors relevant experience and qualifications. Full curricula vitae are not included.	EMPr to be revised to reflect the details, including curriculum vita, of the EAP responsible for amending and updating the EMPr's.
Appendix 4(1)(1)(b):	A detailed description of the aspects of the activity that are covered by the EMPr as identified by the project description;	Section 1 provides an Introduction to the project. Section 2 provides general context to the activities, receiving environment, impacts, and the legal frameworks. Both EMPr's provide a generic description of activities with no site specific definition (beyond the block boundaries). The EIA Regulations require a detailed description. The generic description provided is inadequate.	As and when the Holder defines the specific location, and extent of future exploration activities, further assessment of the impacts of these activities in the relevant site specific context must be undertaken and the EMPr's consequently amended. Formal EMPr amendment processes as prescribed by Regulations 31 to 33 of the EIA Regulations or alternative as agreed to with the Competent Authority.
Appendix 4(1)(1)(c):	A map at an appropriate scale which superimposes the proposed activity, its associated structures, and infrastructure on the environmental sensitivities of the preferred site, indicating any areas that should be avoided, including buffers;	Section 1 of the EMPr's includes a locality map of the entire exploration right blocks. No site specific detail is provided in respect of proposed exploration activities. Sections 2.2. and 2.3 of the EMPr's identify and describe, at a high level, the environmental components and sensitivities likely to be affected by the activities. The sensitivities described and depicted spatially in the reports are dated (2014) and require update and amendment to reflect current sensitivities. Of specific note is the changes to the relevant Marine Protected Areas, Critical Biodiversity Areas, and ecologically important	As and when the Holder defines the specific location, and extent of future exploration activities, the locality, layout and sensitivity maps will require updating and the EMPr's amended accordingly. For the purposes of the fixed non-invasive exploration activities defined in the current Exploration Works Programme (EWP), the generic EMPr's are adequate.

Requirement		Evaluation EMPr's	Recommendations
		and sensitive areas within the Blocks which would require specific description and impact assessment once future exploration activities are defined.	
Appendix 4(1)(1)(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 though the environmental impact assessment process for all phases of the development including – 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;	Section 2.3 of the EMPr's identifies and describes the impacts associated with the drilling and seismic surveys. Section 3 of the EMPr's lists the impact management rational and objectives. The objectives and actions are listed for each project activity and include activities associated with the planning, operations, and closure.	None.
Appendix 4(1)(1)(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 – 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;	Section 3 of the EMPr's lists the impact management rational and objectives. The impact management hierarchy has been applied in the identification of relevant impact management actions.	None.

Requirement		Evaluation EMPr's	Recommendations
	iii. Comply with any applicable provisions of the act regarding closure, where applicable; ands iv. Comply with any provisions of the Act regarding financial provisions for rehabilitation, where applicable.		
Appendix 4(1)(1)(g):	The method of monitoring the implementation of the impact management actions contemplated in paragraph (f);	For each activity identified in Section 3 associated audit guidelines are provided which include requirements for documentation and monitoring. Activity 14.1 of Section 3 of the Drilling EMPr provides a breakdown of required monitoring. Activity 13.1 of Section 3 of the Seismic EMPr provides a breakdown of required monitoring.	None.
Appendix 4(1)(1)(h):	The frequency of monitoring the implementation of the impact management actions contemplated in paragraph (f);	Activity 14.2 of Section 3 of the Drilling EMPr provides a breakdown of required compliance auditing requirements including the frequency thereof. Activity 13.2 and 13.3 of Section 3 of the Seismic EMPr provides a breakdown of required reporting and auditing, including the frequency thereof.	None.
Appendix 4(1)(1)(i):	An indication of the persons who will be responsible for the implementation of the impact management actions.	For each impact management action listed in Section 3 a specific party is assigned responsibility.	None.
Appendix 4(1)(1)(j):	The time periods within which the impact management actions contemplated in paragraph (f) must be implemented;	For each impact management action listed in Section 3 the relevant timing is provided.	None.

Requirement		Evaluation EMPr's	Recommendations
Appendix 4(1)(1)(k):	The mechanism for monitoring compliance with the impact management actions contemplated in paragraph (f);	Activity 14.2 of Section 3 of the Drilling EMPr provides a breakdown of required compliance auditing requirements. Activity 13.2 and 13.3 of Section 3 of the Seismic EMPr provides a breakdown of required reporting and auditing.	None.
Appendix 4(1)(1)(l):	A program for reporting on compliance, taking into account the requirements as prescribed by the Regulations;	Activity 14.3 of Section 3 of the Drilling EMPr provides a breakdown of required compliance reporting requirements. Activity 13.2 and 13.3 of Section 3 of the Seismic EMPr provides a breakdown of required reporting and auditing.	None.
Appendix 4(1)(1)(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 ii. Risks must be dealt with in order to avoid pollution or the degradation of the environment; and	Activity 5 of Section 3 of the EMPr's provides the requirements for training and awareness.	None.
Appendix 4(1)(1)(n):	Any specific information that may be required by the competent authority.	N/A- no record was provided of specific requirements from the competent authority.	N/A

7.3.1.2 AUDIT FINDINGS AND RECOMMENDATIONS

The audit findings are presented in Section 7.2. It is recommended that the documentation and retention period requirement in the EMPr be amended to provide for retention for a minimum of 5 years after the validity of the petroleum right ends. The EMPr will need to be amended accordingly.

7.3.1.3 ADEQUACY OF IMPACT MANAGEMENT

This section aims to present the findings of an evaluation of the current EMPr's and the ability of the measures contained in the EMPr's to sufficiently provide for the avoidance, management and mitigation of environmental impacts associated with the undertaking of the activity. The approach taken included:

- Consideration of the impacts identified and presented in the EMPr, and to determine whether any additional impacts and associated management outcomes and actions should be included.
- Consideration of the current impact management actions, their adequacy and potential changes to align with good international industry practice (GIIP).

A critical component of this evaluation relates to the nature of the exploration activities included in the Exploration Works Programme (EWP). The EWP for the renewal period pending approval lists the following exploration activities:

- Firm commitment: Reprocessing of 2D seismic of approximately 1500 line km; and
- Contingent activities: Possible future seismic and drilling activities contingent on further downstream progress[4].

The findings of this evaluation are presented in Table 5 for both the seismic and the drilling activities.

[4] The specific exploration prospects, locations and activities are not yet defined.

Table 5: Recommended additions and amendments to the impact management outcomes and actions.

