11.0 Environmental and Social Management Plan

This chapter presents the ESMP prepared for the proposed appraisal activities (as described in Section 5.0).

11.1 Introduction

11.1.1 Scope and Objectives

The objectives of this ESMP include the following:

- Meet Namibian EIA legislation and international laws and conventions.
- Operationalise oil and gas industry good practices and standards.
- Set out mitigation required to ensure the negative impacts associated with the proposed appraisal activities (as assessed in Chapters 8.0 and 9.0) are avoided and, where they cannot be avoided, are minimised.
- Provide an implementation mechanism, by project phase, for project controls and mitigation measures identified in the ESIA Report.
- Establish a monitoring programme and record-keeping protocol against which the operator and its contractor's/sub-contractor's performance can be measured and to allow for corrective actions or improvements to be implemented when needed.
- Provide protocols for dealing with unforeseen circumstances or ineffective mitigation measures.

11.1.2 ESMP Structure

Description of the structure and content of the ESMP is given in Table 11-1 below.

Table 11-1: Description of the Structure and Content of the ESMP

Section	Contents
Section 11.1	**Introduction** Objectives and structure of the ESMP.
Section 11.2	**Summary of the Key Environmental and Social Sensitivities** Key sensitivities in the study area and implications for the project.
Section 11.3	**Supporting Documentation** Main documentation supporting the implementation of the ESMP.
Section 11.4	**Roles and Responsibilities** Key roles and responsibilities for the implementation and management of the ESMP.
Section 11.5	**Training, Awareness and Competency** Training and awareness provisions for the operator's staff and Contractors involved in the project.
Section 11.6	**Compliance Verification and Corrective Actions** Inspections, monitoring and auditing requirements to ensure compliance with the ESMP and implementation of corrective actions.

Section	Contents
Section 11.7	**Management of Change** Procedure to be followed to respond to changes to the ESMP and/or drilling design.
Section 11.8	**Communication** Communication channels between the operator, the contractor(s) and external stakeholders.
Section 11.9	**Document Control and Reporting** Document control and reporting requirements (internal and external).
Section 11.10	**Environmental and Social Mitigation Management Commitment Register** Commitments that will be implemented to prevent, minimise or manage significant negative impacts and optimise and maximise any potential benefits of the project.

11.2 Summary of the Key Environmental and Social Characteristics and Sensitivities

Key characteristics and sensitivities in the Project's area of influence are summarised in Table 11-2 below.

Table 11-2: Key characteristics and sensitivities in the Project's Area of Influence

Aspect	Key characteristics and sensitivities
1. Physical aspects	
Climate	• The climate of the Namibian coastline is classified as hyper-arid with typically low, unpredictable winter rains and strong predominantly south-easterly winds. • Mild temperatures prevail year-round, averaging around 16°C along the coast and increasing inland. • Winds are one of the main physical drivers of the near shore Benguela region. During summer, wind is strongest with southerlies dominating most of the time. Winter remains dominated by southerly winds, but the proximity of winter cold-front systems introduces a significant north-westerly component. • Frequent fog occurs along the coast, mainly from February through May.
Bathymetry and Sediments	• Block 2814A is located on the outer shelf, shelf edge and upper slope in water depths ranging from 150 m to 750 m. • Tripp Seamount is a geological feature situated approximately 74 km south-west of Block 2814A . The seamount rises from the seabed at a depth of approximately 1 000 m to a depth of 150 m. This seamount is an important feature because it attracts an abundance of marine life and is a productive fishing ground. • Sediments in the vicinity of Block 2814A is likely dominated by 'sand' and 'muddy sand'. Hard substrate may be present.
Benguela Current and Upwelling	• The Namibian coastline is strongly influenced by the Benguela Current system. The coastal upwelling region in the Benguela current is an area of particularly high natural productivity, with extremely high seasonal production of phytoplankton and zooplankton. • The Lüderitz upwelling cell is the most intense upwelling cell in the system, with the seaward extent reaching nearly 300 km. • The Lüderitz Upwelling Cell - Orange River Cone (LUCORC) area forms a major environmental barrier between the northern and southern Benguela sub-systems. Although upwelled nutrients may be high within Block 2814A,

Aspect	Key characteristics and sensitivities
	plankton levels and spawning are likely low due to the proximity to the LUCORC area.
2. Ecological aspects	
Marine Fauna	• The benthic habitat at depths beyond 500 m have been assigned a threat status of 'Least Threatened', as they comprise large areas in the Namibian EEZ and experience limited impacts. However, the continental shelf is considered 'Endangered' due to habitat degradation from trawling. • Spawning levels near Block 2814A are expected to be low due to its proximity to the LUCORC area. • Small pelagic fish species usually occur in mixed shoals near within the 200 m depth contour, and thus are likely in the shallower regions of Block 2814A. Large migratory pelagic fish species, such as tunas, billfish and sharks, may be encountered in the area of interest. • Leatherback turtle occurrence in the area of interest is possible, but abundances are similarly expected to be low. • The shallower parts of Block 2814A are located within the foraging ranges of Cape fur seals and Cape gannets. • Thirty-five species of whales and dolphins are known or likely to occur in Namibian waters and thus could be encountered in Block 2814A. Cetacean species most likely to be encountered in the area of interest are long-finned pilot, Bryde's and humpback whales, as well as various dolphin species. • The closest fur seal colonies to Block 2814A are at van Reenen Bay and Baker's Bay approximately 90 km inshore and to the north-east of the block, in the Tsau//Khaeb (Sperrgebiet) National Park.
Conservation and Protected Areas	• The Lüderitz Bay and Ichaboe Island Rock-Lobster Sanctuaries are 150 km north-east of Block 2814A. • Inshore of Block 2814A, the coastline of Namibia is part of a continuum of protected areas that stretch along the entire Namibian coastline. • The Namibian Islands' Marine Protected Area (NIMPA) lies inshore of Block 2814A, with the closest point being over 65 km away. The Orange Shelf Edge MPA is 75 km south of Block 2814A at its closest point, in South African waters. • Block 2814A lies offshore of the three of the designated coastal Ramsar sites in Namibia (including Orange River Mouth, Sandwich Harbour, and Walvis Bay Wetland). • Block 2814A lies offshore from all coastal Important Bird Areas (IBA), but lies within the proposed Atlantic Southeast 21 marine IBA. • Block 2814A is almost entirely located within the Orange Seamount and Canyon Complex transboundary Ecologically or Biologically Significant Marine Area (EBSA). • Block 2814A partially overlaps with an ESA bordering the Orange Seamount and Canyon Complex EBSA.
3. Socio-economic aspects	
Commercial Fisheries	• Block 2814A overlaps directly with the large pelagic longline, demersal trawl, demersal longline and pole-line sectors. Namibia promotes mariculture, particularly in Lüderitz's nutrient-rich waters, with allocated plots for various seafood cultivation.
Marine traffic	• The block overlaps the main traffic route that passes around southern Africa. The coastal region south of Lüderitz is a restricted diamond mining area, which limits public access.

Aspect	Key characteristics and sensitivities
Other Human Uses	• Current diamond mining operations exist to depths of 150 m, and as such there is no overlap with Block 2814A. • Block 2814A does not overlap with any submarine cables.
Onshore logistics base	• Lüderitz and Walvis Bay are established, well serviced, medium sized, industrial harbour towns. Walvis Bay is the most important harbour in Namibia. The towns and their associated facilities, including the port services and accommodation, are sufficiently developed and have the capacity to cater for development projects.
Tourism	• Coastal tourism and recreational activities and services are found primarily in and around Lüderitz and further up the coast at Walvis Bay, Swakopmund and Henties Bay. It should be noted that the bulk of tourism and small-scale fishing takes place within 1 nm of the coast.
Intangible Cultural Heritage	• With regard to the proposed project and Block 2814A, no specific spiritual links have been found between indigenous communities and the sea. The known beliefs linked to water relates to rivers and not the Namibian offshore environment and no specific ritual practices linked to the coast are known. Similarly, no specific spiritual links have been found between Europeans resident along the coast of Namibia and the sea.

11.3 Supporting Documentation / Actions

This Section lists the plans / documents / actions that form part of the overall internal Health, Safety and Environment Management System (HSE-MS) and will be prepared in addition to the ESMP, but only prior to drilling being undertaken.

11.3.1 Well Drilling Design

BW Kudu will develop and finalise the well drilling design, according to applicable policies, procedures, standards and guidelines, prior to going out for tender, including: well location, well depth, well architecture, fluid programme, onboard treatment, well abandonment strategy/plan, planning and logistic organisation, etc.

The well drilling details will be compiled into a notification document, which will be submitted to MME at least 30 days prior to mobilisation.

11.3.2 Project HSE Plan

BW Kudu will prepare a Project Health, Safety and Environment (HSE) Plan, which deals with HSE aspects specific to the project (e.g., operation specificities, project ESIA main outcomes, specific Emergency Response Plan (ERP), waste management with local facilities, planning, organogram, local content, social performance, MMO and Pam scope, etc). It will also detail the specificities and equipment related to the operations and associated environmental, socio-economic and health aspects, as well as the organisation supporting the project (objectives, resources, documentation, risk management and control, etc.). Part of this document are the aspects related to the management of air emissions, discharges to the sea, waste, spill and related logbooks.

All staff, contractors and sub-contractors are required to comply with this document when working on the project.

11.3.3 HSE-MS Bridging Document

BW Kudu will prepare a Bridging Document with its contractors, who will in turn have contractual agreements with their sub-contractors. These HSE-MS Bridging Documents will address specific organisational, procedural and emergency response arrangements between BW Kudu and its contractors.

11.3.4 Contractor Kick-off Meeting and Crew Awareness

Part of the objectives of the Kick-Off Meeting is to introduce the teams, understand the project background, the key environmental and social sensitivities, what needs to be undertaken to mitigate risks and impacts, and also agree on how the work should be undertaken to ensure efficiency and effectiveness.

Prior to start of operations BW Kudu and/or contractor will present an HSE awareness introduction training to ensure the project personnel (including project vessels / drilling unit, etc. where applicable) are appropriately informed of the purpose and requirements of the overall HSE-MS, including emergency procedures, spill management, etc., as well as the specificities of the project.

11.3.5 Plans and Procedures

This ESMP will form part of an overall HSE-MS which will be prepared before the start of the appraisal campaign. It will include at least the documents listed below and will include all of the project controls and mitigation measures detailed in the Commitments Register (see Table 11-7).

11.3.5.1 Shipboard Oil Pollution Emergency Plan (SOPEP)

Before mobilisation to site, the drilling contractor will submit for approval to BW Kudu and MME a SOPEP and procedures to be implemented in the event of an accidental spill of oil (or other polluting substances) at sea.

This plan will notably require:

- The implementation of measures to immediately stop the spill (sealing the leak, repairing leaking tanks, etc.).
- Recovery of spilled fluids.
- The notification of BW Kudu and the Namibian authorities on the spill.
- The implementation of external response measures in the event of a large spill.

Any oil or chemical spills in water must be reported immediately to BW Kudu and regular updates must be sent during pollution clean-up operations.

The SOPEP will include procedures in line with international good practice for the accidental release of chemicals and fuels during appraisal activities. The plan will include the following:

- Definition of roles and responsibilities.
- Identification of potential sources of accidental pollution (storage, use, etc.).
- Definition of design standards adopted to ensure the integrity and reliability of the equipment.

- Description of the security systems in place to prevent pollution.
- Inspection reports for the proper maintenance of safety equipment and systems.
- Procedures for handling chemicals and fuels to reduce the risk of accidental pollution (also refer to Section 11.3.5.7 for the Hazardous Substances Management Plan).
- An action plan with instructions for the oil pollution prevention team. This is a list of duties the crew members have to fulfil in case of a spill.

11.3.5.2 Emergency Response Plan (ERP)

BW Kudu holds the overarching ERP and any gaps with the contractor ERP (site specific) are addressed in a bridging document. The ERP will establish the procedures for addressing potential emergency situations (e.g., fuel / oil spill, injury, damage to or loss of company / private property or equipment, etc.) that could occur during the project at the various project sites. The ERP addresses these situations and provides information and direction for addressing the situation as quickly as possible.

The ERP will classify emergencies into severity levels and include emergency procedures that address the potential degrees of impact / risk relating to various scenarios (including well control incident, oil / chemical spill, explosion / fire, helicopter incident, vessel incident, man overboard / missing person, medical emergency, loss of office service and road transport incident):

- A low-level emergency (accident or incident) is one that can be handled at the site and involves no serious human injuries, no disruptions of operations and no publicity. There are no national or international implications.
- A moderate-level emergency (emergency) may involve a single serious injury, temporary disruption of operations, some publicity or the likelihood thereof, with possible implications at the national level.
- A high-level emergency (crisis) would involve one or more fatalities or multiple serious injuries, sustained disruption of operations, significant publicity or the certainty thereof, plus implications at the national and possibly international level. There might be a potential threat to the viability of a company.

11.3.5.3 Blow-Out Contingency Plan (BOCP)

The BOCP focuses on well control operations and will set out the detailed response plan and intervention strategy to be implemented in the event of a blow-out. It ensures response times are minimised and that the most efficient and effective contingency measures are implemented.

Since potential blow-outs and subsequent intervention techniques may be inherently different, it is impractical to cover all possibilities in a general contingency document. However, for rapid response, a structured organisational and technical guideline, with examples and trigger mechanisms, is essential. These will be detailed in the BOCP, which is an internal document.

