Executive Summary

1.0 Introduction

This Executive Summary provides a synopsis of the Draft Environmental and Social Impact Assessment (ESIA) Report prepared as part of the ESIA that is being undertaken for an application to undertake appraisal well drilling in Block 2814A off the southern coast of Namibia (**Figure 1**).

1.1 Project Background and Location

BW Kudu Limited (BW Kudu), a subsidiary of BW Energy, is the holder of a Petroleum Production Licence (PPL) 003 for Block 2814A. Block 2814A covers an area of approximately 4 568 km^2 and is located 85 km offshore at its closest point, in water depths ranging from 150 m to 750 m.

BW Kudu is applying to undertake appraisal activities within Block 2814A. The proposed offshore appraisal programme includes:

- Seabed sampling; and
- Drilling up to four appraisal wells, including:
  - Vertical Seismic Profiling (VSP);
  - Well testing; and
  - Plugging and abandonment / suspension of wells.

The proposed Project triggers a number of listed activities in terms of the Environmental Impact Assessment (EIA) Regulations 2012. As such, it requires an Environmental Clearance Certificate (ECC) before such activities can commence. SLR Environmental Consulting (Namibia) (Pty) Ltd (SLR) has been appointed by BW Kudu to manage the ECC application and undertake the ESIA process for the proposed appraisal activities.

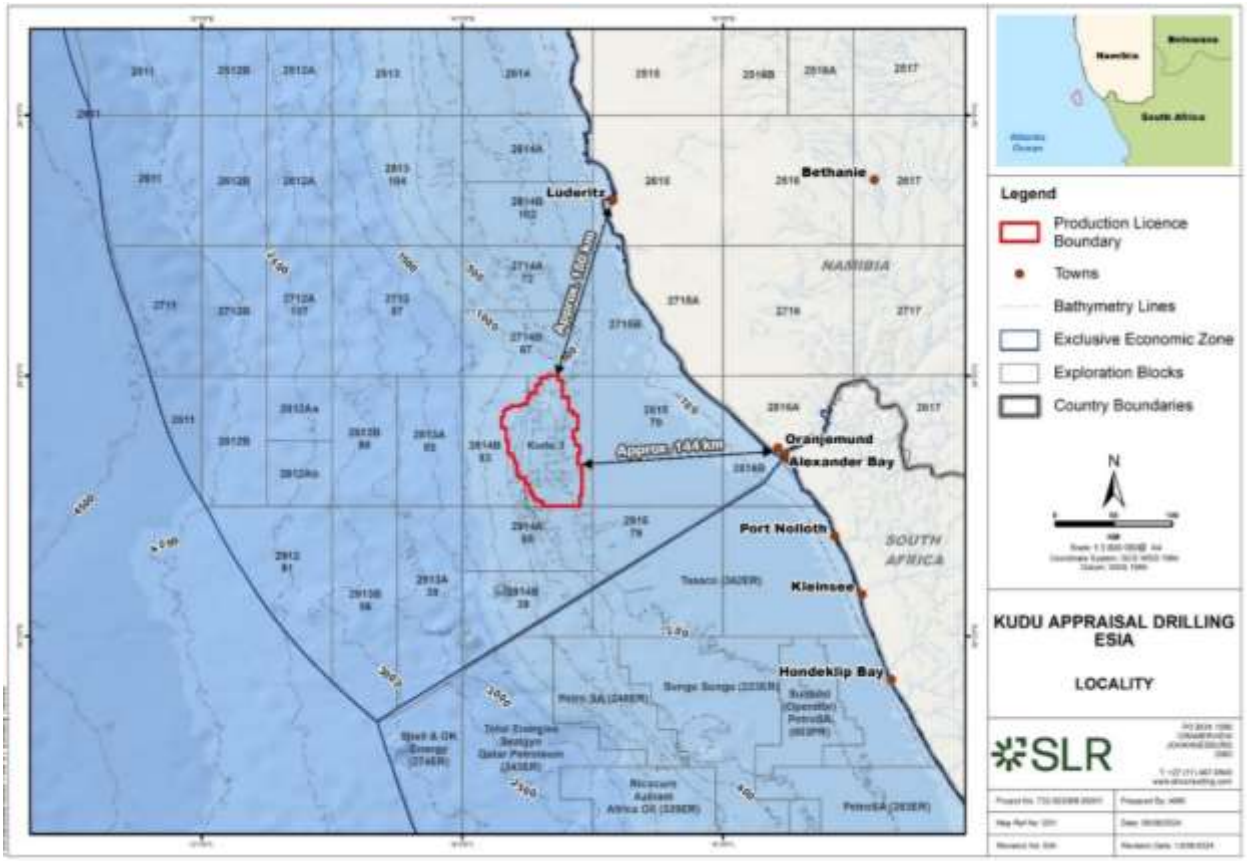

Figure 1: Locality map of Block 2814A (PPL 003) off the southern coast of Namibia and surrounding Blocks

1.2 Purpose of this Report and Opportunity to Comment and Attend Public Meetings

This Draft ESIA Report has been prepared in compliance with Section 15(2) of the EIA Regulations 2012, as part of the ESIA process that is being undertaken for the application by BW Kudu for proposed appraisal well drilling activities in Block 2814A. The key objective of this report is to identify, assess and report on potential impacts the proposed Project may have on the receiving environment. This ESIA Report thus describes and analyses what the consequences of the Project activities will be in terms of potential impacts on the biophysical and socio-economic environment. The ESIA Report also identifies, by applying the Mitigation Hierarchy, how negative impacts can, as far as possible, be avoided or mitigated and controlled, and how positive impacts can be enhanced.

This Draft ESIA Report is available for public comment from **12 February to 14 March 2025,** and Interested and Affected Parties (I&APs) are invited to comment on any aspect of the proposed activities and the findings of the ESIA process.

Copies of the full report are available on the SLR website (https://www.slrconsulting.com/public-documents/BWKudu-ESIA) and at the following locations:

Location	Name of Facility	Physical Address
Walvis Bay	Walvis Bay Library	Nangolo Mbumba Drive, Civic Centre
Lüderitz	Lüderitz Library	Ring Street

Any comments should be sent to SLR by scanning the QR code below, following to associated link to the online form or submit using the contact details provided alongside.

Stakeholders are also invited to attend public meetings in Walvis Bay and Lüderitz that will be held during the Draft ESIA Report comment and review period. Specific details of these meetings are provided below.

Location	Name of Venue	Date and Time
Lüderitz	The Nest Hotel	18 February 2025, 10h00
Walvis Bay	The Protea Indongo Hotel	19 February 2025, 11h00

Comments received on the draft report will be documented and responded to in a Comments and Responses Report. The draft report will be updated into a Final EIA Report, to which the Comments and Responses Report will be appended. The final report will be submitted to the Ministry of Mines and Energy (MME): Energy Directorate for consideration and review. In terms of Section 32 of the Environmental Management Act, 2007 (No. 7 of 2007), MME is then required to make a recommendation on the acceptance or rejection of the report to the Ministry of Environment, Forestry and Tourism (MEFT): Directorate of Environmental Affairs (DEA), who will make the final decision on the ECC application.

QR Code and Link for the online Registration / Comment Form

https://forms.office.com/e/Fe8nP3nL9y

SLR contact details

Email: BWKuduPPL003@slrconsulting.com

Tel: +264 61 231 287

Postal Address: PO Box 86386, Windhoek

2.0 ESIA Process

The ESIA process consists of two phases (namely Scoping and Impact Assessment) and a series of steps to ensure compliance with the EIA Regulations, 2012 (**Figure 2**).

The ESIA is currently in the Impact Assessment Phase.