EMPr Section	Comments	Nature of change	Recommendations
EMPr for Seismic Activities (Environmental Resources Management, 2014)			
2.1.2	The current stakeholder communications requirements do not include the need to develop and maintain an effective grievance mechanism.	Amend	2.1.2. Compile a Communications Plan that outlines the communications procedures for all stakeholder engagement, including a Stakeholder Engagement Register, responsibilities for review of stakeholder comments, feedback to the stakeholder and close out actions and requirements. The plan must include an effective Grievance Mechanism aligned with the requirements of the IFC, considering mechanisms for grievance input, assessment, action, monitoring, and closure.
4.1.1	The current pre-survey notification is 15 days prior to the survey commencing. This should be extended to at least 3 weeks, and additional stakeholders should be included.	Amend	Fishing stakeholders and other marine users who operate in the area shall be notified in writing of seismic activities and the location and presence of exclusion and safety areas at least 3 weeks prior to the scheduled commencement of survey activities. Should seismic activities extent beyond the original time frame stakeholders should be notified within 24 hours. Stakeholders include: • Overlapping and neighbouring users with delineated boundaries in the marine petroleum and mineral prospecting and mining industries • South African and foreign fishing vessels, who can be informed through the recognized fishing associations and Department of Agriculture, Forestry and Fisheries (DAFF) examples include the South African Deep Sea Trawling Association, Inshore Pelagic, Rock Lobster and Tuna Associations, fishing companies and fishing agents • Government Departments with jurisdiction over marine activities, particularly DEA and PASA, SAN Hydrographer, South African Maritime Safety Authority (SAMSA) and local Port Captains. • DFFE Vessel Monitoring, Control and Surveillance Unit in Cape Town.

EMPr Section	Comments	Nature of change	Recommendations
4.1.1	Additional engagement requirements for the fishing industry.	Additional	• An experienced Fisheries Liaison Officer (FLO) should be placed on board the seismic or escort vessel to facilitate communications with fishing vessels in the vicinity of the seismic survey area. • Ensure project vessels fly standard flags and lights to indicate that they are engaged in towing surveys and are restricted in manoeuvrability. • Notify any fishing vessels at a radar range of 12 nm from the seismic vessel via radio regarding the safety requirements around the seismic vessel.
5.1.3	Included requirement for training on incident and reporting procedures.	Amend	5.1.3. All personnel shall receive regular training on the handling and management of waste, and incident response and reporting procedures.
6.1	Disturbance and behavioural changes in pelagic fauna due to vessel lighting vessel lighting on marine fauna was not specifically identified.	Additional	6.1.2.1 The lighting on the survey and support vessels must be reduced to a minimum compatible with safe operations. Light sources must, if possible and consistent with safe working practices, be positioned in places where emissions to the surrounding environment can be minimised.
	Impacts of marine biodiversity through the introduction of non-native species in ballast water and on ship hulls was not specifically identified in the EMPr	Additional	• Avoid the unnecessary discharge of ballast water. Discharge of ballast water during the survey to be approved by the ECO. • Use filtration procedures during loading in order to avoid the uptake of potentially harmful aquatic organisms, pathogens and sediment that may contain such organisms. • Ensure that routine cleaning of ballast tanks to remove sediments is carried out, where practicable, in mid-ocean or under controlled arrangements in port or dry dock, in accordance with the provisions of the ship's Ballast Water Management Plan. • Ensure all infrastructure (e.g. arrays, streamers, tail buoys etc) that has been used in other regions is thoroughly cleaned prior to deployment. • Comply with the requirements of the International Convention for the Control and Management of Ships' Ballast Water and Sediments (BWM Convention).
6.1.2	Expanded requirement for environmentally friendly streamers.	Additional	6.1.2. Ensure that solid streamers rather than fluid-filled streamers are used. Alternatively, low toxicity fluid-fill streamers could be used.

EMPr Section	Comments	Nature of change	Recommendations
6.2.3	The existing EMPr requires that helicopter flights must follow set flight paths, the restrictions or guidance on how to define these flight paths is not provided. Depending on the specific location of future surveys, it may be necessary to adjust flight paths to avoid sensitive areas.	Amend	6.2.3. Helicopter flight logs will be kept to demonstrate compliance with set flight paths. Pre-planned flight paths must avoid sensitive areas and colonies as identified during the pre-commencement assessment (refer to control 7.1.4.1) and must be approved by the ECO.
6.3.2	Impacts of the unplanned loss of equipment to sea from the survey vessel on commercial fishing. The current controls do not include notification of such to the SAN Hydrographic Office (SANHO).	Amend	6.3.2. The incident management procedure should be followed in the event of a lost object or other materials (see Activity 11.1). Notify SANHO of any hazards left on the seabed or floating in the water column, and request that they send out a Notice to Mariners with this information.
6.5.5	Bunkering should be restricted from taking place at night or during periods of low visibility.	Amend	6.5.5. Offshore bunkering will not be allowed in the following circumstances: • Wind force and sea state conditions of 6 or above on the Beaufort Wind Scale, • During any workboat or mobilisation boat operations, • During helicopter operations, • During the transfer of in-sea equipment, and • At night or times of low visibility.
7.	Whilst the general impacts on marine ecology from seismic sources are identified, no acoustic sound transmission loss modelling (STLM) was done. This is accepted standard practice for current EIA's to be able to inform the impact assessment. Without this it is not possible to define the impact zones applicable to the survey and thereby assess the impact. Whilst the generic impacts of seismic surveys on marine ecology are listed, they are not substantiated on a site	Additional	7.1.4.1. Once specific target areas for future seismic surveys are defined the following must be undertaken by an EAP prior to commencement:: • Undertake survey (technical specifications) and location specific sound transmission loss modelling (acoustic modelling) in order to define the magnitude and extent of potential underwater noise. • A cultural heritage impact assessment should be undertaken by a suitable qualified specialist with specific focus on the intangible heritage. • Revise the impact assessment on the basis of the outcomes of the acoustic modelling (with inputs from relevant specialists including but not limited to