11.3.5.4 Oil Spill Contingency Plan (OSCP)

As standard practice, an OSCP will be prepared for each drilling operation for approval by MME. The OSCP is the operational internal document prepared and aligned with local and national regulations, applicable international conventions and company rules. The primary objective of the OSCP is to identify all possible spill scenarios, level of response requirements and set in motion the necessary actions to stop any discharge of oil and to minimise its effects. It also:

- Provides an emergency notification system, including a standardised format for oil spill notification.
- Describes the escalation monitoring process from Tier 1 to Tier 2 and Tier 3 incidents (refer to Box 11-1).
- Outlines the system for command and control of the oil spill response operations and organisation.
- Provides checklists of actions for key personnel during an oil spill.
- Provides strategy and tactics to respond to the different types and levels of oil spills using local and international resources.
- Includes oiled wildlife emergency response measures.

Box 11-1: Tiered Preparedness and Response

Oil spill response planning is based on the principle of a tiered response. Tiered Preparedness and Response gives a structured approach to both establishing oil spill preparedness and undertaking a response. It allows potential oil spill incidents to be categorised in terms of their potential severity and the capabilities that need to be in place to respond (IPIECA, 2007). Conventionally the concept has been considered as a function of size and location of a potential oil spill, with three tiers typically defined (see table below). Tier 1 being the lowest category of response and Tier 3 being the highest category requiring response from Government and international assistance.

Tier 1	Minor spills that are quickly controlled, contained and cleaned up using local (onsite or immediately available) company/contractor owned equipment and personnel resources. For offshore facilities, local resources could include those at the facility, or nearby support vessels or at a designated shore support base or staging area.
Tier 2	Tier 2 events are more diverse in their scale and by their nature involve potentially a broad range of impacts and stakeholders. Moderate spills, controlled or uncontrolled, requiring activation of significant regional oil spill response resources and all or most of the Spill Management Team. Tier 2 response resources are varied in their provision and application. Management responsibilities are usually shared in a collaborative approach and a critical feature is the integration of all resources and stakeholders in the response efforts.
Tier 3	Major spills, controlled or uncontrolled, requiring activation of large quantities and multiple types of response resources including those from out of the region, and possibly international sources. Tier 3 events are rare, but have the potential to cause widespread damage and affect many people. Tier 3 response resources are concentrated in a relatively few locations, held in readiness to be brought to the country when needed. Such significant events usually call for the mobilisation of very substantial resources and a critical feature is their rapid movement across international borders and the integration of all resources into a well-organized and coordinated response. The entire Spill Management Team will be required and will likely be supplemented by outside organisations.

Thus, the OSCP provides for a comprehensive response to all oil and chemical pollution emergencies in the marine environment regardless of how costs might be attributed or ultimately recovered. In updating the OSCP for each well, BW Kudu will review the capacity of local resources and, where necessary, it will be adjusted/made specific to local context and any short-comings in local resources will be addressed where required.

The OSCP will be periodically tested to ensure an effective and co-ordinated response to oil spill situations.

Spill Contingency Planning Process Overview

To achieve the objective of developing an effective response through an appropriate preparedness, oil spill contingency planning is based on good practice (e.g. Ipieca Oil Spill Preparedness and Response Good Practice Guidance) and a structured process (see Figure 11-1), resulting in an OSCP.

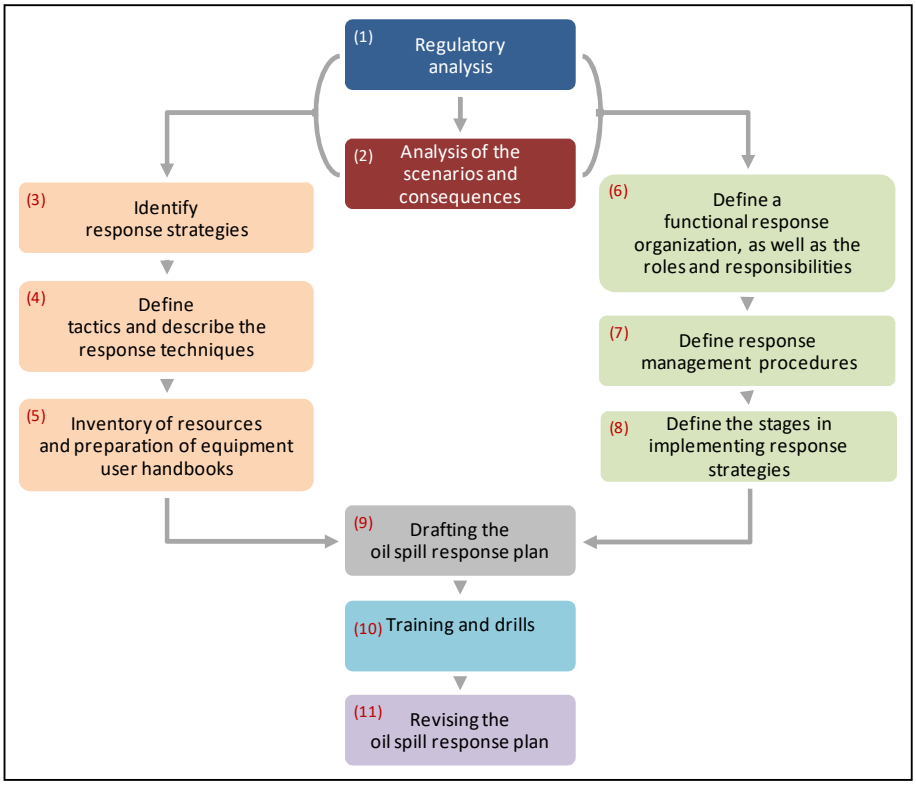

Figure 11-1: Spill Contingency Planning Process Overview

The main steps are listed below:

- **Step 1:** Once the operations are defined, the international and national regulatory framework and environmental/societal context are analysed to carefully define the requirements and expectations to be met, during the preparation and in case of a spill.
- **Step 2:** All oil spill scenarios are identified and analysed, together with their consequences and classified following the international tiered approach (Box 11-1).
- **Steps 3-5:** For each representative scenario, a response strategy is developed, appropriate tiered response resources are determined for an effective, proportionate and

sustainable response and a functional incident management organisation is set up to implement the response, to operate effectively at all tier levels, with clear roles and responsibilities for each party involved.

- **Step 6:** An OSCP is developed.
- **Step 7:** Personnel are trained, and the OSCP is tested through drills/exercises to verify the adequacy and effectiveness of the preparation.
- **Step 8:** As operations evolve and/or exercises show a need for, the OSCP is updated.

11.3.5.5 Stakeholder Engagement Plan

Objectives

The Stakeholder Engagement Plan, prepared by BW Kudu, will provide the framework to ensure effective engagement with external stakeholders and detail the planning for information disclosure, stakeholder engagements and dealing with expectations / grievances. It will ensure that the right stakeholders are notified timeously about the appraisal activities with information that is accurate and transparent. The plan will provide for stakeholder concerns and grievances to be responded to in an efficient and coordinated manner.

This plan will set out the specific measures to be taken to ensure the project is communicated to stakeholders and to minimise the potential negative impacts of the Project on human and socio-economic receptors, specifically:

- A public information and disclosure programme covering all BW Kudu activities and phases to ensure that the public are informed of the appraisal activities (specifically onshore and nearshore activities).
- Management of community expectations related to local procurement, local content, and local employment opportunities.
- Establishment of a functional grievance mechanism that allows stakeholders to lodge specific grievances related to operation.

The aim of such engagement is to ensure open communication, direct communication and consistent communication with stakeholders that may be affected by operations.

Stakeholder Database

A stakeholder database will be developed and maintained. At minimum, the database will contain the contact details of:

- Any person that submitted a request to be included in the database at any time.
- Any person that has submitted written comments or attended any public meetings.
- All organs of state which have jurisdiction in respect of the Project.

The database will be built on and customised to accurately cover the stakeholders of each activity. Any and all forms of correspondence between the Project and registered stakeholders will be recorded under a Stakeholder Database.

Notifications

A public information and disclosure programme will be implemented to ensure stakeholders are regularly informed of appraisal activities. This will support ongoing engagement and assist in drawing out any ongoing or new issues and concerns. Focus should be placed on the onshore logistics base location.

Notifications will provide the details and timing of the drilling, including amongst other:

- Notification to stakeholders (including local authorities, fishing associations, small-scale fisheries, indigenous groupings and leadership, civil society, etc.) prior to and after each drilling campaign.
- Notification during drilling via navigational warnings via Navigational Telex (Navtext) and twice daily on Channel 16 VHF; Call sign: ZSC.
- Meetings with stakeholders, as required.

Information Disclosure

BW Kudu will disclose project information[57] containing all the relevant facts in a truthful and transparent manner. Through the disclosure, relevant information or documentation will be broadly available to stakeholders, including people with limited access to technology, education, or resources. At minimum this will include:

- Placing hardcopies of relevant documents at public venues at beneficiary communities.
- Placing hardcopies of relevant documents at municipal offices.
- Main documents will be prepared in English (as the official language).
- Translation of key documents to local indigenous languages where required.
- Meetings with stakeholders, as required.
- Monitoring of and engaging with other vessels.

The drilling unit will be equipped with appropriate radar and communications to ensure that other vessels adhere to the safe operational limits. Other vessels (e.g., fishing, transport, etc.) will be alerted about the drilling operation.

Any fishing vessels at a radar range of 24 nm from the drilling unit will be notified via radio regarding the safety requirements around the vessel / drilling unit.

Concerns and Grievances Management

BW Kudu is committed to ensure stakeholders have access to an effective Grievance Mechanism and will, prior to commencement of operations, implement a grievance procedure detailing how to manage stakeholder grievances related to negative or perceived negative impacts caused by Project related activities. This procedure will protect the

[57] Where information is deemed to be sensitive or private in nature, BW Kudu may elect to not release this information. Nevertheless, sufficient information will be provided for stakeholders to become aware and understand the components of the exploration so as to make informed comments and representations.

complainant's rights to access to information, access to the grievance procedure, and the right to have one's confidentiality and/or anonymity protected, if requested.

This grievance procedure will be promoted among external stakeholders through different possible access points and communication means (e.g. BW Kudu grievance administrator, toll free number, web page, email, complaint boxes, posters and leaflets, etc).

The key steps of the process consists of:

- Receiving and registering the grievance;
- Acknowledgement of the grievance received and informing stakeholders about the follow-up actions;
- Assessing and investigating the grievance;
- Proposing a solution;
- Implementing the solution when the solution in line with good practice and industry standards;
- Incorporate an appeals provision for overdue or complex complaints that cannot be resolved per regular process; and
- Closing-out the grievance when no further action is required.

After a solution is proposed to the complainant, different levels of resolution are possible, depending on the acceptance of the solution by the complainant, until a final solution is satisfactory and accepted. BW Kudu will identify roles and responsibilities to support the resolution process internally and may include an appeals committee consisting of company representatives and external stakeholders, or the use of a neutral third-party mediator in some cases.

BW Kudu will ensure the complainant is informed and involved all along the resolution process.

All grievances will be documented to ensure they are handled properly and within the timeframe described in the procedure. It must also reflect that UN Guiding Principles on Business and Human Rights have adhered to in the process.

11.3.5.6 Waste and Emissions Management Plan

Objectives

The Waste Management Plan establishes procedures for the storage, collection, management, and disposal of waste, including air emissions, liquid and solid waste (hazardous and non-hazardous wastes). Certain waste will be treated and disposed of offshore, while other waste will be transported ashore. The plan will, therefore, describe the procedures to be followed to ensure the treatment, transfer and/or disposal of waste both offshore and onshore.

Compliance with International Conventions

The drilling unit and all project vessels will have equipment, systems and protocols in place for prevention of pollution by oil, sewage and garbage in accordance with the MARPOL convention. MARPOL 73/78 was developed by the IMO with an objective to minimise pollution of the oceans and seas, including dumping, oil and air pollution.

Specific MARPOL requirements are included in the detailed Environmental and Social Mitigation Management Commitment Register (see Section 11.10).

Waste Management General Principles

Waste management during the drilling campaign will be planned in accordance with the waste prevention and management principles described in Table 11-3.

Table 11-3: Waste Prevention and Management Principles

Principle	Rules to be implemented
Minimisation of waste generated	• In the Project supply policy, select the equipment and supplies that generate the least waste (by minimising packaging). • Select the equipment and supplies that generate the least hazardous waste.
Storage security	• The waste will be handled and stored according to its nature and its risk class, in compliance with hygiene and safety rules. • A waste storage area will be defined on the drilling unit and project vessels, and at the logistics base. Compatible waste will be stored together. • Any hazardous waste will be stored separately, on retention. The area will be adequately ventilated if the waste is flammable. • Access to waste storage areas will be controlled. • The waste storage areas will be kept in good order and clean.
Waste management hierarchy	Waste will be managed by applying the following order of priority: • Avoid generating waste. • Minimise the generation of waste. • Reuse waste (especially for reusable non-hazardous waste). • Recycle waste. • Onboard treatment and incineration (when relevant and authorised). • Dispose of waste in compliance with applicable regulations and rules of good practice.
Recording and monitoring of waste generated	• A register of the waste generated will be kept up to date in order to identify the nature and quantity of the waste generated, ensure its traceability, and identify if possible, the types of waste that can be avoided. • This register will include monitoring of waste evacuated ashore and their disposal, specifying the providers mandated for their management, the disposal method agreed. The transfer and waste disposal forms and certificates will be kept for traceability.
Staff training	The workforce will be trained on: • Waste management. • Protection of the environment and the impacts associated with poor waste management, and how to avoid these impacts. • Promoting the reuse and recycling of waste. • Treatment of waste in accordance with the management plan by type and risk class. • Adopting the necessary safety measures when handling hazardous waste. • Keeping and maintaining traceability records.