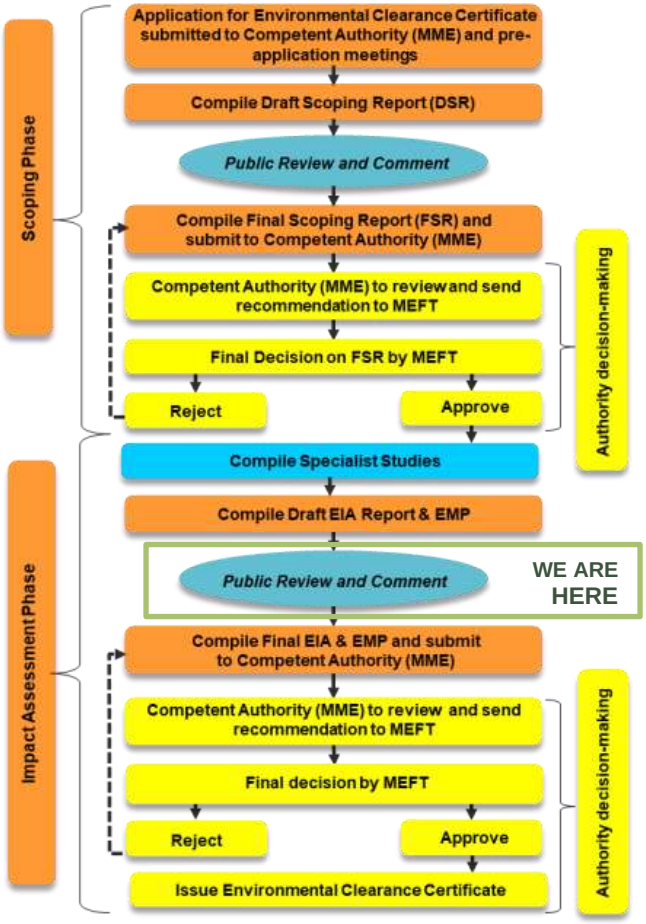

Figure 2: Namibian ESIA Process

2.1 Scoping Phase

Objective: To define the scope of the proposed activities, identify potential environmental and social impacts, and develop the terms of reference (i.e. plan of study) for specialist studies. This phase aims to ensure that all relevant issues are identified at the start of the ESIA for consideration in the Impact Assessment Phase.

Key Activities:

- **Notification of I&APs**: Stakeholders, including local communities, government agencies, and non-governmental organisations, were informed about the proposed activities and invited to participate in the ESIA process.
- **Public and Stakeholder Consultation**: A Draft Scoping Report (DSR) was released for a 30-day comment period and public meetings were held to gather input and concerns from I&APs. These consultations provided valuable insights into local conditions and stakeholder expectations.
- **Identification of Key Environmental and Social Aspects**: Potential impacts were identified based on the proposed activities, baseline studies, and stakeholder input. This formed the basis for further investigation undertaken during the Impact Assessment Phase and presented in this report.

The Final Scoping Report (FSR) was accepted by the MEFT on 5 February 2025, which confirmed that the FSR provided adequate identification of significant impacts and that SLR may proceed with the detailed assessment in accordance with Regulation 14 and 15 of the EIA Regulations 2012.

2.2 Impact Assessment Phase

Objective: To carefully study and understand the potential impacts identified during the Scoping Phase and to develop mitigation measures to avoid and / or reduce their effects. This phase aims to ensure the proposed activities, if authorised, move forward with minimal negative effects on the environment and society.

Key Activities:

- **Technical Modelling Studies**: Advanced models were used to assess underwater noise, drilling discharges and unlikely oil spills. These models helped specialists predict the extent and severity of potential impacts and how to respond effectively to potential impacts.
- **Specialist Studies**: Detailed investigations were conducted on marine ecology, fisheries, socio-economic, air quality and climate change impacts. These studies, which are appended to this report, provide an understanding of the potential impacts and inform the development of mitigation measures.
- **Mitigation Hierarchy:** The assessment follows a plan to avoid, minimise, and manage negative impacts. This makes sure the proposed activities use the best and most sustainable solutions available.
- **Public and Stakeholder Consultations**: This Draft ESIA Report has been

released for a 30-day review and comment period, and meetings are being held to present the findings of the impact assessment.

- **Decision-making:** The Final EIA Report will be submitted for decision-making, after which all registered I&APs will be notified of the decision.

3.0 Description of the Proposed Activities

3.1 Overview of Proposed Activities

The key activities and components are summarised in **Table 1**.

Table 1: Summary of key activities and components

Seabed Sampling	
Purpose	Characterise the seafloor and for laboratory geochemical analyses for drilling unit anchoring purposes
Method	Piston and box coring (or grab samples)
Number of samples	Up to 50
Duration	6 weeks
Appraisal Drilling	
Purpose	Confirm and test the presence and quality of hydrocarbon resources
Number of wells	Up to 4 appraisal wells
Size of area for drilling	4 568 km^2
Well depth	~ 4 900 m
Water depth range in Block	150 m - 750 m
Duration to drill each well	• 100 days in total per well: ○ Mobilisation: 5 days (within country) ○ Well drilling: 70 days, ○ Well testing (drill stem test): 15 days (optional) ○ Well abandonment: 5 days per well ○ Demobilisation: up to 5 days
Commencement of drilling and anticipated timing	• Commencement is not confirmed, but anticipated to be in the Q3 of 2025. The ESIA assumes two wells could be drilled in the first year and two wells in the second year.
Proposed drilling fluids (muds)	• Water-Based Muds (WBM) during the riserless drilling stage • Non-Aqueous Drilling Fluid (NADF) during the risered drilling stage (closed loop system)
Drilling and support vessels	• Drillship or semi-submersible drill rig • Three support vessels. These vessels will be on standby at the drilling site, and move equipment and materials between the drilling unit and the onshore base
Operational safety zone	Minimum 500 m around drilling unit; however, operators are likely to request 2 nm
Flaring (non-routine)	If hydrocarbons are discovered, well testing / drill stem test (DST) may be performed
Logistics base	Walvis Bay (preferred location) or the Port of Lüderitz
Logistics base components	Office facilities, laydown area, mud plant
Support facilities	Helicopter support base in Lüderitz (preferred alternative) or Oranjemund
Staff requirements	• Specialised drilling staff supplied with hire of drilling unit • Specialised international and local staff at logistics base
Staff changes	Rotation of staff every four weeks with transfer by helicopter to shore

3.2 Drill Unit, Vessel Support and Onshore Logistics Base

- *Drilling Unit*: BW Kudu is proposing to use a drillship or semi-submersible drilling unit to undertake the proposed appraisal activities. The final drilling unit selection will depend on availability and final design specifications. The drilling unit will either be dynamically positioned (water depths > 450 m) or need to be anchored (water depths < 450 m).
  A temporary 500 m safety zone (or large if the drilling unit is anchored) around the drilling unit will be enforced at all times during operation.
- *Support vessels*: The drilling unit is expected to be supported by up to three support vessels between the drilling unit and onshore logistics base.
- *Helicopter support*: Transportation of personnel to and from the drilling unit by helicopter is the preferred method of transfer to and from Lüderitz/Oranjemund.
- *Logistics base*: The primary onshore logistics base will be located at either the Port of Walvis Bay (preferred alternative) or the Port of Lüderitz.

3.3 Drilling Operation

- *Final Drilling Site Selection*: Site selection will be based on further detailed analysis of available seismic, pre-drilling survey data and the geological target. A Remote Operating Vehicle (ROV) will be used to finalise the well position based on, *inter alia*, the presence of seafloor obstacles or the presence of any sensitive features that may become evident during a pre-drilling survey.
- *Drilling Sequence or Stages*: A well will be created by drilling a hole into the seafloor with a drill bit attached to a rotating drill string, which crushes the rock into small particles, called “cuttings”. After the hole is drilled, casings of steel pipe (which provide structural integrity to the newly drilled hole), are placed in the hole and permanently cemented into place. The diameter of the well decreases with increasing depth. Drilling is undertaken in two stages, namely the riserless and risered drilling stages (**Figure 3**).
  - *Initial (riserless) drilling stage:* At the start of drilling, a 42” hole will be drilled approximately 75 m deep. A conductor pipe is then run into the hole and cemented into place, after which a low pressure wellhead will be placed on top of the conductor. Further sections are then drilled to diameter of 26” to a depth of approximately 625 m. These initial sections of the hole will be drilled using seawater (with viscous sweeps) and Water Based Muds (WBMs). All cuttings and WBM from this initial drilling stage will be discharged directly onto the seafloor adjacent to the hole.
  - *Risered drilling stage:* This stage commences with the lowering of a Blow-Out Preventer (BOP) and installing it on the wellhead, which seals the well and prevents any uncontrolled release of fluids (e.g. oil, gas or condensate) from the well (a ‘blow-out’). A marine riser is installed on top of the BOP, which isolates the drilling fluid and cuttings from the environment creating a “closed loop system”. Drilling is continued by lowering the drill string through the riser, BOP and casing, and rotating the drill string. During the risered drilling stage, should the WBMs not be able to provide the necessary characteristics required to safely drill the well, a low toxicity Non-Aqueous Drilling Fluid (NADF) will be used. In instances where NADFs are used, cuttings will be treated to reduce oil content to <3% Oil On Cutting and discharged overboard.
- *Well Logging*: Once the target depth is reached, the well will be logged and possibly tested. Well logging involves the evaluation of the physical and chemical properties of the rocks in the sub-surface, and their component minerals, including water, oil and gas, to confirm the presence of hydrocarbons and the

petrophysical characteristics of the rock through which the hole has been drilled. Vertical Seismic Profiling (VSP) is an evaluation tool that is used when the well reaches target depth to generate a high-resolution seismic image of the geology in the well's immediate vicinity. The VSP images are used for correlation with surface seismic images. VSP uses a small airgun array, which is operated from the drilling unit. During VSP operations, receivers are positioned in a section of the borehole and the airgun array is discharged at intervals. This process is repeated for different stations in the well and may take up to nine hours to complete. BW Kudu is proposing to undertake one VSP operation per well, which would be scheduled towards the end of the drilling operations.