EMPr Section	Comments	Nature of change	Recommendations
	specific level. The Agulhas bank is a productive fishing area and includes sensitive marine receptors (incl penguins, Agulhas Bank Nursery Area, Shackleton Seamount Complex, Kingklip Ridge, adjacent to Agulhas Bank Complex MPA; Agulhas Muds MPA, overlaps with South West Indian Seamounts MPA, close to De Hoop MPA, overlaps with defined CBA1 Natural Areas, overlaps with a defined Important Marine Mammal Area). This necessitates an update to the impact assessment, informed by site specific marine acoustic modelling once survey details are available. The potential impact on tangible and intangible cultural heritage has not been assessed. The coastal areas adjacent to Block 9 has significant sites of archaeological significance (including shell middens, fish traps, caves, etc). Whilst impacts on these tangible features is unlikely from normal seismic operations they may be impacted in the event of unplanned events (e.g. large spills). The nature and extent of the intangible attachments and cultural significance of the sea to the coastal communities has not been assessed. Intangible heritage is linked to the health of the marine ecosystem as a whole as well as the livelihoods that are dependent on the ocean in the area		marine ecology, and fisheries). Impact on Small Scale Fisheries must be included. • Supplement the impact management actions and impacts contained in the EMPr to account for the site and survey specific controls. • Obtain relevant approvals from the competent environmental authority in accordance with relevant legal requirements (e.g. amendments to EA and/or EMPR in accordance with NEMA requirements).
	The current marine mammal monitoring relies on daylight MMO observations only. It is current best practice to supplement the MMO's with Passive Acoustic Monitoring (PAM), especially during nighttime and low visibility conditions.	Additional	• All seismic vessels must be fitted with Passive Acoustic Monitoring (PAM) technology, which detects animals through their vocalisations. • The PAM technology must have enough bandwidth to be sensitive to the whole frequency range of sensitive marine life expected in the area. • The use of PAM 24-h a day must be implemented to detect deep diving species.

EMPr Section	Comments	Nature of change	Recommendations

			• Ensure the PAM streamer is fitted with at least four hydrophones, of which two are HF and two LF, to allow directional detection of cetaceans.
			• Ensure the PAM hydrophone streamer is towed in such a way that the interference of vessel noise is minimised.
			• Ensure spare PAM hydrophone streamers (e.g. 4 heavy tow cables and 6 hydrophone cables) are readily available in the event that PAM breaks down, in order to ensure timeous redeployment.
			• An independent Passive Acoustic Monitoring (PAM) Operator is required on board at all times. As a minimum, at least one PAM must be on watch at all times while the acoustic source is active. The duties of the PAM operator would be to:
			  ○ Provide effective regular briefings to crew members, and establish clear lines of communication and procedures for onboard operations;
			  ○ Ensure that the hydrophone cable is optimally placed, deployed and tested for acoustic detections of marine mammals;
			  ○ Confirm that there is no marine mammal activity within 500 m of the seismic source array prior to commencing with the "soft-start" procedures;
			  ○ Record species identification, position (latitude/longitude), distance and bearing from the vessel and acoustic source, where possible;
			  ○ Record general environmental conditions;
			  ○ Record seismic source activities, including sound levels, "soft-start" procedures and pre-start regimes;
			  ○ Request the delay of start-up and temporary termination of the seismic survey, as appropriate.

		Additional	Define and enforce the use of the lowest practicable seismic source volume for production. Design arrays to maximise downward propagation, minimise horizontal propagation and minimise high frequencies in seismic source pulses (have this verified by independent evaluators).

EMPr Section	Comments	Nature of change	Recommendations
	Impacts on turtles and cetaceans due to ship strikes, collision and entanglement with towed equipment was not specifically identified.	Additional	• The vessel operators must keep a constant watch during daytime operations for marine mammals and turtles in the path of the vessel. • Keep watch for marine mammals behind the vessel when tension is lost on the towed equipment and either retrieve or regain tension on towed gear as rapidly as possible. • Ensure that 'turtle-friendly' tail buoys are used by the survey contractor or that existing tail buoys are fitted with either exclusion or deflector 'turtle guards'. • Ensure vessel transit speed between the survey area and port is a maximum of 12 knots (22 km/hr), except in MPAs where it is reduced further to 10 knots (18 km/hr). • Should a cetacean become entangled in towed gear, contact the South African Whale Disentanglement Network (SAWDN) formed under the auspices of DEA to provide verbal specialist assistance in releasing entangled animals where necessary. • Report any collisions with large whales to the International Whaling Commission (IWC) database, which has been shown to be a valuable tool for identifying the species most affected, vessels involved in collisions, and correlations between vessel speed and collision risk
7.2.1	Clarified exclusion period to be inclusive for both June and November.	Amend	7.2.1. Seismic surveys must not be scheduled during whale breeding periods from 1st June to 30th November when higher numbers of whales are present.
7.2.5	The 500m mitigation zone should be defined as being from the seismic source and not the vessel.	Amend	7.2.5. Firing of seismic guns must not be initiated until observations have confirmed that the 500m radius around the seismic source is clear of marine mammals, no visible swimming or shoaling large pelagic fish, and that no turtles or diving sea birds are seen to be present. The MMO must be in close communication with the seismic airgun or seabed logging personnel and should issue an "all clear" signal prior to initiating seismic airgun firing or seabed logging.

EMPr Section	Comments	Nature of change	Recommendations
13.2	As environmental monitoring information gathered during surveys is of high scientific value, such information should be made available (inter alia to SANBI, SAEON, and the DFFE) to contribute to the knowledge base of deep-water environments	Additional	The environmental monitoring data collected (including the MMO and PAM) must be made available to the DFFE, SANBI and SAEON for their use in future scientific research.
EMPr for Drilling Activities (Environmental Resources Management, 2014)			
2.1.1.	Existing EMPr does not explicitly refer to requirements of MARPOL Annex 1 and associated Oil Pollution Emergency Plan.	Amend	2.1.1. Ensure that the service providers (drilling, support vessels etc) have the following subsidiary plans / procedures in place: • Oil Spill Contingency Plan • Emergency Response Plan, including MEDIVAC plan • Waste Management Plan • Incident Management and Reporting • Ballast Management Plan • Regulation 37 of MARPOL Annex I will be applied, which requires that all ships of 400 gross tonnage and above carry an approved Shipboard Oil Pollution Emergency Plan (SOPEP). The purpose of a SOPEP is to assist personnel in dealing with unexpected discharge of oil, to set in motion the necessary actions to stop or minimise the discharge, and to mitigate its effects on the marine environment. The SOPEP must be submitted to the SAMSA for review and approval.
2.1.1.	Specify additional requirements for oil spill contingency planning.	Additional	• Develop response strategy and plan (OSCP), aligned with the National OSCP that identifies the resources and response required to minimise the risk and impact of oiling (shoreline and offshore). This response strategy and associated plans must take cognisance to the local oceanographic and meteorological seasonal conditions, local environmental receptors and local spill response resources. The response strategy must be informed by an Oil Spill Drift Modelling study specific to the drill target area. The development of the site-specific response strategy and plans must include the following:

EMPr Section	Comments	Nature of change	Recommendations
			○ Develop an Oiled Wildlife Contingency Plan (OWCP) in collaboration with specialist wildlife response organisations with experience in oiled wildlife response. The OWCP should be integrated into the site-specific OSCP and include detailed protocols on the collection, handling and transport of oiled marine fauna. ○ Assessment of onshore and offshore response resources (equipment and people) and capabilities at time of drilling, location of such resources (in-country or international), and associated mobilisation / response timeframes. ○ Selection of response strategies that reduce the mobilisation / response timeframes as far as is practicable. Use the best combination of local and international resources to facilitate the fastest response. ○ Well-specific oil spill modelling for planning purposes taking into consideration site- and temporal-specific information, the planned response strategy, and associated resources. ○ Develop intervention plans for the most sensitive areas to minimise risks and impacts and integrate these into the well-specific response strategy and associated plans. ○ The OSCP must include an oiled wildlife contingency plan or any wildlife response strategy developed in consultation with specialist wildlife response organisations, e.g. SANCCOB. Such plan must consider and align with international best practice, including the IPIECA Wildlife Response Preparedness Guidelines. • Schedule joint oil spill exercises including the operator and local departments / organisations to test the Tier 1, 2 & 3 responses. • Ensure contract arrangements and service agreements are in place (e.g. OSRL) to implement the OSCP, e.g. capping stacks at a local venue and other international locations, surface response equipment (e.g. booms, dispersant spraying system, skimmers, etc.), dispersants, response vessels, etc. • Use low toxicity dispersants that rapidly dilute to concentrations below most acute toxicity thresholds. Dispersants should be used cautiously and only with the permission of DFFE.

EMPr Section	Comments	Nature of change	Recommendations
			• Ensure a standby vessel is within 30 minutes of the drilling unit, equipped for dispersant spraying and can be used for mechanical dispersion (using the propellers of the ship and/or firefighting equipment). It should have at least 5m^3 of dispersant onboard for initial response. • As far as possible, and whenever the sea state permits, attempt to control and contain the spill at sea with suitable recovery techniques to reduce the spatial and temporal impact of the spill • In the event of a spill, use drifter buoys and satellite-borne Synthetic Aperture Radar (SAR)-based oil pollution monitoring to track the behaviour and size of the spill and optimise available response resources. • The Operator is to submit all forms of financial insurance and assurances to PASA to manage all damages and compensation requirements in the event of an unplanned pollution event.
2.1.	Whilst the general impacts on marine ecology from drilling are identified, no site specific oil spill/ blowout modelling or drilling discharge modelling was done. This is accepted standard practice for current EIA's to be able to inform the impact assessment. Without this it is not possible to define the impact zones applicable to the survey and thereby assess the impact. Whilst the generic impacts of drilling on marine ecology are listed, they are not substantiated on a site specific level. The Agulhas bank is a productive fishing area and includes sensitive marine receptors (incl penguins, Agulhas Bank Nursery Area, Shackleton Seamount Complex, Kingklip Ridge, adjacent to Agulhas Bank Complex MPA; Agulhas Muds MPA, overlaps with South West Indian Seamounts MPA, close to De Hoop MPA, overlaps with defined CBA1 Natural Areas, overlaps with a defined Important Marine Mammal Area). This necessitates an update to the impact assessment,	Additional	1.1.1.1. Once specific target areas for future drilling are defined the following must be undertaken by an EAP prior to commencement: : • Undertake drilling (technical specifications) and location specific oil spill drift modelling and drilling discharge modelling in order to define the magnitude and extent of potential impacts from unplanned well blowouts and discharges of drill cuttings and muds. • Undertake survey (technical specifications) and location specific sound transmission loss modelling (acoustic modelling) in order to define the magnitude and extent of potential underwater noise from drilling and siting activities (e.g. vertical seismic profiling (VSP), Multibeam Echosounder (MBES)). • A cultural heritage impact assessment should be undertaken by a suitable qualified specialist with specific focus on the intangible heritage. • Revise the impact assessment on the basis of the outcomes of the modelling (with inputs from relevant specialists including but not limited to marine ecology, and fisheries). Impact on Small Scale Fisheries must be included. • Supplement the impact management actions and impacts contained in the EMPr to account for the site and drill specific controls.

EMPr Section	Comments	Nature of change	Recommendations
	informed by site specific modelling once drilling target area details are available. The potential impact on tangible and intangible cultural heritage has not been assessed. The coastal areas adjacent to Block 9 has significant sites of archaeological significance (including shell middens, fish traps, caves, etc). Whilst impacts on these tangible features is unlikely from normal exploration operations they may be impacted in the event of unplanned events (e.g. large spills). The nature and extent of the intangible attachments and cultural significance of the sea to the coastal communities has not been assessed. Intangible heritage is linked to the health of the marine ecosystem as a whole as well as the livelihoods that are dependent on the ocean in the area		• Obtain relevant approvals from the competent environmental authority in accordance with relevant legal requirements (e.g. amendments to EA and/or EMPR in accordance with NEMA requirements).
2.1.2.	The current stakeholder communications requirements do not include the need to develop and maintain an effective grievance mechanism.	Amend	2.1.2. Compile a Communications Plan that outlines the communications procedures for all stakeholder engagement, including a Stakeholder Engagement Register, responsibilities for review of stakeholder comments, feedback to the stakeholder and close out actions and requirements. The plan must include an effective Grievance Mechanism aligned with the requirements of the IFC, considering mechanisms for grievance input, assessment, action, monitoring, and closure.
4.1.	Additional engagement requirements for the fishing industry.	Additional	• An experienced Fisheries Liaison Officer (FLO) should be placed on board the drilling or support vessel to facilitate communications with fishing vessels in the vicinity of the drilling activities. • Ensure project vessels fly standard flags and lights (as appropriate) to indicate that they are engaged drilling activities and are restricted in manoeuvrability. • Notify any fishing vessels at a radar range of 12 nm from the drilling vessel via radio regarding the safety requirements around the rig.