Management of Discharge and Emissions

The Waste, Emissions and Discharge Management Plan will also provide for the management of discharges linked to activities. The plan will include procedures that comply with national regulations and international good practice guides. The plan will include the following:

- Identification and characterisation of discharges and emissions.
- Definition of qualitative and quantitative treatment objectives for discharges and emissions.
- Definition of responsibilities for the measurement, recording and reporting of discharge / emission characteristics.
- Definition of resources, tools and methods to be used to measure, record and report discharges and emissions.
- Definition of the means (equipment and procedures) used to treat these discharges and emissions in accordance with the defined limits.

Monitoring Requirements

Monitoring requirements are presented in Section 11.6.1.

11.3.5.7 Hazardous Substances Management Plan

A Hazardous Substances Management Plan will be developed by the contractor to detail the measures to minimise potential pollution. The plan will be applied to all phases of the Project and will include all hazardous products used during the Project, including drilling fluids and cement used during well drilling. The Hazardous Substances Management Plan is based on the principles of life cycle assessment. A standard plan will include:

- Inventory of chemical products (identification, classification, quantification and method of delivery);
- Product properties (dangerousness, toxicity, health and safety recommendations) based on product safety sheets (Safety data sheets, eco-toxicological data);
- Evaluation of the use of alternative products;
- Storage and handling procedures including personal protective equipment for personnel;
- Emergency procedures;
- Evaluation of recycling possibilities; and
- Disposal procedures for unused products (return to the supplier for example).

11.3.5.8 Preventive Maintenance Plan

A Preventive Maintenance Plan will be available on board the drilling unit and all project vessels in order to minimise the risk of mechanical failure likely to lead to reduced efficiency (e.g., sewage treatment plan, incinerator, macerator/grinder, oil/water separator, etc.) and other unplanned events (e.g., oil leaks or diesel spills). Control and maintenance procedures will be implemented at regular intervals by the various service providers.

This plan will provide for the implementation of leak detection and maintenance programmes for:

- Valves, flanges, fittings, seals, hydraulic systems, hoses, etc;
- All diesel motors and generators receive adequate maintenance to minimise soot and unburnt diesel released to the atmosphere; and
- Waste treatment facilities, e.g., sewage treatment plan, incinerator, macerator/grinder, etc.

This plan will also detail the procedure to follow if certain facilities (e.g., oil/water separator) are not available due to maintenance or overload.

This plan will also ensure that all equipment (e.g., wellheads, BOPs, etc.) that has been used in other regions is thoroughly cleaned prior to deployment.

11.3.5.9 Ballast Water Management Plan

Ballast water discharge will follow the requirements of the IMO 2004 International Convention for the Control and Management of Ships' Ballast Water. All ships engaged in international traffic are required to manage their ballast water to a certain standard, according to a ship-specific Ballast Water Management Plan. This plan deals with the ballast water management system on each of the project vessels, including how it operates and procedures for monitoring and reporting, including ballast logbook.

11.3.5.10 Corrective Action Plan

Events (incidents / accident) will undergo a root cause analysis, while non-compliances identified during audit findings (see Section 11.6.2) will be investigated to identify underlying causes to non-compliance situations and then rectified. Management actions will be taken to correct the underlying causes behind the audit findings and improvements will be made before another audit is conducted. This audit process allows for problems to be corrected, compliance to be improved and prevention of the same findings during subsequent audits.

Where corrective actions are deemed necessary, specific measures will be developed, with designated responsibility and timing, and implemented. In this way, continuous improvement in performance will be achieved. Corrective actions will be captured in a Corrective Action Plan, which will document the actions to correct an issue, problem, non-compliance or underperformance. It is essentially a plan to improve performance and/or reduce risk.

11.4 Roles and Responsibilities

The project will have dedicated, competent personnel that will manage and oversee the HSE aspects over the project lifecycle. BW Kudu, as operator of the block, will retain the primary responsibility for meeting environmental and social commitments throughout the project life span.

The key HSE management roles and responsibilities supported by a project specific organogram will be defined by the drilling contractor and validated by the operator prior to the commencement of any appraisal activities.

11.4.1 BW Kudu

BW Kudu will be responsible for the overall implementation of the ESMP and meeting the environmental and social commitments. BW Kudu maintains responsibility for the appraisal activities and the management of any contractors, and will have the following key responsibilities:

- Ensure that all contractors adhere to the ESMP, as stipulated in appointment contracts.
- Ensure that sufficient resources are deployed in order to efficiently implement this ESMP.
- Ensure the contractors implement the ESMP and any additional approval conditions contained in the ECC issued by MEFT.
- Ensure that environmental audits are undertaken to measure compliance with the agreed environmental performance objectives.
- Ensure that environmental monitoring and reporting are undertaken by all contractors.
- Ensure that personnel with responsibilities (e.g., MMOs, PAM operators, etc.) are adequately trained and experienced and are supported with essential resources.
- Conduct monitoring, auditing and implement corrective actions as per the requirements of the ESMP.
- Engage with MME, MEFT and relevant stakeholders when necessary at key stages of the project.
- Coordinating with contractors to ensure that key stakeholders are timely informed about the project activities, and that concerns and questions are responded to and grievances are managed properly, as per the Stakeholder Engagement Plan.
- Appoint a BW Kudu representative onboard the drilling unit to ensure compliance with the various commitments and supervise contractor coordination, especially with MMO and PAM personnel.
- Establish and maintain a functional grievance mechanism that allows stakeholders to submit specific grievances related to operations, by ensuring they are informed about the process and that resources are mobilized to manage the resolution of all grievances.

11.4.2 Drilling Contractor

The drilling contractor appointed by BW Kudu shall be responsible for the drilling unit. All regulatory requirements and obligations endorsed by BW Kudu shall apply to the contractors and any sub-contractors. BW Kudu shall inform the contractors of these obligations in the appointment contract.

The contractor shall:

- Be responsible for and convey the requirements of the ESMP to all staff and any sub-contractors (including MMOs, PAM operators and other subcontractors, e.g., support

vessels, helicopter, emergency support, catering, etc.), and ensure that they comply with their obligations.

- Ensure that all staff are given an environmental and social induction and that further training is undertaken at crew changes.
- Be responsible for ensuring the health and safety of all personnel on the drilling unit and project vessels.

11.4.3 Marine Mammal Observers

MMOs must have the following qualifications / experience:

- Experience in seabird, turtle, large pelagic fish and marine mammal identification and observation techniques.
- Certification from the Joint Nature Conservation Committer (JNCC) or an equivalent body, e.g., Bureau of Ocean Energy Management (BOEM).
- The lead MMO should have an appropriate graduate degree and relevant seafaring experience.
- Safety certificate (BOSIET or equivalent).
- Medical certificate (OGUK, ENG1 or equivalent).

The MMO shall have the following responsibilities during VSP operations:

- Provide effective regular briefings to crew members, and establish clear lines of communication and procedures for onboard operations.
- Record airgun activities, including sound levels, “soft-start” procedures and pre-firing regimes.
- Observe and record responses of marine fauna to VSP operations from optimum vantage points, including penguin, large pelagic fish (e.g., shoaling tuna, sunfish, sharks), turtle and cetacean incidence and behaviour and any mortality or injuries of marine fauna as a result of VSP operations. Data captured should include species identification, position (latitude/longitude), distance/bearing from the drilling unit, swimming speed and direction (if applicable) and any obvious changes in behaviour (e.g., startle responses or changes in surfacing/diving frequencies, breathing patterns) as a result of the VSP activities. Both the identification and the behaviour of the animals must be recorded accurately along with current VSP sound levels. Any attraction of predatory seabirds, large pelagic fish or cetaceans (by mass disorientation or stunning of fish as a result of VSP activities) and incidents of feeding behaviour among the hydrophone streamers should also be recorded.
- Record meteorological conditions at the beginning and end of the observation period, and whenever the weather conditions change significantly.
- Request the delay of start-up or temporary termination of VSP operations, as appropriate. It is important that MMO decisions on the termination of firing are made confidently and expediently, and following dialogue between the observers on duty at the time. A log of all termination decisions must be kept (for inclusion in both daily and “close-out” reports.

- Use a recording spreadsheet (e.g., JNCC, 2017) in order to record all the above observations and decisions.
- Prepare a close-out report summarising the findings of the MMO observations with the records database appended.

11.4.4 PAM Operators

PAM operators must have the following qualifications/experience:

- Experience in marine mammal detection and identification techniques.
- Experience in appropriate deployment of PAM equipment.
- Certification from JNCC or an equivalent body (e.g., BOEM)
- The lead PAM operator should have an appropriate training certificate and relevant seafaring experience.
- Safety certificate (BOSIET or equivalent).
- Medical certificate (OGUK, ENG1 or equivalent).

The PAM operator will have the following responsibilities during VSP operations undertaken during periods of darkness or low visibility:

- Provide effective regular briefings to crew members, and establish clear lines of communication and procedures for onboard operations.
- Ensure that the PAM hydrophone cable is optimally placed, deployed, tested and repaired / replaced (when necessary) for acoustic detections of marine mammals.
- Recording all airgun activities, including timeline log, sound levels, “soft-start” procedures and pre-firing regimes.
- Confirm that there is no marine mammal activity within 500 m of the airgun array prior to commencing with “soft-start” procedures.
- Record species identification, position (latitude/longitude), distance and bearing from the vessel and acoustic source, where possible.
- Record general environmental conditions.
- Request the delay of start-up and temporary shut-down of VSP operations, as appropriate.

11.5 Training, Awareness and Competency

BW Kudu and the contractor will implement environmental awareness and training and ensure the competency of staff with responsibilities in terms of the ESMP.

BW Kudu will highlight the contractor's responsibility in terms of identifying, planning, monitoring, and recording the training needs of personnel whose work may have a significant adverse impact upon safety, the environment and in the community. Employees at all levels will be made aware of the potential impacts of their activities, and the roles and responsibilities in achieving conformance with the ESMP and internal policy and procedures.

The personnel with responsibilities in specific HSE practices will be adequately trained to ensure effective implementation of the work instructions and procedures for which they have responsibilities. This training will include awareness and competency with respect to the following:

- General awareness relating to appraisal activities, including environmental and social impacts that could potentially arise from project activities.
- Legal requirements in relation to safety and environmental performance.
- Necessity of conforming to the requirements of the ECC and ESMP, including reporting requirements (i.e. such as incident reporting).
- Activity-specific training (i.e. waste management practices, oil spill containment and response, grievance management).
- Roles and responsibilities to achieve compliance, including change management and emergency response.

Training will take cognisance of the level of education, designation and language preferences of the personnel.

The appointed contractor (and any sub-contractors) will also be required to institute training programmes for its personnel. The contractor will be responsible for site HSE awareness training for personnel working on the project and for identification of any additional training requirements to maintain required competency levels.

The contractor training programme will be subject to approval by the operator, and it will be audited to ensure that:

- Training programmes are adequate and all personnel requiring training have been trained; and
- Competency is being verified.

11.6 Compliance Verification and Corrective Actions

Monitoring and auditing will be undertaken to confirm adequate implementation of the ESMP, as well as the effectiveness of mitigation measures in avoiding or minimising impacts. BW Kudu's and contractor's HSE staff will implement a formal tracking procedure for investigating cause and identifying corrective actions in response to accidents, HSE and/or social non-compliances. Corrective actions include those intended to improve performance, non-compliances and non-conformances.

11.6.1 Monitoring

Monitoring will be conducted to ensure compliance with regulatory requirements and the performance objectives specified in the ESMP, as well as to evaluate the effectiveness of operational controls and mitigation measures. Monitoring will include, but not limited to, those criteria listed in Table 11-4, which must be reviewed and updated to incorporate any additional aspects that may need to be monitored.