- *Well (flow) testing*: In case of hydrocarbon discovery, a well or flow test can be undertaken to determine the economic potential of the discovery before the well is either abandoned or suspended. A typical well test would take up to three days to complete (1 day flaring during clean-up, 2 days flaring during main test). For well flow-testing, hydrocarbons would be burned at the well site. If water from the reservoir arises during well flow testing, these would be separated from the oily components and treated onboard to reduce the remaining hydrocarbons from these produced waters. Treated produced water will then either be discharged overboard or transferred to an onshore facility for treatment and disposal (estimated volume of 300 m^3).
- *Well Sealing and Plugging:* Once drilling and logging are completed, the well(s) will be sealed with cement plugs, tested for integrity and abandoned according to international best practices.
- *Demobilisation:* After the appraisal wells have been sealed and tested for integrity, a decision would be made as to whether the wells would be abandoned or suspended. If the well(s) are to be abandoned, the wellheads will be removed (with casings cut-off below the seafloor). However, if the well(s) are to be suspended, the intention is to leave the wellhead(s) on the seafloor if it is deemed safe to do so based on a risk assessment. A final clearance survey check will be undertaken using an ROV, after which the drilling unit and supply vessels will demobilise from the offshore licence area.

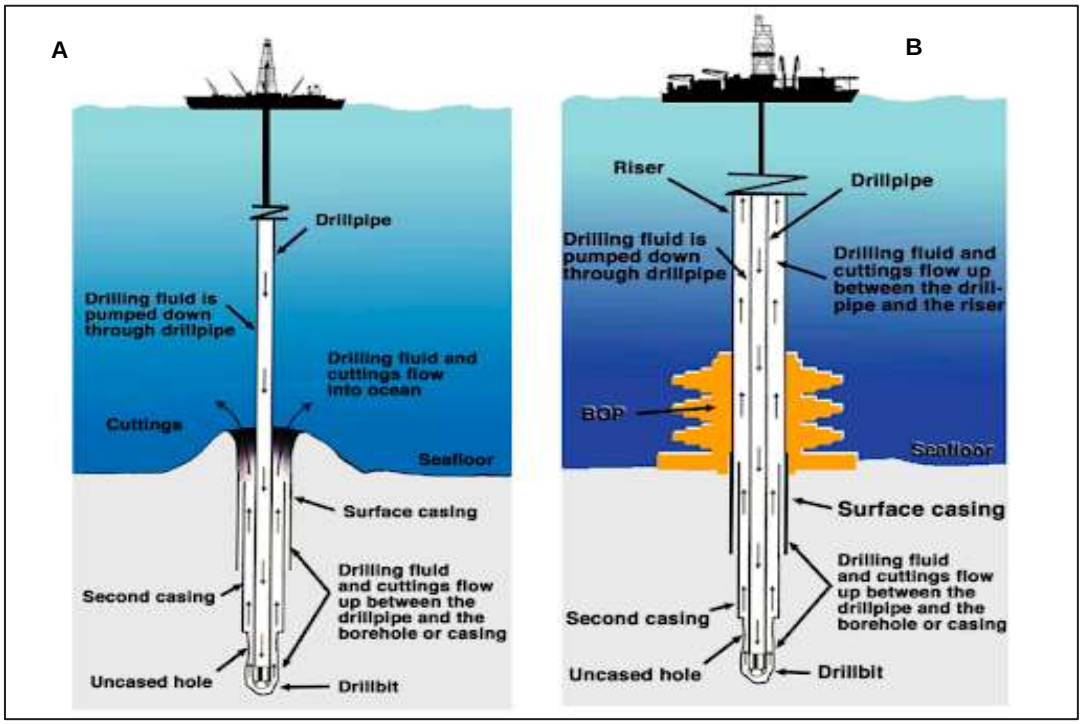

Figure 3: Drilling stages: (a) riserless drilling stage; and (b) risered drilling stage

3.4 Emergency Response

In the unlikely event of an oil spill, BW Kudu and the drilling contractor will have an emergency response plan and equipment in place to clean-up such a spill. In addition, BW Kudu will become a member of Oil Spill Response Limited (OSRL), which provides response equipment (e.g., dispersants, booms, and dispersant spray equipment including aircraft and the use of globally advanced capping stacks and other) in the event of a well blow-out.

These capping stacks are advanced devices designed to seal off a well and prevent oil from spilling into the ocean. OSRL keeps one of these capping stacks at its facility in Saldanha Bay, situated on the West Coast of South Africa. This equipment can be rapidly transported anywhere in the world by sea or air in case of an emergency.

4.0 Description of the Receiving Environment

Table 2 provides a brief description of the attributes of the receiving environment of the Licence Block and the central to southern Namibian offshore regional area.

Table 2: Summary of the Receiving Environment

Receptor/ Variable	Description Summary
1. Bio-physical considerations	
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, plankton levels and spawning are likely low due to the proximity to the LUCORC area.
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 Exclusive Economic Zone (EEZ) and experience limited impacts. However, the continental shelf is considered ‘Endangered’ due to habitat degradation from trawling (**Figure 4**). • Spawning levels near Block 2814A are expected to be low due to its proximity to the LUCORC area (**Figure 5**).

<table>
<tr><th>Receptor/ Variable</th><th>Description Summary</th></tr>
<tr><td></td><td>

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.

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<tr><td>Conservation and Protected Areas</td><td>

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.

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<tr><td colspan="2">2. Socio-economic considerations</td></tr>
<tr><td>Commercial Fisheries</td><td>

Namibia promotes mariculture, particularly in Lüderitz's nutrient-rich waters, with allocated plots for various seafood cultivation.
Block 2814A overlaps directly with the large pelagic longline, demersal trawl, demersal longline and pole-line sectors (Figures 6 to 9). Average annual catches and effort recorded within Block 2814A and the safety exclusion zone reported as a total and a percentage of the national totals are presented below.

<table>
<tr><th rowspan="2">Annual catch and effort</th><th colspan="2">Within Block 2814A</th><th colspan="2">Within Safety Exclusion Zone*</th></tr>
<tr><th>Total</th><th>Proportion of National Total</th><th>Total</th><th>Proportion of National Total</th></tr>
<tr><td colspan="5">Large Pelagic Longline (2010-2023)</td></tr>
<tr><td>Annual average catch (tonnes)</td><td>11</td><td>0.52%</td><td>93.0</td><td>4.44%</td></tr>
<tr><td>Annual average effort (no. of hooks)</td><td>6 212</td><td>0.35%</td><td>55 123.1</td><td>3.09%</td></tr>
<tr><td colspan="5">Demersal Trawl (2010-2021)</td></tr>
<tr><td>Annual average catch (tonnes)</td><td>532</td><td>0.46%</td><td>30.4</td><td>0.03%</td></tr>
<tr><td>Annual average effort (no. of trawls)</td><td>158</td><td>0.53%</td><td>7.7</td><td>0.03%</td></tr>
<tr><td colspan="5">Demersal Longline (2010-2023)</td></tr>
<tr><td>Annual average catch (tonnes)</td><td>135</td><td>1.70%</td><td>8.1</td><td>0.10%</td></tr>
<tr><td>Annual average effort (no. of hooks)</td><td>673 026</td><td>2.52%</td><td>26 861.0</td><td>0.10%</td></tr>
<tr><td colspan="5">Pole-line (2013-2022)</td></tr>
<tr><td>Annual average catch (tonnes)</td><td>11</td><td>1.71%</td><td>2.3</td><td>0.36%</td></tr>
<tr><td>Annual average effort (no. of poles)</td><td>84</td><td>6.00%</td><td>10.3</td><td>0.74%</td></tr>
<tr><td colspan="5">Notes:
Exclusion area of 4 320 km^2 (72 km radius) is considered for large pelagic longline fishery, while an exclusion area of 12.6 km^2 (2 km radius) is considered for the other fisheries.</td></tr>
</table>
</td></tr>
</table>

Receptor/ Variable	Description Summary
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 (**Figure 10**).
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.
Lüderitz	• Lüderitz is a small, relatively well serviced town. The remoteness of the town has impacted on the economic opportunities and connectivity with the rest of Namibia. It is, however, well placed to handle investments, in that it has infrastructure and is able to provide water, power and other basic services.
Walvis Bay	• Walvis Bay is an established, well serviced, medium sized, industrial harbour town. It is the most important harbour in Namibia. The town and its associated facilities, including the port services and accommodation, are sufficiently developed and have the capacity to cater for development projects.