EMPr Section	Comments	Nature of change	Recommendations
4.1.2.	Added additional fisheries sector stakeholders	Amend	4.1.2. Fishing stakeholders, and other marine stakeholders who operate in the area shall be notified of drilling operations and the timing and location of exclusion zones at least 30 days prior to the scheduled commencement of drilling activities. Fishing stakeholders should include; the Agulhas Offshore Forum, Association of Small Hake Industries, FishSA, SA Tuna Longline Association, South African Hake Longline Association (SAHLLA), DFFE Vessel Monitoring, Control and Surveillance (VMS) Unit in Cape Town, SA Deep Sea Trawling Industry Association (SADSTIA), SA Inshore Fishing Industry Association, South East Coast Inshore Fishing Association, SA Midwater Trawling Association, SA Tuna Association, Fresh Tuna Exporters Association, South Coast Rock Lobster Association, SAMSA, relevant Port harbourmasters, the naval hydrographic office and the DFFE (Fisheries branch).
5.1.2.	Added requirement to train on incident response procedures.	Amend	5.1.2. All personnel shall receive regular training including tool box talks on the handling and management of waste, and incident response and reporting procedures.
6	Impacts on turtles and cetaceans due to ship strikes, and collision was not specifically identified.	Additional	• The vessel operators (incl Captain and crew) must keep a constant watch for marine mammals and turtles in the path of the vessel. • Ensure vessel transit speed between the area of interest and port is a maximum of 12 knots (22 km/hr), except in MPAs where it is reduced further to 10 knots (18 km/hr), as well as when sensitive marine fauna are present in the vicinity. • Report any collisions with large whales to the International Whaling Commission (IWC) database. • Contractors will ensure that the proposed drilling campaign is undertaken in a manner consistent with good international industry practice and BAT. All whales and dolphins are given protection under the South African Law. The Marine Living Resources Act, 1998 (No. 18 of 1998) states that no whales or dolphins may be harassed, killed or fished. No vessel or aircraft may, without a permit or exemption, approach closer than 300 m to any whale and a vessel should move to a minimum distance of 300 m from any whales if a whale surfaces closer than 300 m from a vessel or aircraft.

EMPr Section	Comments	Nature of change	Recommendations
6.1.	Disturbance and behavioural changes in fauna due to vessel lighting or light from flaring, was not specifically identified.	Additional	6.1.2.2. The lighting on the drill unit and support vessels must be reduced to a minimum compatible with safe operations. Light sources must, if possible and consistent with safe working practices, be positioned in places where emissions to the surrounding environment can be minimised. If possible and consistent with safe working practices, flaring to take place during daylight hours.
6.2.3.	The existing EMPr requires that helicopter flights must follow set flight paths, the restrictions or guidance on how to define these flight paths is not provided. Depending on the specific location of future surveys, it may be necessary to adjust flight paths to avoid sensitive areas.	Amend	6.2.3. The following impact management actions apply to helicopter flights: • Helicopter flight logs will be kept to demonstrate compliance with set flight paths. • Pre-planned flight paths must avoid sensitive areas and colonies as identified during the pre-commencement assessment (refer to control 1.1.6.1) and must be approved by the ECO. • Brief all pilots on the ecological risks associated with flying at a low level along the coast or above marine mammals.
		Additional	• All whales and dolphins are given protection under the South African Law. The Marine Living Resources Act (Act No. 18 of 1998) states that no whales or dolphins may be harassed, killed or fished. No vessel or aircraft may, without a permit or exemption, approach closer than 300m to any whale and a vessel should move to a minimum distance of 300 m from any whales if a whale surfaces closer than 300 m from a vessel or aircraft.
6.3.3.	Additional actions related to minimising and managing the risk of dropped objects.	Additional	6.3.3. Additional Actions: • Ensure containers are sealed / covered during transport and loads are lifted using the correct lifting procedure and within the maximum lifting capacity of crane system. • Undertake a post drilling ROV survey to scan seafloor for any dropped equipment and other removable features around the well site. In the event that equipment is lost during the operational stage, assess safety and metocean conditions before performing any retrieval operations.

EMPr Section	Comments	Nature of change	Recommendations
			• Notify SAN Hydrographer of any hazards left on the seabed or floating in the water column, with the dates of abandonment/loss and locations and request that they send out a Notice to Mariners with this information.
6.7.1.	Update ballast water management requirement to align with current best practice and obligations.	Amend	6.7.1. Ballast water from all vessels, discharged will follow the requirements of the International Maritime Organisation's (IMO) 2004 International Convention for the Control and Management of Ships' Ballast Water and Sediments. Including: • Establishing standards and procedures for the management and control of ships' ballast water and sediments. • Ships are required to implement a Ballast Water Management Plan, which includes a detailed description of the actions to be taken to implement the Ballast Water Management requirements. • All ships using ballast water exchange should, wherever possible, do so at least 200 nautical miles (± 370 km) from nearest land in waters of at least 200 m deep. Where this is not feasible, the exchange should be as far from the nearest land as possible, and in all cases a minimum of 50 nm (± 93 km) from the nearest land and preferably in water at least 200m in depth. • Ships will also have a Ballast Water Record Book to record when ballast water is taken on board; circulated or treated for Ballast Water Management purposes; and discharged into the sea. • Avoid the unnecessary discharge of ballast water. Discharge of ballast water during the survey to be approved by the ECO. • Use filtration procedures during loading in order to avoid the uptake of potentially harmful aquatic organisms, pathogens and sediment that may contain such organisms.
6.7.2.		Additional	6.7.2. Ensure all equipment (e.g. drill string, wellhead, BOP etc.) that has been used in other regions is thoroughly cleaned prior to deployment Avoid the unnecessary discharge of ballast water. Discharge of ballast water during the survey to be approved by the ECO.

EMPr Section	Comments	Nature of change	Recommendations
7.1.	The EMPr makes reference to using sonar or other techniques during the Rig site survey and positioning process. The impacts associated with these techniques have not specifically been identified, assessed, or impact management actions specified. Further the EMPr does not identify, assess or mitigate the potential impacts that noise from drilling operations might have on the marine environment. Additional mitigation measures or impact management actions should be included to address impacts associated with MBES, VSP, .	Additional	The following management actions should be implemented to control impacts from noise on the marine environment: • For Sonar Surveys, recommendations for mitigation include: o Appoint a minimum of two dedicated Marine Mammal Observer (MMO)[5], with a recognised MMO training course, on board for marine fauna observation (360 degrees around survey vessel), distance estimation and reporting. One MMO should also have Passive Acoustic Monitoring (PAM) training. The MMO must ensure compliance with mitigation measures during seismic geophysical surveying. o Ensure survey vessel is fitted with PAM technology (one or more hydrophones), which detects animals through their vocalisations, should it be possible to safely deploy PAM equipment. o Pre-survey scans should be limited to 15 minutes prior to the start of survey equipment. o "Soft starts" should be carried out for any equipment of source levels greater than 210 dB re 1 µPa at 1 m over a period of 20 minutes to give adequate time for marine mammals to leave the vicinity. o If several types of sonar equipment are to be started sequentially or interchanged during the operation, only one pre-shoot search is required prior to the start of acoustic output. A pre-shoot search will, however, be required for gaps in data acquisition of greater than 10 minutes.