Table 11-4: Monitoring Requirements

No.	Risk	Criteria to be monitored	Inspections	Accountability (indicative)
M1	**Waste and Emissions Management Plan**			
M1-1	Galley waste and air emissions	• Type and volume of waste discharged/incinerated • Estimate volume of air emissions from incineration	Recorded daily in the operational log inspection	Contractors (Vessel Captain / Offshore Installation Manager)
M1-2	General waste	• Type and volume of waste generated daily • Location of waste discharged • Type and volume transferred for onshore disposal and possibly incinerated • Compliance with Waste Management Plan	Prior to waste transfers to supply vessel / port	BW Kudu Logistics Manager and Contractor (Vessel Captain / Offshore Installation Manager
M1-3	Hazardous waste	• Type and volume of waste generated • Volume transferred for onshore disposal • Compliance with Waste Management Plan	Prior to waste transfers to supply vessel / port	BW Kudu Logistics Manager and Contractor (Vessel Captain / Offshore Installation Manager
M1-4	Fuel usage and air emissions	• Type and volume on board • Type and volume consumed • Air emissions from fuel combustion, including CO_2, N_2O and CH_4 levels	Daily operational log inspection Fuel transfer log sheet	BW Kudu Logistics Manager, Contractors (Vessel Captain / Offshore Installation Manager / Pilot)
M1-5	Sewage	• Discharge volumes • Residual chlorine concentration	Recorded daily in the operational log inspection	BW Kudu Logistics Manager and Contractor (Vessel Captain / Offshore Installation Manager
M1-6	Drilling fluids (WBM)	• Volume of WBM on board drilling unit • Toxicity, barite contamination and oil content of WBM (prior to discharge) • Volume of WBM used • Volume of WBM discharged • Volume of residual muds sent to shore	Recorded daily in the operational log inspection	BW Kudu Drilling Manager, Contractors (Service Contractor)

No.	Risk	Criteria to be monitored	Inspections	Accountability (indicative)
M1-7	NADF fluids and associated drill cuttings	• Volume of NADF on board drilling unit • Volume of NADF used • Volume of NADF discharged or shipped to shore • Oil content in NADF drill cuttings discharged (average <3% oil on cuttings) • Gamma ray results to assess radioactivity if the risk of radioactivity exists	Recorded daily in the operational log inspection	BW Kudu Drilling Manager, Contractors (Service Contractor)
		• BOP and riser equipment for hole wash out (from cracks in riser).	Upon installation and twice weekly	
M1-8	Cement	• Volume used (total volume, including volume discharged onto seabed) • Pressure testing on abandonment cement plugs	During cementing operations using ROV	BW Kudu Drilling Manager, Contractors (Service Contractor)
M1-9	Flaring	• Record daily flare and cumulative flare volumes • Continuous visual monitoring of the flare for security, malfunctioning and efficiency • Record Air emissions from flaring, including CO_2, N_2O and CH_4 levels	During flaring	BW Kudu Drilling Manager, Contractors (Service Contractor)
M1-10	Produced water	• Discharge volume or volume sent for onshore treatment • Oil content in produced water	During produced water discharge	BW Kudu Drilling Manager, Contractors (Service Contractor)
M2	**Preventive Maintenance Plan**			
M2-1	Deck drainage/ machinery space/ bilge water	• Correct operation of oil separating / filtering equipment and oil content meter (compliance with MARPOL 73/78 standards) • Oil in water concentration in normal discharges (not produced water) <15 ppm prior to discharge overboard	Prior to drilling and once during campaign	Contractors (Vessel Captain / Offshore Installation Manager)
M2-2	Sewage discharge	• Correct operation of sewage treatment system (compliance with MARPOL 73/78 standards) • BOD of <25 mg/l (if the treatment plant was installed after 01/01/2010,) or <50 mg/l (if installed before 01/01/2010)	At start and once during campaign	Contractors (Vessel Captain / Offshore Installation Manager)

No.	Risk	Criteria to be monitored	Inspections	Accountability (indicative)
		• Sewage Certificate		
M2-3	Galley waste and air emissions	• Correct operation of macerator	At start and once during campaign	Contractors (Vessel Captain / Offshore Installation Manager)
M2-4	Equipment fouling	• Ensure all equipment (e.g., wellhead, BOP, etc.) that has been used in other regions is thoroughly cleaned prior to deployment.	Prior to deployment	Contractors (Vessel Captain / Offshore Installation Manager)
M2-5	Lighting	• Ensure lighting on the drilling unit and project vessels is reduced to a minimum compatible with safe operations whenever and wherever possible.	At start and once during campaign	Contractors (Vessel Captain / Offshore Installation Manager)
M2-6	Cranes	• Ensure loads are lifted using the correct lifting procedure and within the maximum lifting capacity of crane system.	Prior to lifting operations	Contractors (Vessel Captain / Offshore Installation Manager)
M2-7	Emissions	• Ensure diesel motors and generators are in good working order to minimise soot and unburnt diesel released to the atmosphere.	Ad hoc during operation	Contractors (Vessel Captain / Offshore Installation Manager)
M3	**Biodiversity Management**			
M3-1	Sensitive seabed structures	• Colony forming corals or structural features mapping within 200 m of a proposed well site. • Type and quantity of benthic biota	Pre-spudding ROV inspection prior to drilling	BW Kudu HSE Manager and Environmental expert, Contractor (ROV Operator)
M3-2	Fauna interaction	• Presence of marine faunal activity (cetaceans, penguins, shoaling large pelagic fish or turtles) within 500 m radius of the vessel prior to	During VSP operations	Marine Mammal Observer (MMO)

No.	Risk	Criteria to be monitored	Inspections	Accountability (indicative)
		commencing with the “soft-start” procedures (visually during the day) and during VSP operations • Record airgun activities, including sound levels, “soft-start” procedures and pre-firing regimes • Species, position (latitude/longitude) and distance from the vessel, where possible • Responses of marine fauna to VSP operations • A log of all VSP activity and shut-down decisions		
M3-3		• Presence of cetacean activity detected by PAM within 500 m radius prior to commencing with the “soft-start” procedures and during operations (subject to risk assessment) • Species, position (latitude/longitude) and distance from the vessel, where possible • A log of all VSP (seismic) activity and shut-down decisions	During VSP operation (at night and periods of poor visibility)	Passive Acoustic Monitoring (PAM) Operator
M4	**Stakeholder Engagement Plan**			
M4-1	Grievances	• Registering of all grievances, solution and outcome	Continuous throughout operations	BW Kudu General Manager
M5	**Emergency Response Plan, SOPEP and OSCP**			

M5-1	Faunal Strikes	• During normal operations ensure vessel transit speed between the drill area and port remain within operational speed limits:
		  ○ Supply vessel: 10-13 knots
		  ○ Fast supply vessel: 17-20 knots
		  ○ Crew change vessel: 20-25 knots
		• Speed should be reduced to operational speed range minimums within 25 km of the coast.
			Continuous during transit	Vessel Captains

No.	Risk	Criteria to be monitored	Inspections	Accountability (indicative)
M5-2	Lost equipment	• Scan seafloor for any dropped equipment around the well site • Retrieve these objects, where practicable, after assessing the safety and metocean conditions	Prior to drilling unit leaving site using ROV	BW Kudu Drilling Manager, Contractor (ROV Operator)
		• Establish a hazards database listing: > the type of gear lost / left on the seabed > date of abandonment/loss > location > where applicable, the dates of retrieval	Ongoing through daily operational log and incident reporting system	BW Kudu Drilling and Logistics Manager, Contractors (Vessel Captain / Offshore Installation Manager)
M5-3	Oil / fuel spill	• Bunkering operations log • Weather conditions and sea state during bunkering operations	During bunkering	Contractors (Vessel Captain / Offshore Installation Manager)
M5-4	Oil / fuel spill	• Record of all spills (Incident Register), including spill reports and use of dispersants; emergency exercise reports; contacts update, audit reports	Ongoing through daily operational log and incident reporting system	BW Kudu Drilling and Logistics Manager, Contractors (Vessel Captain / Offshore Installation Manager)
M5-5	Blow-out	• BOP certifications / tests • Emergency response equipment availability	At start of campaign	BW Kudu Drilling Manager
M6	**Ballast Water Management Plan**			
M6-1	Ballast water	• Volume discharged and location (start and finish coordinates) • Uptake volumes and location (start and finish coordinates) • Start and finish times for pumping water during an exchange • Actual pumping times • Residual volume remaining in the tank at the end the empty cycle prior to refill (empty refill method only)	During and after de-ballasting	Contractor (Offshore Installation Manager)

No.	Risk	Criteria to be monitored	Inspections	Accountability (indicative)
M7	**Hazardous Substances Management Plan**			
M7-1	Chemicals and hazardous materials	• Volume stored • Volume consumed	Routine operational inspection of the: • Storage area • Management and transfer procedures • Log sheet update	Contractors (Vessel Captain / Offshore Installation Manager, Service Contractor)
M7-2	Radioactive sources	• Test to determine leak levels • Record sources lost down hole	At start and once during campaign	Contractor (Service Manager)
M7-3	Accidental oil and chemical spills	• Type of chemical spilled • Volume	Ongoing through daily operational log and incident reporting system	BW Kudu Drilling and Logistics Manager, Contractors (Vessel Captain / Offshore Installation Manager, pilot)

The main objectives of the monitoring programme include:

- Gathering, recording and analysing data required for regulatory and ESMP purposes.
- Identifying changes in the physical, biological and social environment.
- Producing information to evaluate environmental performance specified in the ESMP.
- Producing information about emergencies that require an immediate response.
- Obtaining information on the actual and potential environmental and social impacts of appraisal activities.
- Using monitoring results as a source of information and as grounds for decision making regarding the design of new mitigation measures.

As a general approach, BW Kudu will ensure that all monitoring programmes comprise the following:

- A formal procedure.
- Use of appropriately calibrated equipment.
- The date, time and monitoring point of each sample is to be recorded.
- Where samples require analysis, these will be preserved according to laboratory specifications.
- Accredited laboratories will be used to undertake sample analyses and/or internal laboratory results will periodically be checked by independent and accredited laboratories.
- Analysis, where relevant, must be carried out in accordance with methods prescribed by the Namibian National Standards, in terms of the Standards Act, 2005 (No. 18 of 2005) or similar.
- Monitoring data will be stored in an appropriate database.
- Data will be interpreted and reports on trends in the data will be compiled on a regular basis.
- Both the data and the reports will be kept on record for the duration of operations.

11.6.2 Auditing

Contractors will be required to conduct routine HSE inspections (internal and independent audits) to monitor compliance and implementation of conditions stipulated in this ESMP. The results of the inspection and monitoring activities will be reported to the operator (BW Kudu).

Beyond the routine inspection and monitoring activities conducted by the contractors, formal audits will be carried out internally by BW Kudu's on-board HSE representatives to determine the level of compliance with the ESMP and its own HSE standards and policies. The audit data will include the contractor's monitoring and inspection records.

The audit will include amongst other things, checking:

- Completeness of HSE documentation, including planning documents and inspection records.

- Conformance with monitoring requirements.
- Efficacy of activities to address any non-conformance with monitoring requirements.
- Training activities and record keeping.

Findings will be documented in audit reports, which will be submitted to the relevant Manager for action and follow-up.

11.6.2.1 Audit Methodology

An audit methodology, programme and protocol will be developed for the internal audits and the external ESMP close-out compliance audits. These audits are an integral part of the implementation of the ESMP and audit findings can be used as a basis to measure compliance and confirm the efficacy and efficiency of the mitigation measures. The proposed approach to auditing consists of four basic steps:

- Planning the audit.
- Conducting the audit.
- Producing audit findings (measuring compliance and identifying problems).
- Reporting audit findings for management action.

A four-level rating scale is proposed to assess the performance of the ESMP against each individual element. Elements are rated individually as “full compliance”, “partial compliance”, “non-compliance” or “not applicable” as per the Table 11-5 below.

Table 11-5: Audit Rating Scale

Full compliance	All of the requirements of the ESMP element have been fulfilled. Element has been documented and monitored and upon verification is found to be fully implemented.
Partial compliance	Only certain elements of the key requirements have been fulfilled and a plan is in place to progress to full compliance. Element has been documented and monitored but not consistently or completely implemented.
Non-compliance	The requirements of the ESMP have not been fulfilled. No evidence or incomplete evidence of compliance.
Not applicable	The ESMP elements are not applicable.

11.6.3 Corrective Actions

BW Kudu’s and contractor’s HSE staff will implement a formal non-compliance and corrective action tracking procedure for investigating cause and identifying corrective actions in response to accidents, HSE and/or social non-compliances.

Audit findings will undergo a root cause analysis to identify underlying causes to non-compliance events. Management actions will be taken to correct the underlying causes behind the audit findings and improvements will be made before another audit is conducted. This process allows for problems to be corrected, compliance to be improved and prevention of the same findings during subsequent audits.

Where corrective actions are deemed necessary, specific measures will be developed and documented in a Corrective Action Plan, with designated responsibility and timing, and implemented. In this way, continuous improvement in performance will be achieved.

BW Kudu's and contractor's HSE staff will be responsible for keeping records of corrective actions and for overseeing the modification of environmental or social protection procedures and/or training programmes to avoid repetition of non-conformances and non-compliances.

11.7 Management of Change

The development and implementation of the ESMP is an ongoing process that is iterative in nature. This document must thus be seen as a 'living' document and amendments may need to be implemented during the project. Typical changes that can affect the ESMP include:

- A material project design change that occurs after the ESMP has been compiled and approved.
- Changes in the feasibility/availability of specific mitigation measures.
- Personnel changes and/or planning on the project.
- Equipment failure during the survey or drilling.

This document is the first version of the ESMP. Certain aspects of this document may be expanded/made more specific during the detailed design stage to ensure, firstly, that it includes all conditions of approval and, secondly, that it addresses all impacts related to the detailed design. It may also need to be amended if audit findings indicate:

- Insufficient mitigation of environmental impacts associated with the undertaking of the activity; or
- Insufficient levels of compliance with the ECC or ESMP.

These changes will be subject to a management of change procedure. Further detail on the management of change procedure, including levels of change and associated actions, is presented in Table 11-6.

Table 11-6: Management of Change Procedure

Level of Change	Description of Level of Change and Action
Level 1: Minor Change	This applies where the change is largely deemed to be **immaterial to the ESIA findings**, the listed activities that were applied for are still relevant and it does not affect the ability to meet environmental and social performance requirements outlined the ESIA Report and ESMP. Assuming the proposed activities is approved by MEFT, the ECC will need to be renewed every three years. As part of the ECC renewal application, the relevance of the ESMP should be reviewed and amendments proposed where necessary. These changes and their evaluation should be communicated to MME and MEFT for information purposes and the ESMP revised where necessary.
Level 2: Significant Change	This applies where a change would **lead to a significant departure from the base-case** or a key aspect of it, such that the existing ESIA Report or ESMP does not adequately address potential impacts or require additional mitigation. This would imply that a new listed activity(s) is triggered or an approved activity would change.

Level of Change	Description of Level of Change and Action
	This requires an update of the ESIA Report and ESMP through an amendment application in terms of the Environmental Management Act, 2007 and Regulations 19 and 21 of the EIA Regulations 2012, and submission thereof to MEFT for review and decision.

11.8 Communication

11.8.1 Internal Communication

Channels of communication will be established between BW Kudu, the contractors, project personnel (e.g. MMOs and PAM operators) and external stakeholders. BW Kudu will establish and implement procedures for internal communication between the various levels and functions of the project staff organisation.