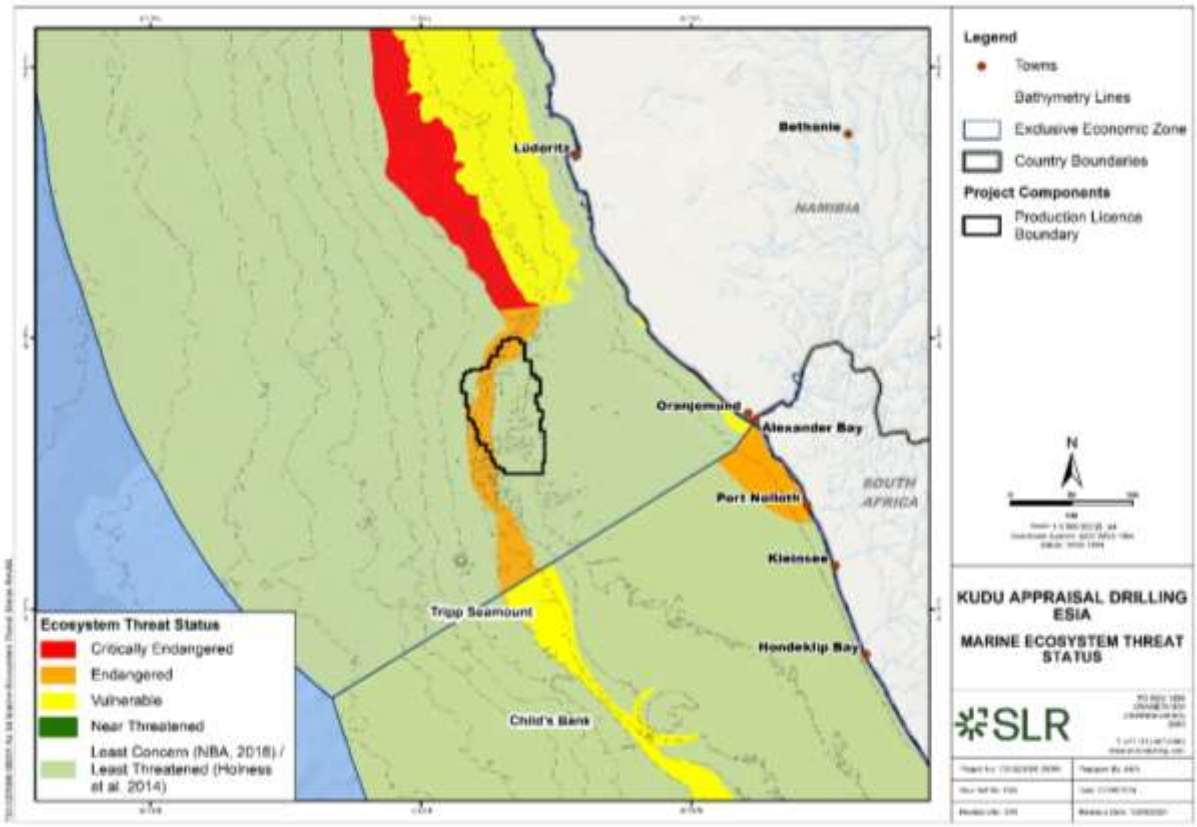

Figure 4: Block 2814A (black polygon) in relation to ecosystem threat status

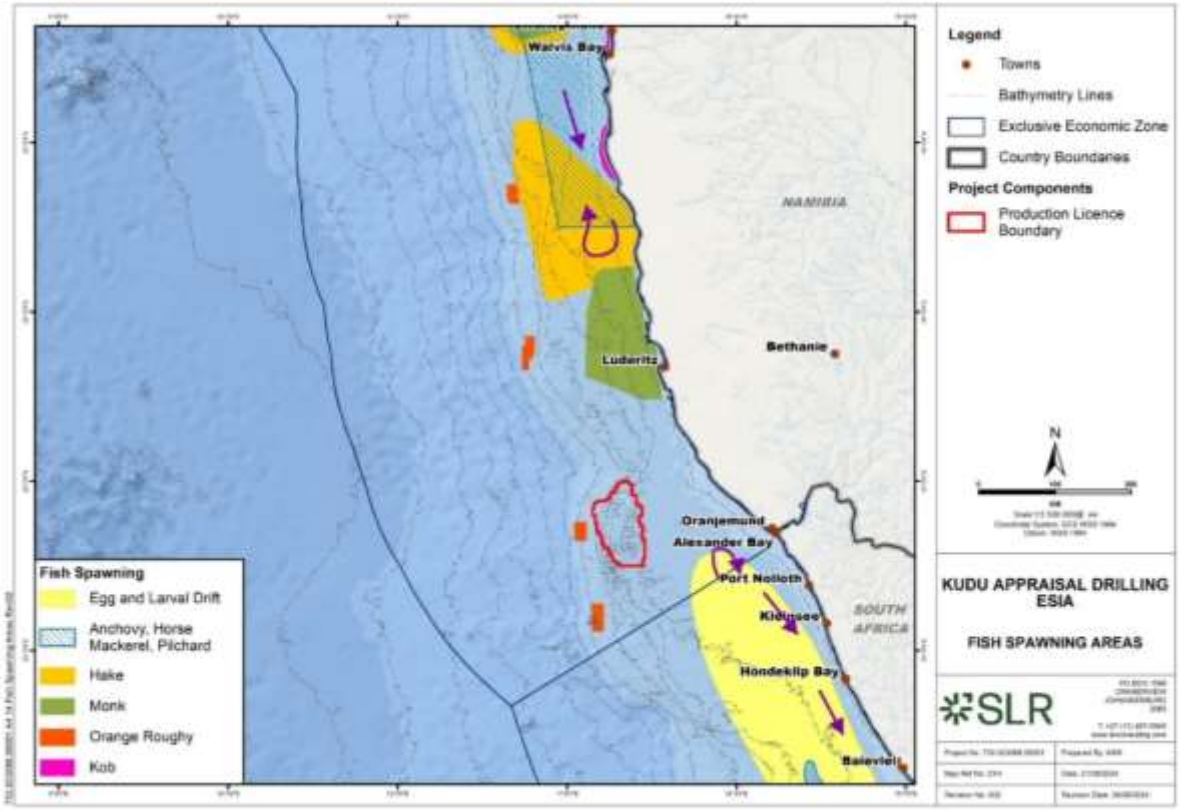

Figure 5: **Block 2814A (red polygon) in relation to major spawning areas in southern Namibia**