[5] Non-dedicated MMOs can be implemented for short surveys using low-energy sources. Such personnel are trained MMOs who may undertake other roles on the vessel when not undertaking their mitigation role (JNCC 2017).

EMPr Section	Comments	Nature of change	Recommendations
			○ 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. ○ Preference should be given to planning sonar surveys to avoid the migratory periods for cetaceans. ○ No sonar survey-related activities are to take place within declared Marine Protected Areas. • For Drilling Operations, recommendations for mitigation include: ○ The drilling contractor will ensure that the proposed exploration activities are undertaken in a manner consistent with good international industry practice and BAT. ○ All whales and dolphins are given protection under the South African Law. The Marine Living Resources Act, 1998 (No. 18 of 1998) states that no whales or dolphins may be harassed, killed or fished. ○ No vessel or aircraft may, without a permit or exemption, approach closer than 300 m to any whale and a vessel should move to a minimum distance of 300 m from any whales if a whale surfaces closer than 300 m from a vessel or aircraft. ○ The generation of vessel noise and drilling noise cannot be eliminated due to the nature of the drilling operations. The following measures will be implemented to reduce noise at the source: ▪ Implement a maintenance plan to ensure all diesel motors and generators receive adequate maintenance to minimise noise emissions. ▪ Ensure vessel transit speed between the site and port is a maximum of 12 knots (22 km/hr), except within 25 km of

EMPr Section	Comments	Nature of change	Recommendations
			the coast where it is reduced further to 10 knots (18 km/hr). • For VSP, recommendations for mitigation include: o Key personnel and equipment: ▪ Appoint a minimum of two dedicated Marine Mammal Observer (MMO), with a recognised MMO training course, on board for marine fauna observation (360 degrees around drilling unit), distance estimation and reporting. One MMO should also have Passive Acoustic Monitoring (PAM) training should a risk assessment, undertaken ahead of the VSP operation, indicate that the PAM equipment can be safely deployed considering the metocean conditions (specifically current). ▪ Ensure drilling unit vessel is fitted with PAM technology (one or more hydrophones), which detects animals through their vocalisations, should it be possible to safely deploy PAM equipment. o Pre-start Protocols for airgun testing and profiling: ▪ VSP profiling should, as far as possible, only commence during daylight hours with good visibility. However, if this is not possible due to prolonged periods of poor visibility (e.g. thick fog) or unforeseen technical issue which results in a night-time start, refer to "periods of low visibility" below. ▪ Undertake a 1-hr (as water depths > 200 m) pre-shoot visual and possible acoustic scan (prior to soft-starts / airgun tests) within the 500 m radius mitigation zone in

EMPr Section	Comments	Nature of change	Recommendations
			order to confirm there is no cetaceans, turtles, penguins and shoaling large pelagic fish activity close to the source. ▪ Implement a "soft-start" procedure of a minimum of 20 minutes' duration when initiating the acoustic source (except if testing a single airgun on lowest power). This requires that the sound source be ramped from low to full power rather than initiated at full power, thus allowing a flight response by marine fauna to outside the zone of injury or avoidance. ▪ Delay "soft-starts" if cetaceans, turtles and shoaling large pelagic fish are observed / detected within the mitigation zone during the pre-shoot visual / acoustic scan. A "soft-start" should not begin until 20 minutes after cetaceans depart the mitigation zone or 20 minutes after they are last seen or acoustically detected by PAM in the mitigation zone. In the case of penguins, shoaling large pelagic fish and turtles, delay the "soft-start" until animals move outside the 500 m mitigation zone. ▪ Maintain visual and possibly acoustic observations within the 500 m mitigation zone continuously during VSP operation to identify if there are any cetaceans present. ▪ Keep VSP operations under 200 pulses to remain within the 500 m exclusion zone for LF cetaceans. o Shut-Downs: Shut down the acoustic source if cetaceans, penguins, shoaling large pelagic fish or turtles are sighted within 500 m mitigation zone until such time as the mitigation zone is clear of cetaceans for 20 minutes or in the case of penguins, shoaling large pelagic fish or turtles, the animals move outside the 500 m

EMPr Section	Comments	Nature of change	Recommendations
			mitigation zone before the soft-start procedure and production may commence. ○ Breaks in Airgun Firing ▪ Breaks of less than 20 minutes: • there is no requirement for a soft-start and firing can recommence at the same power level as at prior to the break (or lower), provided that continuous monitoring was ongoing during the silent period and no cetaceans, penguins, shoaling large pelagic fish or turtles were detected in the mitigation zone during the breakdown period. • If a cetaceans are detected in the mitigation zone during the breakdown period, there must be a minimum of a 20-minute delay from the time of the last detection within the mitigation zone and a soft-start must then be undertaken. In the case of penguins, shoaling large pelagic fish or turtles, the animals move outside the 500 m mitigation zone within the 20 minute period. ▪ Breaks of longer than 20 minutes: • If it takes longer than 20 minutes to restart the airguns, a full pre-watch and soft-start process should be carried out before the survey re-commences. If an MMO/PAM operator has been monitoring during the breakdown period, this time can contribute to the 60-minute pre-watch time.

EMPr Section	Comments	Nature of change	Recommendations
			○ Period of low visibility ▪ Ensure that during periods of low visibility (where the mitigation zone cannot be clearly viewed out to 500 m), including night-time, the VSP source is only used if PAM technology is in place to detect vocalisations (subject to a risk assessment indicating that the PAM equipment can be safely deployed considering the metocean conditions) or: • there have not been three or more occasions where cetaceans, penguins, shoaling large pelagic fish or turtles have been sighted within the 500 m mitigation zone during the preceding 24-hour period; and • a two-hour period continual observation of the mitigation zone was undertaken (during a period of good visibility) prior to the period of low visibility and no cetaceans, penguins, shoaling large pelagic fish or turtles were sighted within the 500 m mitigation zone. The operations will be managed in compliance with the IFC EHS Guidelines for Offshore Oil and Gas Development, 2015.
7.1.1.	Expanded on the requirements for a pre-drill survey.	Amend	7.1.1. Undertake a seabed survey using side scan sonar, ROV, or other appraisal method to: • determine the presence of sensitive reef habitats or shipwrecks, • confirm whether any infrastructure might be affected (pipelines etc), and • to confirm the state of the seabed. The survey should extend over the area likely to be affected by drill cuttings and mud discharges, as defined by a drill cuttings and muds discharge modelling study. The