11.8.2 Stakeholder Engagement

As noted in Section 11.3.5.5, a Stakeholder Engagement Plan will be developed and implemented.

A grievance procedure will also be established and implemented (see Section 11.3.5.5).

11.8.3 Authority Communication

A notification document with well drilling details must be submitted to MME and MEFT at least 30 days prior to mobilisation.

BW Kudu will submit an ESMP close-out compliance report to the Competent Authority (MME) within 90 days of the end of each drilling campaign (see Section 11.9.4).

11.9 Document Control and Report

11.9.1 Documentation

BW Kudu will control HSE documentation, including project licences, approvals, management plans, associated procedures, checklists, forms, audits, and reports, through a formal procedure. The document control procedure will describe the processes that the project will employ for official communication of both hardcopy and electronic documents and the requirement for electronic filing, document tracking and version control numbers.

Contractors will be required to develop a system for maintaining and controlling its own HSE documentation and describe these systems in their respective HSE plans.

11.9.2 Incident Reporting

Following every HSE incident, BW Kudu will conduct an incident investigation and prepare a report detailing the events, root causes of the incident(s) and corrective and preventative measures implemented as a result. All incidents where local regulatory standards are exceeded will be reported to MME and MEFT.

11.9.3 Audit Reports

Audit findings (see Section 11.6.2) will be documented in audit reports, which will be submitted to the relevant Manager for action and follow-up.

11.9.4 ESMP Close-Out Compliance Report

BW Kudu will submit an ESMP close-out compliance report to the competent authority (MME) within 90 days of the end of each drilling campaign. This report will *inter alia* outline the implementation of the mitigation measures and degree of compliance with the performance objectives detailed in the ESMP.

11.10 Environmental and Social Mitigation Management Commitment Register

Table 11-7 details the specific management commitments that will be implemented to prevent, minimise or manage significant potential negative impacts and optimise and maximise any potential benefits of the project.

These tables are structured in the following manner so that the mitigation measures have a clear and logical context within which they are designed, implemented, monitored and evaluated:

- **Activities:** Activities are the operational activities that occur as a result of project implementation.
- **Aspect:** Environmental and social aspects are defined as ‘an element of an organisation’s activities, products or services that can interact with the natural and human environment’ e.g., atmospheric emissions, underwater noise levels or discharge of waste to sea.
- **Environmental and Social Performance Objectives / Impact Management Outcomes or Targets:** Every environmental and social management requirement must be translated into an objective, namely an outcome or target that is to be achieved. This is not to say that every requirement must be expressed as an objective, but requirements can be combined as appropriate into single objectives. If the outcome / target is met then the objective will have been deemed to be met, but if the target is not achieved then suitable corrective action must be defined and implemented so as to ensure that the performance is improved to the point that the target is met and the performance is sustained.
- **Associated Plan and Procedure:** The corresponding plan or procedure to which the commitment relates is listed in this column.
- **Mitigation / Management Actions:** A key component of the ESIA process is to explore practical ways of avoiding or reducing potentially significant impacts of the proposed appraisal programme. These are commonly referred to as mitigation measures and are incorporated into the project as part of the ESMP. Mitigation is aimed at preventing, minimising and/or managing potential negative impacts to as low as reasonably practicable (ALARP) and optimising and maximising any potential benefits of the proposed project.

- **Responsibility:** Defining who is responsible for the implementation, monitoring and recording of the mitigation measure.
- **Timing:** Timing refers to the schedule. The 'timing' can be specified in terms of a specific date or relative to other actions (i.e., before project mobilisation, or during operation, as examples) or frequency.
- **Monitoring and Record Keeping:** Monitoring and record keeping requirements must be defined, whereby the organisation responsible for implementing the action/s is given a prescribed reporting mechanism, limited as far as possible to documents plans, correspondence, records, registers, etc.

Table 11-7: Environmental and Social Mitigation Management Commitment Register

Aspect	Environmental and Social Performance Objectives / Impact Management Outcomes or Targets	Associated Plan and Procedure	Mitigation / Management Actions	Respon-sibility	Frequency / Timing	Monitoring and record keeping
1. Planning Phase						
1.1 Preparation of Subsidiary Plans						
Planning and Management	Identification of all parties and their responsibilities documented and communicated	BOCP OSCP SOPEP EMP	Develop a campaign-specific response strategy and plans (OSCP), aligned with the National OSCP, suitable for each drilling campaign that identifies the resources and response required to minimise the risk and impact of oiling. This response strategy must take cognisance of the local oceanographic and meteorological seasonal conditions, oil spill modelling results (Note that oil spill modelling undertaken for this study does not predict shoreline oiling) local environmental receptors and local spill response resources. The development of the site-specific response strategy and plans must include the following: • 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. • Updated oil spill modelling should there be any significant changes to the input data and well architecture to guide the final response strategy. If the updated modelling indicates the possibility of shoreline oiling, additional proactive measures must be committed to. For example: o Implement measures to reduce surface response times (e.g. pre-mobilise a portion of the dispersant stock on the support vessels, contract additional response vessels and aircrafts, mobilise SSDI kit as soon as possible, improve dispersant spray capability, etc.).	BW Kudu / Drilling Contractor	At least 30 days prior to commencement of operation	Copies of all plans Confirm compliance and justify any omissions

Aspect	Environmental and Social Performance Objectives / Impact Management Outcomes or Targets	Associated Plan and Procedure	Mitigation / Management Actions	Respon-sibility	Frequency / Timing	Monitoring and record keeping
			○ Ensure shoreline response equipment (e.g. response trailers, shoreline flushing equipment, shoreline skimmers, storage tanks, shoreline booms, skirt booms, shore sealing booms, etc.) is on standby through service contracts to cover key localities for the full duration of drilling operation phase to proactively protect sensitive coastal habitats and areas. • Develop intervention plans for the most sensitive areas to minimise risks and impacts and integrate these into the campaign-specific response strategy and associated plans. • Develop an oiled wildlife response plan in collaboration with specialist wildlife response organisations with experience in oiled wildlife response. The plans should include detailed protocols on the collection, handling and transport of oiled marine fauna.			
Planning and Management	Identification of all parties and their responsibilities documented and communicated	See Section 11.3.5	Ensure the following subsidiary plans are also in place: • BW Kudu Emergency Response Plan and Medical Emergency Response Plan • Drilling Contractor Emergency Response Plan (including MEDIVAC plan) • Shipboard Oil Pollution Emergency Plan (SOPEP) as required by MARPOL • Stakeholder Engagement Plan • Waste, Emissions and Discharges Management Plan • Hazardous Substances Management Plan • Preventive Maintenance Plan • Ballast Water Management Plan • Corrective Action Plan	BW Kudu / Drilling Contractor	30 days prior to commencement of operation	Copies of all plans and certificates Confirm compliance and justify any omissions
			In addition to the above, ensure that: • Drilling unit must have Pollution Safety Certificate(s). • There is a record of drilling unit / vessels seaworthiness certificate and/or classification stamp. Submit copies of all certificates to MME (see Row 2.1).			Copies of all plans and certificates Confirm compliance and justify any omissions

Aspect	Environmental and Social Performance Objectives / Impact Management Outcomes or Targets	Associated Plan and Procedure	Mitigation / Management Actions	Respon-sibility	Frequency / Timing	Monitoring and record keeping
			• A valid International Sewage Pollution Prevention Certificate (ISPPC), as required by vessel class. • International Oil Pollution Prevention (IOPP) Certificate, as required by vessel class.			Correspondence to PASA
1.2 Preparation for Drilling						
Personnel for faunal observations / detections during VSP surveys	Minimise impact on and disturbance of marine fauna	Drilling programme	• Make provision for the placing of a dedicated Marine Mammal Observer (MMO), with a recognised MMO training course, on board for marine mammal observation, distance estimation and reporting. • Make provision for the placing of a Passive Acoustic Monitoring (PAM) operator, with recognised PAM training, on board should VSP operations be undertaken during periods of darkness or low visibility and a risk assessment, undertaken ahead of the VSP operation, indicate that the PAM equipment can be safely deployed considering the metocean conditions (specifically current).	BW Kudu / Drilling Contractor	Prior to commencement of VSP operations	MMO monitoring (see Row M3-2 in Table 11-4) MMO / PAM report
Equipment			Ensure PAM technology is available for use (one or more hydrophones), which detects animals through their vocalisations, should it be possible to safely deploy PAM equipment.			
Identification and appointment of suppliers	Minimise impact on and disturbance of benthic habitat (EBSA)	Drilling programme	• Give preference to and use when possible/appropriate dynamically positioned drill units.	BW Kudu	Prior to drilling unit hire	Contracts
	Reduce volume of diesel burned and emissions to the air	Waste and Emissions Management Plan	• Include GHG emissions intensity of the vessels as an evaluation criterion in the bidding process.	BW Kudu	During contracting and procurement	Tender results

Aspect	Environmental and Social Performance Objectives / Impact Management Outcomes or Targets	Associated Plan and Procedure	Mitigation / Management Actions	Respon-sibility	Frequency / Timing	Monitoring and record keeping
	Ensure fair, transparent and reasonable preferential contracting of local companies	Local Content Plan	• Maximise use of local skills and resources through preferential employment and procurement of locals where practicable. • Where practically possible consider splitting the procurement of services between Walvis Bay and Lüderitz. • Develop, communicate and implement a fair and transparent labour and recruitment / procurement policy. • Ensure diversity and gender equality in recruitment, as far as possible. • Provide training to staff and service providers before and/or during project implementation. Training should focus on skills required by the industry to increase opportunities for staff and / or service providers benefit from future projects. • Offer a general training opportunity to any staff that will be retrenched at the end of the appraisal programme on how to position themselves for other employment opportunities. • Consider GHG emissions in the evaluations of bids for the appointment of marine operators and helicopter operators.	BW Kudu	During contracting	Contracts
Oil spill planning	Minimise impact of a well blow-out by implementing response procedures efficiently	OSCP	Undertake a drilling unit inspection that is specifically focused on well control equipment. A specific BOP inspection, and relevant upgrades / refurbishment should be completed prior to the unit operating in South African waters.		Prior to drilling unit hire	Inspection report and Peer review report (see Row M5-5 in Table 11-4)
			Ensure that both the well design and well construction plans (Drilling Programme) are peer reviewed internally by HQ specialists, prior to spudding the well.		Prior to finalising drilling programme	
			Ensure contract arrangements and service agreements are in place to implement the OSCP, e.g., capping stack in Saldanha Bay and other international locations, SSDI kit, surface response equipment (e.g., booms, dispersant spraying system, skimmers, etc.), dispersants, response vessels, etc.	Drilling Contractor	Prior to commencement of drilling operations	Contracts
			Ensure there is adequate protection and indemnity insurance cover for oil pollution incidents. Submit proof of financial insurance and assurances to NAMCOR to manage all damages and compensation requirements in the event of an unplanned pollution event.			

Aspect	Environmental and Social Performance Objectives / Impact Management Outcomes or Targets	Associated Plan and Procedure	Mitigation / Management Actions	Respon-sibility	Frequency / Timing	Monitoring and record keeping
2. Mobilisation Phase						
2.1 Stakeholder Consultation and Notification for Drilling						
Interaction, engagement & communication with national authorities and key stakeholders	Inform MME about the commencement of drilling	Stakeholder Engagement Plan	Compile the well drilling details into a notification document and submit to MME. The notification should provide: • Drilling programme (timing, co-ordinates and duration). • Contractor details. • Drilling unit and support vessel specifications (including relevant certification and indemnity insurance).	BW Kudu, Drilling Contractor	Notification to be submitted at least 30-days prior to drilling commence-ment	Correspondence to MME
	Ensure that other users of the sea are aware of drilling activities and navigational safety and parties are aware of the mechanism to follow for raising concerns Minimise disruption to drilling and other users of the sea		Notify key stakeholders of (1) the vessel name and co-ordinates of the drilling location, (2) an indication of the proposed operational timeframes, (3) the dimensions of the temporary safety zone around the drilling unit, and (4) details on the movements of support vessels servicing the project: • Fishing industry / associations: Confederation of Namibian Fishing Association, Large Pelagic and Hake Longlining Association, Namibian Large Pelagic Association, Namibian Hake Association, Namibian Deep Water Trawling Association, and Walvis Bay Pelagic Fishing Association. • South African Navy Hydrographic Office (SANHO). • Namibian Ports Authority. • MFMR Monitoring, Control and Surveillance Unit in Walvis Bay (Vessel Monitoring System in particular).		3 weeks prior to commencement of operations	Copies of all correspondence and list of those to whom it was sent
Interaction, engagement & communication with national authorities and key stakeholders	Ensure that other users of the sea are aware of drilling activities and navigational safety and parties are aware of the mechanism to follow for raising concerns Minimise disruption to drilling and other users of the sea	Stakeholder Engagement Plan	Request, in writing, the SANHO to issue navigational warnings as appropriate (e.g. via Navigational Telex (Navtext) and navigational warnings twice daily on Channel 16 VHF). Also, notify the Ministry of Works & Transport: Directorate of Maritime Affairs who will then send out a Marine Circular notifying other offshore users of the navigation warning.	Drilling Contractor	7 days prior to drilling unit being on drill site	Confirm that request was sent to SANHO
			Implement a grievance mechanism that allows stakeholders to register specific grievances related to operations, by ensuring they are informed about the process and that resources are mobilised to manage the resolution of all grievances, in accordance with the Grievance Management procedure.	BW Kudu, Drilling Contractor	Throughout the drilling campaign	Grievance questions, solution and outcome monitoring (see Row M4-1 in Table 11-4)