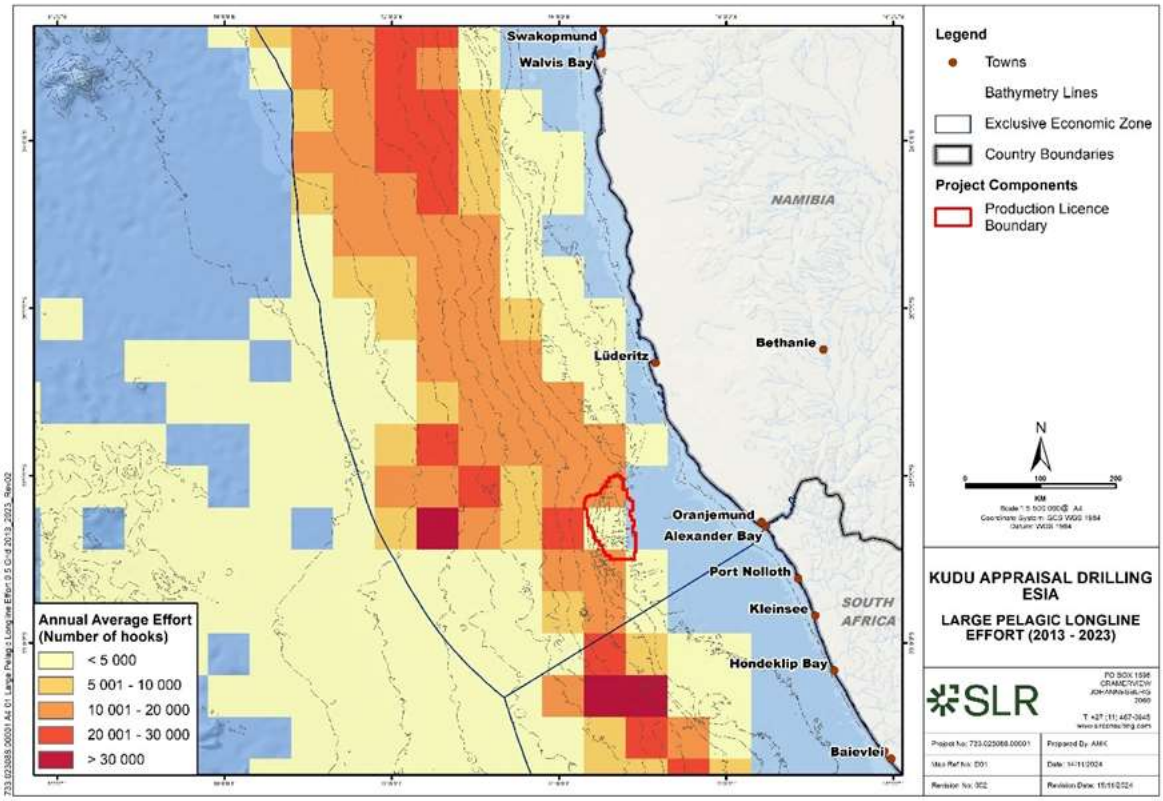

Figure 6: Spatial distribution of effort recorded by the large pelagic longline fishery in Namibia and South Africa in relation to Block 2814A

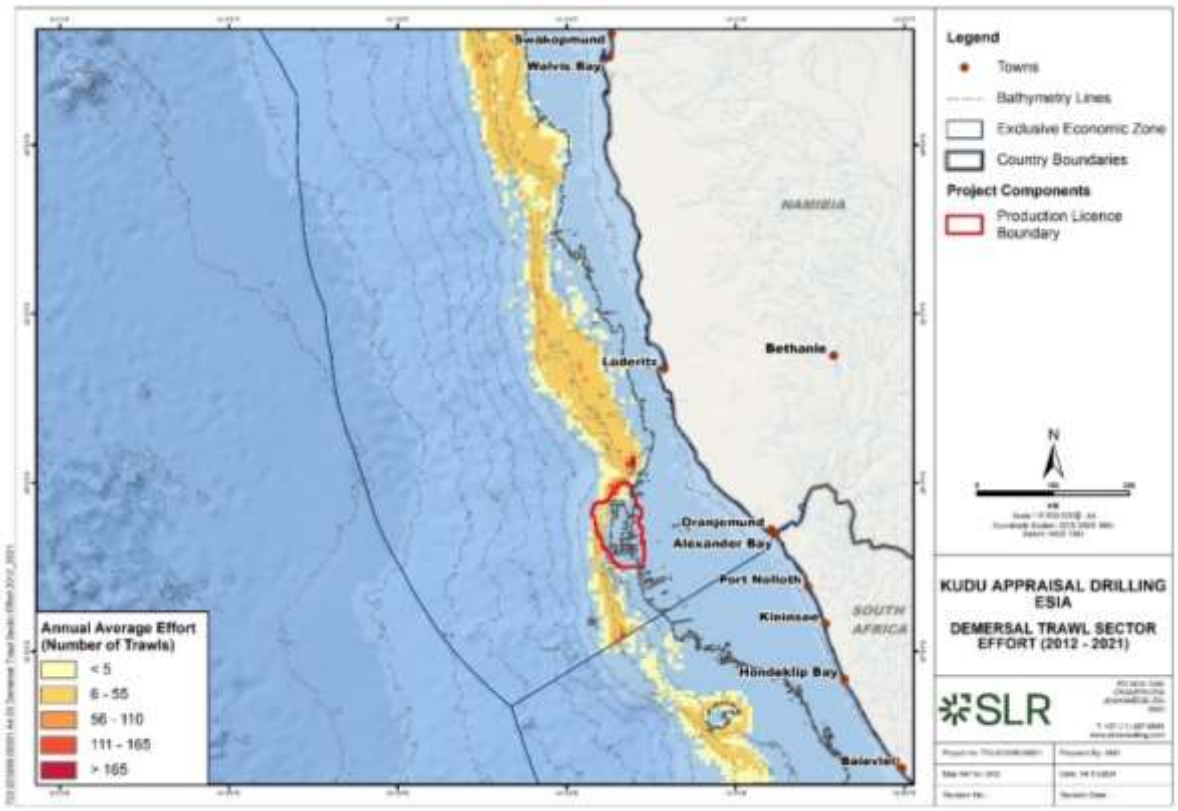

Figure 7: Spatial distribution of effort recorded by the demersal trawl fishery in Namibia and South Africa in relation to Block 2814A

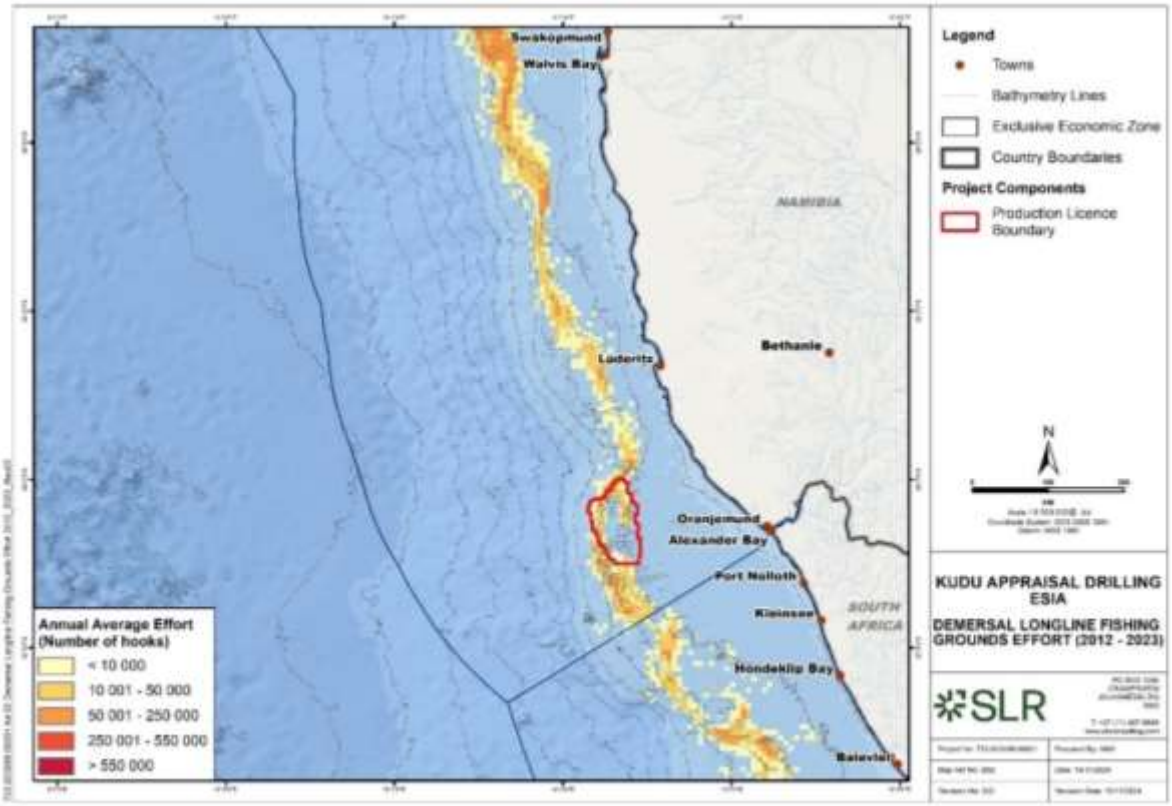

Figure 8: Spatial distribution of effort recorded by the demersal longline fishery in Namibia and South Africa in relation to Block 2814A