EMPr Section	Comments	Nature of change	Recommendations
			findings of the survey should be documented and shared with the DFFE and the South African National Biodiversity Institute (SANBI) for biodiversity research purposes.
7.1.4.		Amend	7.1.4. Use the seabed survey data to prepare a rig positioning plan taking into account the presence of sensitive features. The infrastructure position should be adjusted to avoid the identified sensitive habitats or features. If sensitive and potentially vulnerable habitats are detected, seek the advice of a benthic specialist and, adjust the well position accordingly or implement appropriate technologies, operational procedures and monitoring surveys to reduce the risks of, and assess the damage to, vulnerable seabed habitats and communities.
7.3.4.	Bunkering should be restricted from taking place at night or during periods of low visibility.	Amend	7.3.4. Offshore bunkering will not be allowed in the following circumstances: • Wind force and sea state conditions of 6 or above on the Beaufort Wind Scale, • During any workboat or mobilisation boat operations, • During helicopter operations, • During the transfer of in-sea equipment, and • At night or times of low visibility. Compliance with COLREGS (the Convention dealing with safety at sea, particularly to reduce the risk of collisions at sea) and SOLAS (the Convention ensuring that vessels comply with minimum safety standards).
8.1.	The current EMPr doesn't address the potential risk of cement discharges to the seabed.	Additional	Monitor cement returns and if significant discharges are observed on the seafloor terminate cement pumping.
8.1.1.	Expanded on the requirements for selecting and utilising drilling fluids.	Amend	8.1.1. In compliance with industry standards, select the lowest toxicity drilling fluid (or mud) available to meet the technical drilling requirements. Water based drilling fluids (WBDF) should be selected in preference to Non-Aqueous drilling fluids (NADF) wherever possible. NADF should not be used in the upper part of a well (with the exception in cases of safety or geological reasons to be described in the Notification Report). Where NADFs are required, use Synthetic Based Drilling Fluid (OGP Type III)

EMPr Section	Comments	Nature of change	Recommendations
			with low polycyclic aromatic hydrocarbon content. This information will be documented in the Drilling Fluids programme section of the Drilling Programme. Careful selection of drilling fluid additives taking into account their concentration, toxicity, bioavailability and bioaccumulation potential. Ensure only low-toxicity, low bioaccumulation potential and partially biodegradable additives are used.
8.1.4.	It is recent practice to release drill cuttings during the risered stage at a depth of greater than 10m below sea surface.	Amend	8.1.4. Drill cuttings brought to the surface for processing should be released via a shunt pipe or caisson placed at least 10m below the sea surface to reduce turbidity plumes and to limit the impact area.

9.1.	The management of Produced water is not specifically managed in the EMPr.	Additional	Once the produced water has been separated from the hydrocarbon component, the hydrocarbon component will be burned off via the flare booms, while the water will be temporarily collected in a slop tank. The product water is then either directed to:
			• a settling tank prior to transfer to support vessel for onshore treatment and disposal; or
			• a dedicated treatment unit where, after treatment, it is either:
			  ○ if hydrocarbon content is < 30 mg/l, discharged overboard; or
			  ○ if hydrocarbon content is > 30 mg/l, subject to a 2nd treatment or directed to tank prior to transfer to support vessel for onshore treatment and disposal.

10.1.8	Proactive monitoring and management of uncontrolled discharge of hazardous substances.	Additional	Implement leak detection and repair programs for valves, flanges, fittings, seals, etc
10.1.9	Enhanced controls through Marine Protected Areas.	Additional	Prohibit operational discharges within MPAs during operations, and transit to and from the drill site.
10.2.1	Clarify full compliance requirements with MARPOL.	Amend	10.2.1. Sewage and grey water discharges from vessels are regulated by MARPOL 73/78 Annex IV.

EMPr Section	Comments	Nature of change	Recommendations
		Additional	10.1.8. Discharges of oily water (deck drainage, bilge and mud pit wash residue) to the marine environment are regulated by MARPOL 73/78 Annex I, which stipulates that vessels must have: • A Shipboard Oil Pollution Emergency Plan (SOPEP). • A valid International Oil Pollution Prevention Certificate, as required by vessel class. • Equipment for the control of oil discharge from machinery space bilges and oil fuel tanks, e.g. oil separating/filtering equipment and oil content meter. Oil in water concentration must be less than 15 ppm prior to discharge overboard. • Oil residue holding tanks. • Oil discharge monitoring and control system. The system will ensure that any discharge of oily mixtures is stopped when the oil content of the effluent exceeds 15 ppm.
12.1.1.	Expand condition to require training and response materials.	Amend	12.1.1. The Drilling Contractor will comply with the Incident Management Procedure and Oil Spill Contingency and Emergency Response Plans developed prior to drilling (see section 1.2). Project vessels will be equipped with appropriate spill containment and clean-up equipment, e.g. booms, dispersants and absorbent materials. All relevant vessel crews will be trained in spill clean-up equipment use and routine spill clean-up exercises.
13.5.1.	Revise insurance cover amounts to reflect current and location specific risks.	Amend	13.5.1. Environmental management actions that would be required as a result of an incident or accident would be covered by PetroSA's insurance, as described below: • Third Party liability which includes personal injury, property damage and seepage and pollution as a result of any offshore exploration and production operations is covered up to USD150,000,000 per occurrence. • Well control insurance which would include blowouts and seepage and pollution is covered up to USD150,000,000 per occurrence. Insurance cover amounts must be updated to reflect activity specific risks. If there are actual losses due to the activities performed by the Applicants, the claimants should

EMPr Section	Comments	Nature of change	Recommendations
			be compensated for their losses at market rates. The Applicants must have a claims procedure appropriate to their activities. Compensation should follow the international standards such as the IFC principles, which states that market related prices should be paid, and if anything is restored, it must be to the same or better standards than before.