Aspect	Environmental and Social Performance Objectives / Impact Management Outcomes or Targets	Associated Plan and Procedure	Mitigation / Management Actions	Respon-sibility	Frequency / Timing	Monitoring and record keeping
2.2 Preparation for Drilling						
Oil spill planning	Minimise impact of a well blow-out by implementing response procedures efficiently	OSCP	Undertake oil spill response exercises as specified in the OSCP.	Drilling Contractor	Prior to commencement of drilling	Copy of attendance register and training records
			Ensure oil spill equipment is mobilised and installed on vessels in line with the OSCP – refer to Row 1.1 above.			Contracts
2.3 Mobilisation of Project Staff						
Training and allocation of responsibilities	Project staff have the capability and competence to achieve the ESMP objectives and know what the ESMP environmental requirements are All staff receive HSSE training as part of their HSSE induction, refresher training and an ongoing awareness and behaviour system	Environmen-tal and Social awareness	Ensure that a copy of the ESIA Report and ESMP are supplied to the contractor and sub-contractors and is on board all project vessels during the operation.	BW Kudu, Drilling Contractor	At drilling commencement meeting (Kick-off Meeting) and before new staff commence with work on the project	Copy of attendance register and training records
			Undertake HSE Awareness Training, including induction training to ensure the project personnel (including drilling and support vessels, MMO, PAM operator) are appropriately informed of the purpose and requirements of the ESMP, including emergency procedures, spill management, emission awareness, etc.			
			Ensure that ESMP responsibilities are clearly defined in Job Descriptions of relevant staff.			
			Establish training and exercise programmes to ensure that the response activities can be effectively executed.			
			Ensure that the MMO is briefed on the area-specific sensitivities and on the VSP planning (including roles and responsibilities, and lines of communication).			
			Conduct training of the workforce at all levels (i.e. workers, foremen, managers) in awareness of air emissions. This can be included in site induction courses and should focus on promoting understanding as to why operational controls are in place and should be adhered to			
2.4 Equipment Transfer						
Introduction of non-indigenous invasive marine species	Control the spread of non-native invasive species to vulnerable ecosystems Ships' Ballast Water	Preventive Maintenance Plan	Ensure all equipment (e.g., wellheads, BOPs, riser, etc.) that has been used in other regions is thoroughly cleaned prior to deployment	Drilling Contractor	Prior to entry into Namibian waters	Equipment checking (see Row M2-4 in Table 11-4)

Aspect	Environmental and Social Performance Objectives / Impact Management Outcomes or Targets	Associated Plan and Procedure	Mitigation / Management Actions	Respon-sibility	Frequency / Timing	Monitoring and record keeping
2.5 Exchange of Ballast Water						
Introduction of non-indigenous invasive marine species	Control the spread of non-native invasive species to vulnerable ecosystems by fulfilling the requirements of the International Convention for the Control and Management of Ships' Ballast Water and Sediments ("the Ballast Water Management Convention")	Ballast Water Management Plan	Implement the Ballast Water Management Plan. • Avoid the unnecessary discharge of ballast water. • No discharging of ballast water in harbour / port. Use filtration procedures during loading in order to avoid the uptake of potentially harmful aquatic organisms, pathogens and sediment that may contain such organisms. Whenever possible, conduct the exchange of ballast water at least 200 nm (± 370 km) from the nearest land and in water of at least 200 m depth when arriving from another maritime region. 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 200 m in depth. Ensure that routine cleaning of the ballast tank is carried out, where practicable, in mid-ocean in accordance with Ballast Water Management Plan.	Contractors	During ballast water discharge During ballast tank cleaning	Waste monitoring (see Row M6-1 in Table 11-4) Copy of Ballast Water Management Plan and ballast water management certificate Maintain a complete and accurate Ballast Water Record System Records are to be maintained of ballast water uptakes, discharges and exchanges as per the Ballast Water Management Plan
2.6 Air Pollution Control During Mobilisation						
Emissions to the atmosphere	As per operation phase – refer to Row 3.7.					
2.7 Pollution Control and Waste and Discharges Management During Mobilisation						
Discharge of liquid and solid waste to sea	As per operation phase – refer to Row 3.9.					
2.8 Light Pollution Control During Mobilisation						
Increased ambient lighting	As per operation phase – refer to Row 3.12.					

Aspect	Environmental and Social Performance Objectives / Impact Management Outcomes or Targets	Associated Plan and Procedure	Mitigation / Management Actions	Respon-sibility	Frequency / Timing	Monitoring and record keeping
2.9 Noise Pollution During Mobilisation						
Increased ambient noise levels	As per operation phase – refer to Row 3.13.					
2.10 Shore-Based Community Social Dynamics During Mobilisation						
Impacts to shore-based community health and safety	As per operation phase – refer to Row 3.15.					
3 Operational Phase						
3.1 Stakeholder Participation and Notification of Vessel Operations						
Safety zone around drilling unit	Ensure other users of the sea are notified and navigational safety, and prevention of emergencies / accidents Minimum disruption to drilling and other users of the sea	Stakeholder Engagement Plan	Distribute an updated Notice to Mariners, if different from notification sent out during mobilisation (see Row 2.1), to fishing companies and directly onto vessels. The notice should give updated notice of: • the vessel name and co-ordinates of the drilling location. • an indication of the proposed operational timeframes. • the dimensions of the safety zone around the drilling unit. • details on the movements of support vessels servicing the project.	BW Kudu, Drilling Contractor	7 days prior to establishment at drill site	Copies of all correspondence
			Implement a grievance mechanism that allows stakeholders to register specific questions or grievances related to operations, by ensuring they are informed about the process and that resources are mobilised to manage the resolution of all grievances, in accordance with the Grievance Management procedure.		Throughout the drilling campaign	Grievance questions, solution and outcome monitoring (see Row M4-1 in Table 11-4) Copy of grievance register
3.2 Prevention of Accidents						
Presence of drilling unit	Ensure navigational safety, prevention of accidents, preparation for emergencies and minimise the chance subsequent damage to the environment occurring	Stakeholder Engagement Plan	Maintain standard vessel watch procedures.	Drilling Contractor	Throughout operation	Provide record of any incidents and interaction with other vessels. Provide record of safety drills
			Enforce the 500 m safety zone around the drilling unit.			
			Notify any fishing vessels at a radar range of 24 nm from the drilling unit via radio regarding the safety requirements around the drilling unit.			
			Manage the lighting on the drilling unit to ensure that it is sufficiently illuminated to be visible to fishing vessels and compatible with safe operations			

Aspect	Environmental and Social Performance Objectives / Impact Management Outcomes or Targets	Associated Plan and Procedure	Mitigation / Management Actions	Respon-sibility	Frequency / Timing	Monitoring and record keeping
			Practice regular emergency response drills. Request, in writing, for SANHO to broadcast a navigational warning via Navigational Telex (Navtext) and navigational warnings twice daily on Channel 16 VHF. Also, notify the Ministry of Works & Transport: Directorate of Maritime Affairs who will then send out a Marine Circular notifying other offshore users of the navigation warning.			
			Ensure access to and use of current meteorological and oceanographic information in management of drilling activities.			Provide record of any incidents and interaction with other vessels.
			Use flares or fog horn where necessary.			
Presence and operation of support vessel	Minimise risk of collision with large cetaceans	Drilling programme	During normal operations ensure vessel transit speed between the drill area and port remain within operational speed limits: • Supply vessel: 10-13 knots • Fast supply vessel: 17-20 knots • Crew change vessel: 20-25 knots Speed should be reduced to operational speed range minimums within 25 km of the coast.		Throughout transit	Vessel speed
Presence and operation of support vessel	Minimise risk of collision with large cetaceans	Drilling programme	Keep a constant watch from all vessels (Vessel Captain and crew) for cetaceans and turtles in the path of the vessel. Alter course and avoid animals when necessary.	Drilling Contractor	Throughout transit	Vessel speed
			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.			Provide record of any incidents and interaction with cetaceans and marine mammals
			Avoid approaching cetaceans within 300 m and, if in transit, move to a minimum distance of 300 m from any whales if a whale surfaces closer than 300 m from a vessel.			

Aspect	Environmental and Social Performance Objectives / Impact Management Outcomes or Targets	Associated Plan and Procedure	Mitigation / Management Actions	Respon-sibility	Frequency / Timing	Monitoring and record keeping
3.3 Anchoring						
Physical disturbance of the seabed sediments	Protect sensitive seabed habitats	Drilling programme	• Use existing or acquired Multi Beam Echo Sounder or sidescan data to determine the nature of the seabed within the anchor spread, so as to avoid any hardground communities and rocky outcrops. • Ensure the ROV does not land or rest on the seabed as part of normal operations.	Drilling Contractor	Prior to finalising of drill sites and spudding	Seabed monitoring (see Row M3-1 in Table 11-4) ROV footage and marine faunal specialist report
			Adjust anchor positions, if based on the Multi Beam Echo Sounder or sidescan data, any sensitive species (e.g. colony forming corals) or structural features are located within the predicted anchor spread area.	Drilling Contractor, Marine faunal specialist		
3.4 Spudding						
Physical disturbance of the seabed sediments	Protect sensitive seabed habitats	Drilling programme	• Undertake pre-spudding seabed ROV surveys to identify any colony forming corals and structural features within a distance of 200 m from proposed well site. • Limit the area directly affected by physical contact with infrastructure to the smallest area required. • Ensure the ROV does not land or rest on the seabed as part of normal operations.	Drilling Contractor	Prior to finalising of drill sites and spudding	Seabed monitoring (see Row M3-1 in Table 11-4) ROV footage and marine faunal specialist report
	Protect sensitive seabed habitats		• If colony forming corals or structural features are identified during the pre-spudding ROV survey, marine ecology specialists (internal or external) are to be consulted to determine further mitigation measures. • If colony forming corals or structural features are detected within 200 m of the planned well site, 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.	Drilling Contractor, Marine faunal specialist		
	Protect underwater cultural heritage (e.g. shipwrecks)		Adjust the well location to avoid any marine underwater cultural heritage (shipwrecks) identified in the pre-spudding survey at the well site.	BW Kudu, Drilling Contractor	During spudding, if wreck is identified	ROV footage
		Stakeholder Engagement Plan	Develop and implement Chance Find Procedure. Specifically, if any historic shipwreck objects are found during the pre-spudding seafloor survey or after drilling commencement, which could			Correspondence with SAHRA

Aspect	Environmental and Social Performance Objectives / Impact Management Outcomes or Targets	Associated Plan and Procedure	Mitigation / Management Actions	Respon-sibility	Frequency / Timing	Monitoring and record keeping
			potentially be impacted by the activity, work in the directly affected area should cease (if identified after drilling commencement) until the Namibian Heritage Authority has been notified and the operator has complied with any additional mitigation as specified by the Authority, including any recommended buffer.			
3.5 Well Drilling - Discharge of Drill Cuttings and Cement						

Physical disturbance of the seabed sediments and increased sediment in the water column	Protect sensitive seabed fauna / habitats and pelagic fauna	Waste and Discharges Management Plan
		
		Hazardous Substances Management Plan
			• Use WBMs for drilling, as far as possible.
			• Ensure only low-toxicity, low bioaccumulation potential and partially biodegradable additives are used, where practicable.
			• Maintain a full register of Material Safety Data Sheets (MSDSs) for all chemical used, as well as a precise log file of their use and discharge.
			• Monitoring requirements:
			  ○ Test drilled cuttings for retained oil content to ensure specified discharge standards are maintained (average residual oil on cuttings <6.9%).
			  ○ Use certified Barite with low content of heavy metals and (Br and Hg)
			  ○ Test any other discharged fluids for visible oil contamination (static sheen)
				Drilling Contractor	Throughout drilling, if using WBMs	Monitor fluids and cuttings (see Row M1-6 in Table 11-4)

	Protect sensitive seabed fauna / habitats and pelagic fauna		Use a low toxicity Group III NADF. When using NADF: • Use only low-toxicity, low bioaccumulation potential and partially biodegradable additives, where practicable. • Maintain a full register of Material Safety Data Sheets (MSDSs) for all chemical used, as well as a precise log file of their use and discharge. • Ensure regular maintenance of the onboard solids control package to allow higher NADF recovery. • Treat NADF cuttings to reduce oil content to <3% Oil On Cutting (OOC) prior to discharge overboard • Monitoring requirements: ○ Test drilled cuttings for retained oil content to ensure specified discharge standards are maintained (average residual oil on cuttings <3%).		Throughout drilling, if using NADFs	Monitor fluids and cuttings (see Row 1-7 in Table 11-4)

Aspect	Environmental and Social Performance Objectives / Impact Management Outcomes or Targets	Associated Plan and Procedure	Mitigation / Management Actions	Respon-sibility	Frequency / Timing	Monitoring and record keeping
			○ Use certified Barite with low content of heavy metals and (Br and Hg) ○ Test any other discharged fluids for visible oil contamination (static sheen)			
			Monitoring as per Table 11-4.		Throughout drilling	Monitor fluids and cuttings (see Row M1-7 in Table 11-4)
			Discharge of risered cuttings via a caisson at greater than 5 m below the surface.			
			Use only low-toxicity and partially biodegradable additives in cement.		During cementing	Monitor cement returns (see Row M1-8 in Table 11-4)
	Protect sensitive seabed fauna / habitats and pelagic fauna		• Avoid excess cement usage during the initial riserless drilling stage by monitoring for discharges during cementing using an ROV. If significant discharges are observed on the seafloor terminate cement pumping, as far as possible. • Ensure any excess unused cement onboard the drilling unit is shipped to shore for reuse, storage or disposal.	Drilling Contractor		
Increased levels of radioactivity	Protect the environment and workers		If seabed radioactivity is not confirmed as part of an Environmental Baseline Study, analyse Gamma ray results for radioactivity during logging and / or during cuttings treatment. If any issues with regard to radioactivity are detected, undertaken appropriate treatment and disposal.		During initial cutting treatment / logging	Monitor cuttings (see Row M1-7 in Table 11-4)
3.6 Transport, Storage and Handling of Radioactive Devices and Explosives						
Increased levels of radioactivity	Protect the environment and workers	Preventive Maintenance Plan	Designate competent person/s in charge and to handle radioactive devices and/or explosives.	Drilling Contractor	Throughout drilling operations	Training certificates
			• Comply with necessary regulations for the transport, storage and handling of radioactive devices. • Transport and store radioactive devices in specially designed secured (locked) storage containers.			
			• Follow standard / prescribed radioactive sources procedure. • When radioactive sources are to be used, secure the area between and around the storage containers and the floor and only allow key personnel in the area.			
			Set up incident and emergency reporting procedures for actual or suspected individual over-exposure, theft or loss, logging tools stuck downhole in wells, and release or spillage into the environment.			