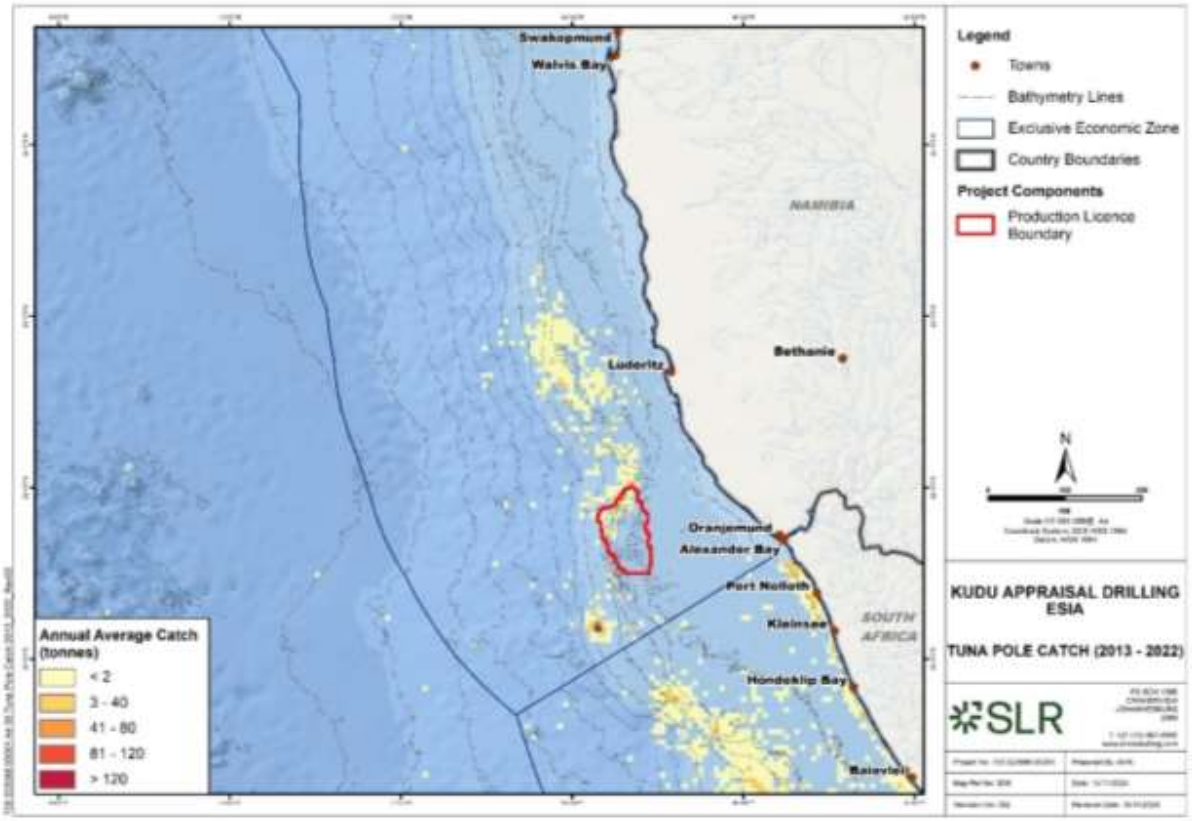

Figure 9: Spatial distribution of catch recorded by the pole-line fishery in Namibia and South Africa in relation to Block 2814A

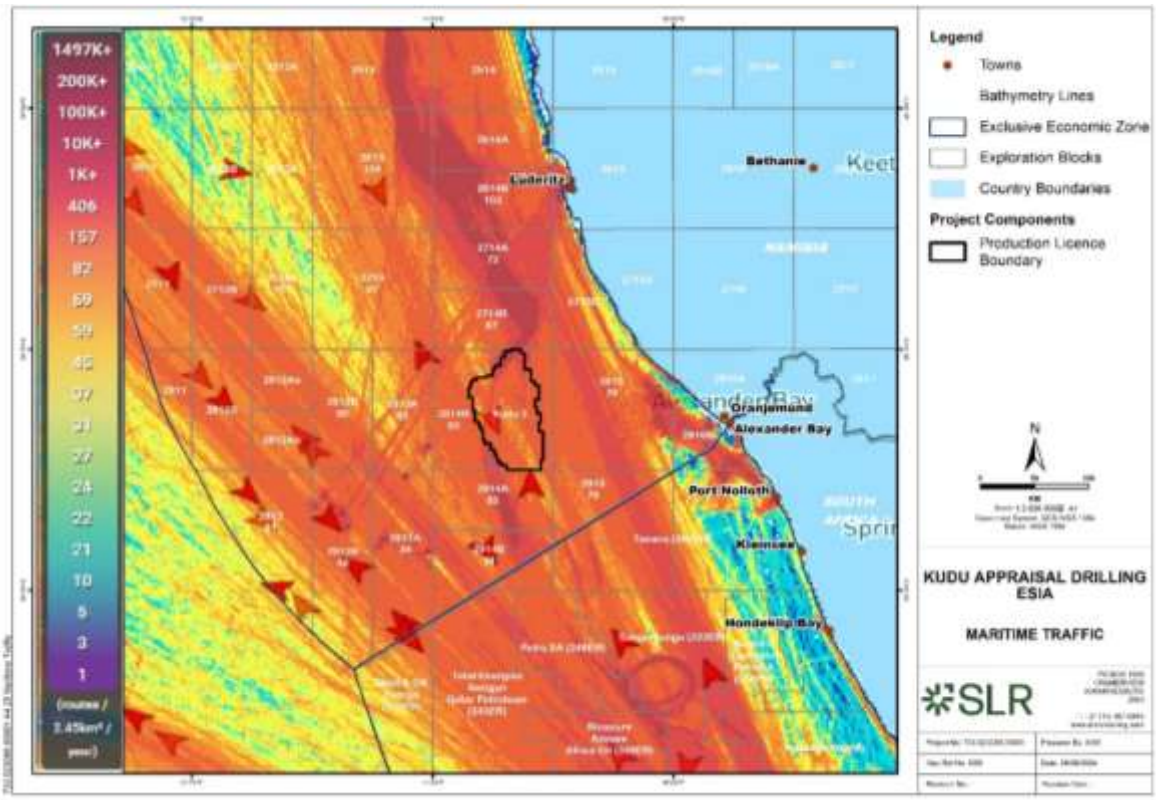

Figure 10: Block 2814A in relation to shipping density around southern Africa

5.0 Impact Assessment Summary

5.1 Summary of Potential Impacts from Normal Operations

5.1.1 Potential Marine Ecology Impacts

5.1.1.1 Physical Disturbance and/or Smothering of Benthic Fauna and Habitat

One of the potentially more significant impacts associated with the proposed appraisal drilling relates to the physical disturbance and / or smothering of vulnerable or sensitive benthic communities during spudding and the discharge of drill cuttings.

The benthic ecosystem habitat type in the licence area is mostly abundant and classified as 'Least Threatened'. It comprises fast-growing species that are able to rapidly recruit into disturbed areas that is thus less susceptible to the effects of smothering. In contrast, the benthos of deepwater hard substrata, which may occur in Block 2814A, are typically vulnerable to disturbance due to their long generation times. Furthermore, the benthic habitat of the north-eastern portion of the Licence Block is rated as 'Endangered', and the block falls predominantly within the Orange Shelf Edge EBSA, which is one of few places where these threatened benthic habitat types are in relatively natural / pristine condition.

The results of the cuttings dispersion modelling study largely confirm the reports of international studies which predict the effects of discharged cuttings to be localised. The cuttings discharged at the seabed during the riserless drilling stage typically create a cone close to the wellbore, thinning outwards. During the risered drilling phase, cuttings would be released at the sea surface from the drilling unit. The discharges would experience greater dispersion as they settle through the water column resulting in an elongated deposit that extends from the well in the direction of the prevailing currents. In terms of sediment thickness and smothering, modelling found that the largest deposition footprints with a deposition thickness of > 0.1 mm extended up to 1.3 km in a NW / N direction. The areas where accumulation exceeds a thickness of > 6.5 mm (which is considered to be a significant risk) are confined to a maximum distance of up to 153 m from the release point.

Although the cuttings deposition footprint is localised, it may overlap with as yet unmapped vulnerable communities on hardgrounds within the EBSA and/or the Endangered' benthic habitat within the licence block, depending on the final positions of the wells.

Tripp Seamount, which is an important feature because it attracts an abundance of marine life and is a productive fishing ground, is located 74 km south-west of Licence Block 2814A and falls well beyond the predicted deposition footprint (no overlap). Furthermore, all major fish spawning areas for commercial species (such as hake and kingklip) occur to the north and south and inshore of the Licence Block and beyond the depositional footprint (no overlap).