7.3.1.4 ADEQUACY OF COMPLIANCE MECHANISMS

It is necessary to evaluate the ability of the EMPr to ensure compliance with the provisions of EMPr. The EMPR's provide clear mechanisms for reporting and auditing, which are aligned with current practice. The EMPr's do not specifically provide for independent auditing as is required by Regulation 34 of the EIA Regulations. It is recommended that the EMPR's be amended to incorporate this requirement (Activity 1 of Section 3). The following requirement should be added to the EMPr's:

- The Holder must appoint an independent Environmental Control Officer (ECO) prior to commencement of any offshore exploration activities.
- The ECO should have appropriate training and/or experience in the implementation of environmental management specifications and must have knowledge and experience in the oil and gas exploration/production sector. The ECO must preferably have a tertiary qualification in an Environmental Management or appropriate field. The ECO's key role is auditing the implementation of the EMPr.
- The ECO will be responsible for the auditing function as well as the clarification of environmental conditions contained in this EMPr to anyone working on the site. For the purposes of this project, the role of ECO and MMO can be fulfilled by the same person.
- The ECO roles include:
    - Recommendations for review and update of the EMPr;
    - Liaison between the Applicant, Contractors, authorities and other lead stakeholders on high importance environmental concerns;
    - Ensures that correct shape files have been uploaded into the vessel navigation systems to support effective implementation of spatial controls
    - Review the project induction training to ensure environmental issues receive adequate attention and important site-specific issues are included;
    - Conduct environmental audits of the contractors including relevant documentation on a monthly basis;
    - Validating the regular inspection reports, which are to be prepared by the relevant contractor's EO or Lead MMO/PAM (who may be tasked with the onsite responsibilities of the ECO);
    - Maintain a record of all non-conformances and incidents to ensure that measures are put in place to remedy such;
    - Maintain a public consultation register in which all complaints are recorded, as well as action taken; and
    - Verification that all environmental monitoring programmes (sampling, measuring, recording etc. when specified) are carried out according to protocols and schedules.
- It is important to note that where opportunity for interpretation occurs within the conditions of this EMPr, the interpretation of the ECO will take preference.

7.3.2 EMPR SHORTCOMINGS AND RECOMMENDATIONS

It is the auditors opinion that the 2014 EMPr's offer generic, sometimes outdated impact management actions and fail to address specific activity and site impacts adequately. Further assessment is needed when specific location details and technical specifications are available, likely necessitating amendments and supplements to the current EMPr. These requirements have been incorporated into the recommended amendments to the EMPr's presented in Section 7.3.1.3 above.

Based on the time that has lapsed between the latest EMPr update in 2014 the following is recommended:

- The social landscape may have changed significantly since the latest 2014 EMPr update. It is recommended that additional stakeholder engagement be undertaken once the project plans are finalized in order to determine if any updates to the EMPr are required and to update and supplement the list of stakeholders identified in the EMPr. If significant new issues are raised during the engagement process, then the EMPr may need to be amended to address these issues.
- At the time the original EIA was conducted no climate change assessment was required to be undertaken. It is recommended that a climate change specialist be engaged to determine if any updates are required to the EMPr in order to effectively deal with climate change adaptation and vulnerability.

8 CONCLUSION

EIMS was appointed to undertake the Environmental Audit to assess compliance with the conditions of the 1997 Seismic EMPr (Crowther Campbell & Associates and CSIR Environmentek, 1997). A total straight compliance score of 33% was obtained for the EMPr (3/9) and a weighted compliance score of 100% (9/9). This indicates that that all of the applicable conditions were either fully compliant or partially complaint.

It is the auditor's opinion that the 2014 EMPr's offer generic, sometimes outdated impact management actions and fail to address specific activity and site impacts adequately. Whilst these generic impact management outcomes and actions may be adequate for the purposes of the current exploration work programme, they are not adequate for any other physical exploration activities (including the potential contingent exploration activities). Further assessment is needed when specific location details and technical specifications for future exploration activities are available, likely necessitating amendments and supplements to the current EMPr.

PetroSA is reminded of the requirements of Regulations 34 of the EIA Regulations, 2014 with regards to findings of the adequacy of the EMPr and access to the audit report. Regulation 34 states:

4) *"Where the findings of the environmental audit report contemplated in sub-regulation (1) indicate-*

   a) *insufficient mitigation of environmental impacts associated with the undertaking of the activity; or*

   b) *insufficient levels of compliance with the environmental authorisation or EMPr and, where applicable the closure plan;*

   the holder must, when submitting the environmental audit report to the competent authority in terms of sub-regulation (1), submit recommendations to amend the EMPr or closure plan in order to rectify the shortcomings identified in the environmental audit report.

5) *When submitting recommendations in terms of sub-regulation (4), such recommendations must have been subjected to a public participation process, which process has been agreed to by the competent authority and was appropriate to bring the proposed amendment of the EMPr and, where applicable the closure plan, to the attention of potential and registered interested and affected parties, including organs of state which have jurisdiction in respect of any aspect of the relevant activity and the competent authority, for approval by the competent authority.*

6) *Within 7 days of the date of submission of an environmental audit report to the competent authority, the holder of an environmental authorisation must notify all potential and registered interested and affected parties of the submission of that report, and make such report immediately available-*

   a) *to anyone on request; and*

   b) *on a publicly accessible website, where the holder has such a website."*

9 ASSUMPTIONS, LIMITATIONS AND GAPS IN KNOWLEDGE

The following assumptions, limitations and gaps in knowledge apply to the audit:

- The information contained in this report was sourced from information and data supplied by third parties that is assumed to be complete, valid and true.
- This report is based on information available at the time of the assessment. The information, data, observations and evidence on what this report is based is beyond the control of EIMS and may change without notice. EIMS will not be liable for any loss or damage which may arise directly or indirectly because of such changes.
- Where reference is made to legislation or other statutory provisions in this report the original legislation or other statutory provisions will always take precedence, and the reader is directed to revert to the original legislation or statutes.
- The audit was limited to the 1997 EMPr for seismic activities (Crowther Campbell & Associates and CSIR Environmentek, 1997) applied to the seismic survey undertaken in 2011-2012. This audit does not consider any other exploration activities undertaken in past renewal periods.
- A comprehensive legal compliance audit is beyond the scope of this audit.

10 REFERENCES

Crowther Campbell & Associates and CSIR Environmentek. (1997, October 15). Environmental Management Programme Report for Prospect Well Drilling in Block 9 Situated Off the Southern Cape Coast.

Crowther Campbell & Associates and CSIR Environmentek. (1997, December 12). Environmental Management Programme Report for Seismic Exploration Surveys in Block 9 Situated off the Southern Cape Coast.

Environmental Resources Management. (2011, April). Environmental Management Programme for Exploration Seismic Activities: Block 9 and 11a.

Environmental Resources Management. (2014, June). Environmental Management Programme for Exploration Seismic Survey: Block 9 and 11a.

Environmental Resources Management. (2014, June). Environmental Management Programme: Exploration Drilling in Block 9 and 11A.