Aspect	Environmental and Social Performance Objectives / Impact Management Outcomes or Targets	Associated Plan and Procedure	Mitigation / Management Actions	Respon-sibility	Frequency / Timing	Monitoring and record keeping
			Routinely test the sources according to industry requirements to document leak levels.			Test results
3.7 Vertical Seismic Profiling (VSP)						
Increased ambient underwater noise levels	Reduce disturbance of marine fauna, particularly cetaceans (whales and dolphins), seals, seabirds (particularly penguins) and turtles	Drilling programme	• Make provision for the placing of a dedicated MMO, with a recognised MMO training course, on board for marine mammal observation, distance estimation and reporting. • Make provision for the placing of a Passive Acoustic Monitoring (PAM) operator, with recognised PAM training, on board should VSP operations be undertaken during periods of darkness or low visibility and 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 VSP be undertaken in darkness or periods of low visibility, and it is assessed as safe to deploy PAM equipment. Support vessels should be used to deploy PAM equipment should the drilling unit thrusters pose a technical risk.	Drilling Contractor	During VSP operations	MMO & PAM Operator monitoring (see Row M3-2 in Table 11-4) MMO / PAM report
			<u>Pre-start Protocols for airgun testing and profiling:</u> • Commence VSP profiling, as far as possible, 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 pre-shoot visual and possible acoustic scan (prior to soft-starts / airgun tests) within the 500 m radius mitigation zone in 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 VSP acoustic source (except if testing a single airgun on lowest power). This			

Aspect	Environmental and Social Performance Objectives / Impact Management Outcomes or Targets	Associated Plan and Procedure	Mitigation / Management Actions	Respon-sibility	Frequency / Timing	Monitoring and record keeping
			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 observations and possibly acoustic detections within the 500 m mitigation zone continuously during VSP operation to identify if there are any cetaceans present.			
			<u>Shut-Downs</u> • 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 mitigation zone before the soft-start procedure and production may commence.			
			<u>Breaks in Airgun Firing: Breaks of less than 20 minutes</u> • 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 no cetaceans, penguins, shoaling large pelagic fish or turtles were detected in the mitigation zone during the breakdown period. • If a cetacean is 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			

Aspect	Environmental and Social Performance Objectives / Impact Management Outcomes or Targets	Associated Plan and Procedure	Mitigation / Management Actions	Respon-sibility	Frequency / Timing	Monitoring and record keeping
			penguins, shoaling large pelagic fish or turtles, the animals move outside the 500 m mitigation zone within the 20-minute period. Breaks in Airgun Firing: Breaks longer than 20 minutes: If it takes longer than 20 minutes to restart the airguns, a full pre-watch and soft-start 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-minutes pre-watch time. 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 used 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 of 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.			
3.8 Air Pollution Control During General Operation						
Emissions to the atmosphere during operation	Reduce volume of diesel burned and emissions to the air	Drill and logistics design Waste and Emissions Management Plan	Develop energy intensity benchmarks, and in the event of excessive fuel consumption, agreed upon measures should be implemented to reduce fuel consumption. Optimise drilling unit / vessel positioning, supply runs and routes and crew changes to reduce fuel consumption and avoid delays that could result in more emissions. Ensure compliance with the requirements set out in MARPOL Annex VI Regulation 18 - Fuel Quality by supplying Project vessels	BW Kudu Drilling Contractor	Throughout operations	Fuel consumption monitoring (see Row M1-4 in Table 11-4) Inventory of volume and type of fuel used.

Aspect	Environmental and Social Performance Objectives / Impact Management Outcomes or Targets	Associated Plan and Procedure	Mitigation / Management Actions	Respon-sibility	Frequency / Timing	Monitoring and record keeping
			with marine gasoil (MGO) or heavy fuel oil (HFO) with less than 0.5% sulphur (mass), where practicable.			
			Record CO_2, CH_4 and N_2O levels (calculated based on Tier 2 or 3 methodologies) annually.	BW Kudu	Annually	
			Ensure no incineration of waste occurs within the port limits.	Drilling Contractor	Throughout operations	Incineration monitoring (see Row M1-1 & 1-2 in Table 11-4)
		Preventive Maintenance Plan	Maintain appropriate operational controls and adhere to repair and maintenance requirements for all equipment.			Equipment monitoring (see Row M2-7 in Table 11-4)
3.9 Air Pollution Control during Well Testing						
Emissions to the atmosphere during flaring	Reduce volume of hydrocarbons burned and emissions to the air	Waste and Emissions Management Plan	• Avoid flaring of produced hydrocarbons wherever practical. • If flaring is the only option available, optimise well test programme to minimise the volume of hydrocarbons flared and well-test durations.	Drilling Contractor	During flaring	Flaring monitoring (see Row M1-9 in Table 11-4)
			Use a high-efficiency (> 95% design efficiency) test flare burner head equipped with an appropriate combustion enhancement system to minimise incomplete combustion, black smoke, and hydrocarbon fallout to the sea.			
			Develop and implement a flare inspection and maintenance programme to ensure flare is operating efficiently.			
			During flaring, implement the following good practices: • Implement source gas reduction measures to the extent possible; • Use efficient flare tips and optimise the size and number of burning nozzles; • Maximize flare combustion efficiency by controlling flare fuel, air and stream flow rates to ensure the correct ratio of assist stream to flare stream; • Minimize flaring from purges and pilots by using purge gas reduction devices, vapour recovery units, inert purge gas, soft seat valve technology and conservation pilots; • Minimize risk of pilot blowout by ensuring sufficient exit velocity and providing wind guards;			

Aspect	Environmental and Social Performance Objectives / Impact Management Outcomes or Targets	Associated Plan and Procedure	Mitigation / Management Actions	Respon-sibility	Frequency / Timing	Monitoring and record keeping
			• Use a reliable pilot ignition system; • Install high integrity instrument pressure protection systems to reduce overpressure events and avoid or reduce flaring situations; • Minimize liquid carryover and entrainment in the gas flare stream with a suitable liquid separation system; • Minimize flame lift off and/or flame lick; • Operate the flare to control odour and visible smoke (i.e. no visible black smoke); • Implement burner maintenance and replacement programmes to ensure continuous maximum flare efficiency; • Meter flare gas.			
			Record CO_2, CH_4 and N_2O levels (calculated based on Tier 2 or 3 methodologies) annually.	BW Kudu	Annually	
3.10 Pollution Control and Waste and Discharges Management During General Operation						
Discharge of liquid and solid waste to sea	Reduce discharges and improve quality of liquid and solid waste to sea by fulfilling the requirements of MARPOL 73/78 standards	Waste and Emissions Management Plan	Implement the Waste, Emissions and Discharges Management Plan.	Drilling Contractor	Throughout operations	Copy of all plans Report the total discharge waste stream volumes
			Prohibit operational discharges when transiting through MPAs.			
			Drilling unit and project vessels will have: • an onboard sewage treatment plant; • a sewage comminating and disinfecting system, and/or • a sewage holding tank.			
			Ensure sewage discharges comply with: • a BOD of <25 mg/l (if the treatment plant was installed after 1/1/2010,) or <50 mg/l (if installed before this date); and • minimal residual chlorine concentration of 0.5 mg/l.		Throughout operations, during discharges	Sewage monitoring (see Row M1-5 & M2-2 in Table 11-4) Sewage Certificate containing the test results of the sewage treatment plant
			Sewage discharge to comply with the following: • No visible floating solids must be produced or discolouration of the surrounding water must occur. • Sewage must be comminuted and disinfected for discharges between 3 nm and 12 nm from the coast.			

Aspect	Environmental and Social Performance Objectives / Impact Management Outcomes or Targets	Associated Plan and Procedure	Mitigation / Management Actions	Respon-sibility	Frequency / Timing	Monitoring and record keeping
			• Disposal of sewage from holding tanks must be discharged at a moderate rate while the ship is proceeding on route at a speed not less than 4 knots.			
3.10 Pollution Control and Waste and Discharges Management During General Operation						
Discharge of liquid and solid waste to sea	Reduce discharges and improve quality of liquid and solid waste to sea by fulfilling the requirements of MARPOL 73/78 standards	Waste and Emissions Management Plan	Galley waste discharge to comply with the following: • No disposal to occur within 3 nm of the coast. • Disposal at >3 nm from coast to be comminuted to particle sizes smaller than 25 mm. • Disposal overboard without grinding can occur greater than 12 nm from the coast when the vessel is sailing. As the drilling unit will be stationary, food waste will need to be comminuted prior to discharge at the drilling site.	Drilling Contractor	Throughout operations, during discharges	Waste monitoring (see Row M1-1 & 1-2 in Table 11-4) Inventory of volume of waste discharged and discharge location
			Minimise the discharge of waste material should obvious attraction of fauna be observed.			
			Ensure all relevant deck and machinery drainage is routed to: • sump tanks on board for treatment prior to discharge to ensure MARPOL compliance. • oil residue holding tanks.			Waste monitoring (see Row M1-3 & M2-1 in Table 11-4) Oil Record Book
			Oil in water concentration in normal discharges (not produced water) must be less than 15 ppm prior to discharge overboard. The oil discharge monitoring and control system must ensure that any discharge of oily mixtures is stopped when the oil content of the effluent exceeds 15 ppm.			
			• Ensure all process areas are bunded to ensure drainage water flows into the closed drainage system. • Use drip trays to collect run-off from equipment that is not contained within a bunded area and route contents to the closed drainage system.			Waste monitoring (see Row M1-3 & M2-1 in Table 11-4) Quantity of oil residue (sludge) produced. Record all discharges, together with date, time and method of
			Use low-toxicity biodegradable detergents in deck cleaning.			
			Implement leak detection and maintenance programmes for valves, flanges, fittings, seals, hydraulic systems, hoses, etc.		Throughout operations	
			Initiate a waste minimisation system, which includes awareness of reduced water usage.			

Aspect	Environmental and Social Performance Objectives / Impact Management Outcomes or Targets	Associated Plan and Procedure	Mitigation / Management Actions	Respon-sibility	Frequency / Timing	Monitoring and record keeping
						discharge, disposal route, any system failure and accidental oil spills in the Oil Record Book
			No disposal overboard of general waste (e.g., domestic waste, cooking oil, plastics and incinerator ash)			Waste monitoring (see Row M1 in Table 11-4). Inventory volume of waste generated Inventory of volume transferred for onshore disposal / incinerated Waste receipts
			Ensure on-board solid waste storage is secure.			
			When authorized, incinerate (non-hazardous only) waste or transport to a licensed onshore waste management facility for disposal/recycling. Retain waste receipts.			
			• Segregate, classify and store all hazardous waste in suitable receptacles on board in order to ensure the safe containment and transportation of waste • Dispose of hazardous waste at a facility that is appropriately licensed and accredited.			
3.11 Pollution Control and Waste and Discharges Management During Well Testing						
Discharge of liquid waste to sea	Reduce discharges and improve quality of liquid waste to sea	Waste and Emissions Management Plan	Treat produced water prior to discharge. • If following onboard treatment, the hydrocarbon content is <30 mg/l, the produced water may be discharged overboard. • If the content is >30 mg/l, it should either undergo a second treatment (see bullet above) or be transferred to shore for treatment and disposal.	Drilling Contractor	During discharge of produced water	Produced Water monitoring (see Row M1-10 in Table 11-4)
Flaring off some of the oil and gas brought to the surface	Minimise the risk of hydrocarbon 'drop-out'		Develop and implement a flare inspection and maintenance programme to ensure flare is operating efficiently.		During flaring	Flaring monitoring (see Row M1-9 in Table 11-4)
			Use a high-efficiency (> 95% design efficiency) test flare burner head equipped with an appropriate combustion enhancement system to minimise emissions and hydrocarbon 'drop-out' during well testing.			
			Minimise the volume of hydrocarbons flared and well-test durations.			