The avoidance of any sensitive and potentially vulnerable habitats within 200 m of a drill site, identified during pre-spudding ROV surveys, or the anchor spread area will reduce the impact of the smothering impact of sensitive and potentially vulnerable hardground communities to **LOW** significance. The recommended 200 m buffer from sensitive and potentially vulnerable habitats, which encompasses the area of significant cuttings deposition, is sufficient to minimise potential impacts on sensitive habitats. The impact on benthic communities associated with unconsolidated sediments, although of lower intensity compared to hardground habitats, is assessed to be of **MEDIUM** significance due to the higher likelihood of occurrence and the long-term impact timeframes with no additional mitigation being possible.

5.1.1.2 Toxicity and Bioaccumulation Effects on Marine Fauna

In addition to the smothering impact, benthic and pelagic fauna may also suffer indirect toxicity and bioaccumulation effects due to leaching of potentially toxic additives. WBMs will be used during the riserless drilling phase, where they will be discharged at the seabed together with the drill cuttings. For the risered sections, a low toxicity NADF (Group III) will be used. Where NADFs are used, cuttings will be treated on board the drilling unit to reduce

oil content (to <3% oil on cuttings) prior to discharge overboard.

Despite the widespread dispersion of the cuttings, toxicity effects may occur in the seabed sediments and in the water column from the potential solution of the constituents and additives of the discharged WBMs and NADFs.

In terms of toxicity effects in sediments, the cuttings dispersion modelling study found that the environmental risk relating to the *total concentration of chemicals* extends up to 1.3 km from the drill site, reducing to within between 310 m and 444 m after 10 years. Furthermore, modelling found that there was no significant biological risk to the benthic communities due to changes in *oxygen levels* (i.e. hypoxic conditions) after 41 days. The area of environmental risk related to toxicity may potentially overlap with as yet unmapped vulnerable communities on hardgrounds and endangered benthic habitat within the Licence Block, depending on the final positions of the wells. Again, the avoidance of any sensitive and potentially vulnerable habitats within 200 m of a drill site, identified during pre-spudding ROV surveys, and treatment of NADF cuttings prior to discharge will reduce the chemical impact on benthic fauna to **LOW** significance.

Considering the environmental risks in the water column, the modelling study found that the maximum cumulative risk during *riserless* drilling extends a maximum horizontal distance of 13.2 km in a north-westerly direction, reducing to 4.8 km after 1 day. During *risered* drilling, the significant risk in the water column also extends up to a maximum horizontal distance of approximately 13 km. Due to the rapid dilution of these constituents in the water column, the overall significant risk in the water column lasted for a maximum of 8 days. The treatment of NADF cuttings prior to discharge will ensure the residual impact on the water column is of **VERY LOW** significance.

5.1.1.3 Behavioural Disturbance of Marine Fauna

Underwater Noise from Vessels and Drilling Activities

Underwater noise will be generated by the project vessels and drilling (non-impulsive noise), as well as VSP operations (impulsive noise). Underwater noise generated by the proposed appraisal activities could impact marine fauna in number of different ways, including physiological injury (permanent or temporary), and disturbance and / or behavioural changes.

Noise modelling predicts that *non-impulsive noise from vessels and drilling activities* could result in behavioural disturbance in turtles, fish and cetaceans up to distances of 30 m, 240 m and 12.5 km from the noise source, respectively. Thus, pelagic species passing through the area may show some behavioural responses to noise generated during drilling. Key southern right calving and nursing areas, located off Lüderitz and Elizabeth Bay, as well as Tripp Seamount, fall outside of the proposed maximum behavioural impact zones, and are thus not expected to be impacted.

Potential behavioural disturbance from the *impulsive noise from VSP operations* is predicted to occur for marine mammals of all hearing groups up to 690 m from the source. In the case of turtles and fish, potential behavioural disturbance is predicted to occur up to 150 m and 1.5 km from the source, respectively.

Due to the proximity of Block 2814A to the main marine traffic routes experiencing increased vessel noise, the potential impact of behavioural disturbance on marine fauna due to vessel and drilling noise is considered to be of **VERY LOW** significance. Behavioural effects are generally short-term, with duration of the effect being less than or equal to the duration of exposure.

The zones of impact for vessel and drilling noise *(non-impulsive noise)* leading to potential permanent (PTS) and temporary (TTS) injury for cetaceans (assuming 0.5 hr exposure, which is unlikely as most pelagic species would be expected to move away from the sound source before trauma could occur) extend up to 30 m and 240 m from the drill site, respectively, with low frequency cetaceans (such as southern right and humpback whales) showing the highest sensitivity. The injury threshold for fish is not reached for non-impulsive noise. Considering VSP operations (impulsive noise), animals would need to be relatively close to the VSP

source to be affected (marine mammals: 350 m (low frequency); fish: 170 m and turtles: 40 m). Cetaceans and fish, being highly mobile, would be able to move away from the sound source before injury occurs.

Considering the zones of impact above, the existing elevated noise due to marine traffic and proposed mitigation (including a pre-start faunal scan, "soft-start" procedure and temporary termination of the acoustic source if cetaceans, penguins, shoaling large pelagic fish or turtles are sighted within the 500 m mitigation zone), the residual impacts on marine fauna due to vessel / drilling and VSP noise are considered to be of **VERY LOW** significance.

Noise from Helicopter Operations

Helicopters flying between the drilling unit and Lüderitz or Oranjemund may fly over or in close proximity to sensitive coastal receptors, such as key faunal breeding/feeding areas, bird or seal colonies, and nursery areas for commercial fish stocks. Although exposure will be limited up to three return flights per week (i.e., 43 trips per well) and be of a temporary nature while the helicopter passes overhead (site specific), indiscriminate or direct low altitude flying over seabird and seal colonies or breeding cetaceans could impact fauna behaviour and breeding success. Mitigation including specified flight paths that avoid of these sensitive receptors and maintaining an altitude of ≥762 m will reduce the impact intensity on marine fauna resulting in an impact of **VERY LOW** significance.

Operational Lighting and Non-Routine Flaring

Operational lighting used to illuminate the drilling unit and support vessels at night would increase ambient lighting in offshore areas, which may disturb and disorientate marine fauna feeding in the area. This is considered to be more of an issue for the stationary drilling unit than for the support vessels that will be travelling between the drilling unit and port. The intense lighting from flaring at night may also disturb and disorientate pelagic seabirds feeding in the area, as well as result in physiological and behavioural effects of fish and cephalopods. The light from flaring would be in addition to the other operational lights on the drilling unit and thus not as intense if it were the sole light source. Due to the distance offshore (far removed from any sensitive coastal receptors and range of most coastal seabirds) and proximity to a main marine traffic route, it is expected that marine fauna would become accustomed to vessel traffic and associated lighting within a few days. Key mitigation involves minimising operational lighting within safety limits and the optimisation of the well test programme to reduce flaring as much as possible. The residual impact related to vessel lighting and flaring is considered to be of **VERY LOW** significance.

Inefficient combustion of hydrocarbons during flaring can result in the release of unburnt hydrocarbons, which 'drop-out' onto the sea surface, which could have toxic effects on marine fauna. Given the offshore location of the licence area and the dominant wind and current direction, which will ensure that any discharges move mainly in a north-westerly away from coast, any hydrocarbon 'drop-out' is expected to disperse rapidly and is unlikely to impact sensitive coastal receptors. The use of a high-efficiency burner to maximise combustion of the hydrocarbons would minimise hydrocarbon 'drop-out', as well as emissions. The residual impact on offshore pelagic fauna, most of which are highly mobile, is assessed to be of **VERY LOW** significance.

5.1.2 Potential Fisheries Impacts

5.1.2.1 Displacement of Fishing Vessels

The implementation of the safety exclusion zone around the drilling unit will effectively exclude fishing from this area for the duration of drilling. Fishing sectors that have historically operated in the licence area (based on MFMR data) that could be affected by the safety zone include the demersal trawl, demersal longline, tuna pole-line and large pelagic longline sectors. The safety exclusion zone, which ranges from 500 m to 2 000 m depending on whether the drilling unit is dynamically positioned or anchored (in water depths < 450 m), will result in an exclusion area of between 80 ha to 1 260 ha for the demersal trawl, demersal longline and tuna pole-line sectors. For these three sectors, less

than 0.4% of the average annual catch within the EEZ falls within the Licence Block. The exclusion zone for the large pelagic longline sector will, however, be larger, as this sector sets surface longlines (with average length of 60 km) that are left unattended to drift in surface currents before they are retrieved. As these lines can become entangled around the stationary drilling unit, the fishing operators will be obliged to take a precautionary approach to reduce the risk of gear entanglement by avoiding a much wider area (estimated to be within a distance of 72 km of the drilling unit, resulting in an exclusion area of 432 000 ha). For the large pelagic long-line sector, approximately 4.4% of the average annual catch within the EEZ falls within the Licence Block. With the implementation of the mitigation measures, which will ensure good communication and coordination with the various fishing sectors allowing them to focus fishing in other areas for the duration of drilling, the residual impact due to safety exclusion area ranges from **VERY LOW** significance for the demersal trawl, demersal longline and tuna pole-line sectors to **LOW** significance for the large pelagic longline sector.