Aspect	Environmental and Social Performance Objectives / Impact Management Outcomes or Targets	Associated Plan and Procedure	Mitigation / Management Actions	Respon-sibility	Frequency / Timing	Monitoring and record keeping
3.12 Light Pollution Control During General Operation and Flaring						
Increased ambient lighting	Protect marine fauna, migratory birds and seabirds by managing illumination of the project vessels Zero fatalities of marine fauna, migratory birds and seabirds	Drilling programme	• Reduce lighting on the support vessels and drilling unit to a minimum compatible with safe operations whenever and wherever possible. • Positioning light sources, if possible and consistent with safe working practices, in places where emissions to the surrounding environment can be minimised.	Drilling Contractor	Throughout operations	Lighting monitoring (see Row M2-5 in Table 11-4)
			• Keep disorientated, but otherwise unharmed, seabirds in dark containers (e.g., suitably ventilated cardboard box) for subsequent release during daylight hours. • Report ringed/banded birds to the appropriate ringing/banding scheme (details are provided on the ring).		As required	Record information on patterns of bird reaction to lights and real incidents of injury/death, including stray land birds resting on the project vessels
3.13 Noise Pollution Control During General Operation						

Increased ambient noise levels from vessel and drilling operations (non-impulsive)	Protect marine fauna, migratory birds and seabirds by managing emitted noise levels by vessels and drilling operations	Drilling programme	• Implement a maintenance plan to ensure all diesel motors and generators receive adequate maintenance to minimise noise emissions.
			• During normal operations ensure vessel transit speed between the drill area and port remain within operational speed limits:
			  ○ Supply vessel: 10-13 knots
			  ○ Fast supply vessel: 17-20 knots
			  ○ Crew change vessel: 20-25 knots
			• Speed should be reduced to operational speed range minimums within 25 km of the coast
				Drilling contractor	Throughout operations	Vessel speed

3.14 Bunkering / Refuelling at Sea						
Spill of hydrocarbons to sea	Protect marine environment Minimise disturbance / damage to marine life	Stakeholder Engagement Plan	• Transfer of oil at sea is not permitted within the economic zone (i.e., 200 miles from the coast) without the permission of the Ministry of Works and Transport. • Submit an application (including location, supplier and timing) for the transfer of oil at sea (outside of port limits) to the Ministry of Works and Transport.	Contractors	As required, at least 5 days prior to refuelling	Provide copies of the correspondence with the Ministry of Works and Transport and approval for bunkering

Aspect	Environmental and Social Performance Objectives / Impact Management Outcomes or Targets	Associated Plan and Procedure	Mitigation / Management Actions	Respon-sibility	Frequency / Timing	Monitoring and record keeping
		Contractor HSSE Plan Contractor Bridging Document SOPEP	• Ensure offshore bunkering complies with Namibian laws and international maritime regulations, such as MARPOL, to ensure operations meet global standards for pollution prevention: • Ensure offshore bunkering activities are undertaken by trained and experienced personnel, with appropriate safety protocols in place, to prevent accidents during fuel transfer, including task-specific job hazard analyses.		During bunkering	Bunkering (see Row M5-3 in Table 11-4) Spill monitoring (see Row M5-4 in Table 11-4) Record of all spills (Incident Register), including spill reports; emergency exercise reports; audit reports.
3.15 Operation of Helicopters for Crew Changes, Servicing, etc.						
Increased ambient noise levels	Minimise disturbance / damage to marine and coastal fauna All pilots are briefed on sensitivity of bird and seal colonies and whale breeding areas	Flight path design	Pre plan flight paths to avoid seal and bird colonies (including colonies and hauls out sites at Altas Bay, Wolf Bay, Long Island and Possession Island) or any of the Islands within the NIMPA. If not possible a minimum altitude of 762m/2 500ft should be maintained except when taking off/landing, in an emergency, and for weather reasons.	Helicopter contractor	All flights between drilling unit and onshore Logistics / Aviation base	Copy of set flight path (including altitude) Helicopter logs Deviations from set flight paths
			Pre-plan flights to avoid extensive low altitude (<762 m or 2 500 ft) flights parallel to the shore.			
		Environ-mental Awareness Training	Comply fully with aviation and authority guidelines and rules.			
			Brief all pilots on the ecological risks associated with flying at a low level along the coast or above marine mammals.			

Aspect	Environmental and Social Performance Objectives / Impact Management Outcomes or Targets	Associated Plan and Procedure	Mitigation / Management Actions	Respon-sibility	Frequency / Timing	Monitoring and record keeping
3.16 Shore-Based Community Social Dynamics						
Impacts to shore-based community health and safety	Reduce undesirable behaviour and associated impacts to shore-based community health and safety.	BW Kudu Code of Conduct	Implement a mandatory code of conduct applicable to all crew members while onshore, which lays out appropriate behaviour in the host community.	Drilling contractor	Throughout operations	Copy of attendance register and training records.
			Ensure workers receive induction courses upon arrival and departure, covering the prevention and treatment of sexually transmitted diseases, gender-based violence, and other anti-social behaviours.			Grievance questions, solution and outcome monitoring (see Row M4-1 in Table 11-4)
			Provide appropriate formal accommodation to crew members while onshore.			Grievance register.
4. Demobilisation Phase						
4.1 Abandonment and / or Suspension of Wells						
Sealing and testing of wells	Isolate permeable and hydrocarbon bearing formations and avoid leakages	Drilling programme	Seal well by inserting cement plugs in the well bore at various levels according to good oilfield practice.	Drilling Contractor	On completion of well drilling	Log on pressure testing the abandonment cement plugs
			Test for integrity.			Test results
			Remove BOP stacks and any other equipment that may have dropped on the seafloor.			ROV footage
			For any suspended wells located in water depths >300 m, install an over-trawlable cap to reduce the risk of damage to demersal trawling gear and the wellhead			
Increased hard substrate on seafloor	Minimise impact on other users of the sea	Waste Management Plan	Ensure any excess cement onboard the drilling unit is shipped to shore for storage or disposal.			Waste receipts
	Minimise impact on other users of the sea Ensure navigational safety	Stakeholder Engagement Plan	Ensure suspended well locations are surveyed and accurately charted with SANHO. Also, notify the Ministry of Works & Transport: Directorate of Maritime Affairs who will then send out a Marine Circular notifying other offshore users.			Correspondence with SANHO
		Emergency Response Plan	• Undertake final clearance survey by ROV to confirm the status of seafloor around the well to ensure no dropped equipment remain.			Seafloor monitoring (see Row M5-2 in Table 11-4)

Aspect	Environmental and Social Performance Objectives / Impact Management Outcomes or Targets	Associated Plan and Procedure	Mitigation / Management Actions	Respon-sibility	Frequency / Timing	Monitoring and record keeping
			• Retrieve lost objects / equipment, where practicable, after assessing the safety and metocean conditions. • Refer to lost equipment in Row 5.2 for equipment that can't be retrieved.			
4.2 Stakeholder Participation						
Safety zone around drilling unit	Ensure navigational safety Notification of all key maritime stakeholders	Stakeholder Engagement Plan	Inform all key stakeholders including SANHO and the Ministry of Works & Transport: Directorate of Maritime Affairs (refer to Row 2.1) that the drilling unit and support vessels are off location and provide details of wellhead abandonment.	BW Kudu	Within two weeks after completion of drilling	Copies of notification documentation required
			Maintain a functional grievance mechanism / procedure that allows stakeholders to register specific questions or grievances related to operations, by ensuring they are informed about the process and that resources are mobilised to manage the resolution of all grievances, in accordance with the Grievance Management procedure.	BW Kudu, Drilling Contractor	Throughout the drilling campaign	Grievance, questions, solution and outcome monitoring (see Row M4-1 in Table 11-4) Copy of grievance register and responses
Information sharing	Expand knowledge base	Stakeholder Engagement Plan	Take steps to share data collected during the drilling programme (e.g. ROV video footage of the benthic environment), if requested, to resource managers (e.g. MFMR).	BW Kudu	If requested	
4.3 Air Pollution Control						
Emissions to the atmosphere	As per operation phase – refer to Row 3.8.					
4.4 Pollution Control and Waste and Discharges Management						
Discharge of liquid and solid waste to sea	As per operation phase – refer to Row 3.10.					
4.5 Light Pollution Control						
Increased ambient lighting	As per operation phase – refer to Row 3.12.					

Aspect	Environmental and Social Performance Objectives / Impact Management Outcomes or Targets	Associated Plan and Procedure	Mitigation / Management Actions	Respon-sibility	Frequency / Timing	Monitoring and record keeping
4.6 Noise Pollution Control						
Increased ambient noise	As per operation phase – refer to Row 3.13.					
4.7 Shore-Based Community Social Dynamics						
Impacts to shore-based community health and safety	As per operation phase – refer to Row 3.16.					
Retrenchment	Minimise impact of retrenchment	Local Content Plan	Offer a general training opportunity to any staff that will be retrenched at the end of the appraisal programme on how to position themselves for other employment opportunities.	BW Kudu	Prior to retrenchment contracting	Training programme
5. Unplanned Events						
5.1 Minor Oil Spills						
Minor oil spill caused by vessel or equipment failure and refuelling	Minimise impact to the marine fauna and the environment by implementing response procedures efficiently	SOPEP Emergency Response Plan	Implement emergency plans in Row 1.1 above. Ensure personnel are adequately trained in both accident prevention and immediate response, and resources are available on each vessel. • Mop up any spills onboard immediately with biodegradable low toxicity detergents. • Use oil absorbent. 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. Where diesel, which evaporates relatively quickly, has been spilled, the water should be agitated or mixed using a propeller boat/dinghy to aid dispersal and evaporation. Use low toxicity dispersants, based on a site/spill specific assessment, as approved by MFMR/MEFT. Ensure adequate resources are available to collect and transport oiled birds to a cleaning station as per specific protocols for capturing and transporting oiled seabirds as outlined in the OSCP and associated wildlife response plan.	Contractors	In event of spill	Spill monitoring (see Row M5-4 in Table 11-4) Record of all spills (Incident Register), including spill reports; emergency exercise reports; audit reports Incident log

Aspect	Environmental and Social Performance Objectives / Impact Management Outcomes or Targets	Associated Plan and Procedure	Mitigation / Management Actions	Respon-sibility	Frequency / Timing	Monitoring and record keeping
5.2 Equipment Loss						
Obstruction on seafloor or in water column	Protect sensitive seabed habitat	Preventive Maintenance Plan	Ensure containers are sealed / covered during transport and that loads are lifted using the correct lifting procedure and within the maximum lifting capacity of crane system.	Contractors	During operation	Equipment monitoring (see Row M2-6 and 5-2 in Table 11-4) Establish a hazards database listing: • the type of gear lost • date of abandon-ment / loss • location; and where applicable, the dates of retrieval
			Minimise the lifting path between vessels.			
			Maintain an inventory of all equipment and undertake frequent checks to ensure items and equipment are stored and secured safely on board each vessel.			
Obstruction on seafloor or in water column	Minimise risk of collision / accident / entanglement and inform relevant parties	Emergency Response Plan	• Undertake a post drilling ROV survey to scan seafloor for any dropped equipment and other removable features near to the well. • In the event that equipment is lost during the operational stage, assess safety and metocean conditions before performing any retrieval operations.	Contractors	As required	
			Notify SANHO and the Ministry of Works & Transport: Directorate of Maritime Affairs 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.	Drilling Contractor	As required	Copies of all correspondence
5.3 Faunal Collisions with Project Vessels						
Vessel strikes	Minimise risk of collision with large cetaceans	Drilling programme Emergency Response Plan	Keep a constant watch from all vessels (Vessel Captain and crew) for cetaceans and turtles in the path of the vessel. Alter course and avoid animals when necessary.	Drilling Contractor	During transit	Vessel speed
			During normal operations ensure vessel transit speed between the drill area and port remain within operational speed limits: • Supply vessel: 10-13 knots • Fast supply vessel: 17-20 knots • Crew change vessel: 20-25 knots Speed should be reduced to operational speed range minimums within 25 km of the coast.			
			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.		As required	

Aspect	Environmental and Social Performance Objectives / Impact Management Outcomes or Targets	Associated Plan and Procedure	Mitigation / Management Actions	Respon-sibility	Frequency / Timing	Monitoring and record keeping
5.4 Well Blow-Out						
Major oil spill from well blow-out	Minimise impact to the marine fauna and the environment by implementing response procedures efficiently	BOCP OSCP ERP SOPEP	Implement emergency plans in Row 1.1 above.	Drilling Contractor	In event of loss of well control or well blow-out	Spill monitoring (see Row M5-4 in Table 11-4) Record of all spills (Incident Register), including spill reports; emergency exercise reports; audit reports Incident log
			Undertake oil spill response exercises as specified in the OSCP.			
			Ensure contract arrangements and service agreements are in place to implement the OSCP, e.g. capping stack, SSDI kit, surface response equipment (e.g. booms, dispersant spraying system, skimmers, etc.), dispersants, response vessels, etc			
			Use low toxicity dispersants, based on a site/spill specific assessment, as approved by MFMR/MEFT.			
			Ensure oil spill equipment is mobilised and installed on vessels in line with the OSCP.	Drilling Contractor		
			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, implement methods to monitor and track the behaviour and size of the spill and optimise available response resources (e.g. Synthetic Aperture Radar (SAR), drift buoys, surveillance planes and satellite imaging).			
	Minimise socio-economic impact to individuals, companies and other organisations	Stakeholder Engagement Plan	Submit proof of financial insurance and assurances to NAMCOR to manage all damages and compensation requirements in the event of an unplanned pollution event.	BW Kudu		Proofs submitted to MME
			• Ensure effective distribution of accurate, transparent and timely reports and updates regarding the spill and response efforts to avoid the spread of speculation and misinformation. • Develop and implement a Community Engagement Plan to ensure that local and national stakeholders are effectively informed about the causes and effects of the blowout and measures to contain it and to address impacts. • Establish a functional grievance mechanism that allows stakeholders to register specific questions or grievances related to operations, by ensuring they are informed about the process and that resources are mobilised to manage the resolution of all grievances, in accordance with the Grievance Management procedure.	Drilling contractor		Grievance, questions, solution and outcome monitoring (see Row M4-1 in Table 11-4) Copy of grievance register and responses