In addition to the above, the proposed abandonment of wellheads on the seafloor could pose an obstruction to demersal trawling, which operates in the northern and western regions of the licence block in waters deeper than 200 m. Considering the limited average annual demersal trawl catch taken from the licence block between 2012 and 2021 (i.e. approximately 0.05%), the residual impact is considered to be of **LOW** significance with the installation of over-trawlable abandonment caps for all wells suspended in water depths >300 m. The operator will also ensure suspended wellheads are surveyed and accurately charted with the SANHO.

5.1.2.2 Changes in Catch due to Behavioural Disturbance of Fish

Any impact to fish and fish behaviour due to underwater noise generated by the project vessels and drilling (non-impulsive noise), as well as VSP operations (impulsive noise), could, in turn, impact fisheries that operate in the area, including the demersal trawl, demersal longline, tuna pole-line and large pelagic longline sectors, through the reduction in catch rates and/or an increase in fishing effort. Considering the maximum noise disturbance zone of 1.5 km during VSP operations and the associated potential loss of catch, the residual impact significance is considered to be **VERY LOW** assuming good communication and coordination with these sectors.

The effects of drilling discharges at the seabed and into the water column could also lead to avoidance of the sediment footprint and plume, toxic effects on benthic and pelagic communities and associated trophic level cascade effects which could affect normal feeding patterns of certain fish species, which could in turn have a secondary impact on commercial fisheries that operate within or adjacent to the drill area in a NW direction. Modelling determined that the environmental risk due to total concentration of chemicals in the sediment extended up to 1.4 km. Whereas the maximum cumulative risk due to the turbidity plume and toxicity effect in the water column extended a maximum horizontal distance of approximately 13 km in the NW direction. These environmental risk areas do not overlap with the major fish spawning areas, which occur further north. Thus, it is unlikely that the distribution and abundance of commercial fish species will be significantly impacted by the deposition of drill cuttings during this project except in the immediate area. The treatment of NADF cuttings prior to discharge and minimising the extent of the sediment plume by discharging cuttings 5 m below surface (during risered drilling) will ensure the residual impact on commercial fishing is of **VERY LOW** significance.

5.1.3 Other Socio-Economic Impacts

5.1.3.1 Generation of Employment and Local Procurement

Since the majority of the workforce will comprise highly specialised skilled staff that will come in with the drilling unit, there will be minimal demand for local content and local employment, outside of the use of local services providers for logistics, supply base, helicopters, refuelling, catering, goods, accommodation, waste management, etc. It is estimated that only up to 12 new direct jobs,

although temporary and short-term, would be created in Namibia during implementation. It is anticipated that some of these positions will be at the onshore logistics base. By maximising the use of local skills and resources, and providing the necessary training, the residual impact is considered to be **LOW POSITIVE** significance.

Further to the above, various goods and services will be procured locally, which is likely to have a positive impact on the local economy through local spend in Walvis Bay and/or Lüderitz, depending on where the onshore logistics / helicopter bases are located. The direct and indirect employment associated with the project will further generate induced jobs through the multiplier effect, i.e. jobs in upstream and downstream sectors that supply goods and services to the workforce and the project. Overall, the increased expenditure would not displace other investment and would constitute a positive injection into the local economy and for local employment, especially considering the relatively high unemployment levels if the area. By promoting local contracting, the residual impact is considered to be **LOW POSITIVE** significance.

5.1.3.2 Potential Reduction in Income from Commercial Fishing and Shipping

A decrease in fish catch could lower the gross income and economic output generated by the fishing industry (assuming they do not fish in adjacent areas, which is unlikely) and its associated value chain, including food processing, transportation, and trade. Catching fewer fish results in decreased revenue for fishers, directly impacting their income and potentially causing financial instability for those who rely on fishing as their main source of livelihood. Overall, the affected fishing area is relatively small compared to the total available fishing grounds, and the project is not anticipated to reduce commercial fishing business opportunities. Given the minimal displacement, the impact on employment in the fishing sector is expected to be negligible. Most fishers will be able to continue their activities with little to no disruption. The slight displacement is unlikely to significantly affect the income of fishers. With the implementation of the mitigation measures, which will ensure good communication and coordination with the various fishing sectors allowing them to focus fishing in other areas for the duration of drilling, the residual impact is considered to be of **VERY LOW** significance for four affected sectors (i.e. demersal trawl, demersal longline, tuna pole-line and large pelagic longline).

The project activities could also affect commercial shipping by exclusion from entering the minimum safety zone around the drilling unit for the duration of the drilling operation. However, the overall extent of the safety zone is very small compared to the extent of the offshore environment and any alterations to vessels' routes, if required at all, will be minimal and not result in material changes in required vessel fuel or transit time. The issuing of navigation warmings would ensure that the residual impact is **INSIGNIFICANT**.

5.1.3.3 Social Disruption and Change in Social Dynamics

The implementation of the project may attract different groups of people to the study region. The prospect of job opportunities could also attract job seekers moving opportunistically into the project area, specifically the town where the logistics / helicopter bases will be located (Walvis Bay, Lüderitz or Oranjemund) in the hope of finding employment or exploiting other commercial opportunities. In addition, crew members on the drilling unit and support vessels will rotate regularly, and international crew members (which make up most staff) may overnight in Windhoek, Lüderitz or Oranjemund before flying to their home destination, or when arriving back in Namibia. Any temporary influx of people, leading to short-term growth in population size, may lead to changes in social dynamics, e.g. conflict in the community / increased competition, stress on existing physical infrastructure and services, and increased incidence of anti-social behaviour.

Furthermore, the offshore oil and gas industry divides opinion in the wider society due to its potential economic benefits and environmental risks. Concerns relating to climate change, damage to marine life and ecosystems, the risk of oil spills and associated economic and

environment impacts and the continued reliance on hydrocarbons are often cited by people opposed to offshore exploration and development. There are, however, other sectors of society that are more accepting of development pathways that support offshore oil and gas exploration and development, noting the potential revenue, employment creation and energy security as benefits. Conflicting opinions on offshore appraisal may result in a deterioration in community cohesion and conflict.

The implementation of a Code of Conduct and induction training will minimise the potential impact related to social disruption and changes in social dynamics to **INSIGNIFICANT**.

5.1.3.4 Intangible Cultural Heritage Links to the Sea

Disturbance of the seabed and / or pollution of the water column can affect peoples' spiritual connectivity with those elements, which in turn may affect peoples' customs, sense of place, wellbeing or rituals. Although well drilling will result in some disturbance of the seafloor, discharges to the water column and underwater noise, local inhabitants have previously reported limited connections with and no rituals involving the ocean or sea. Although discharges may impact people who access the sea for subsistence, livelihood or leisure, most such cultural activities are limited to areas close to the coast and well inshore of the project activities in Block 2814A. Nearshore and onshore project activities, such as supply vessel traffic and crew changes and re-supply from onshore bases, are virtually indistinguishable from other ongoing activities in Namibian coastal and port areas. Given the offshore location of the project, the limited pollution potential and the limited cultural heritage connectivity to the sea (especially offshore areas), the project is expected to have an **INSIGNIFICANT** impact on peoples' intangible cultural heritage.

5.1.3.5 Atmospheric Pollutants and Contribution to GHG Emissions

The release of gaseous pollutants to the atmosphere from proposed activities may cause a short-term reduction in local air quality. Since the proposed operations would be far removed offshore, their contribution of air pollution along the coastline is expected to be low considering the dilution effect due to atmospheric dispersion of the air emissions. Dispersion modelling predicts that peak concentrations associated with project emissions occur within 1.2 km from the drilling location, well offshore of the nearest onshore receptors at Oranjemund (~144 km east) and Lüderitz (~150 km north-east). Furthermore, none of the predicted concentrations exceed the WHO air quality guidelines nor the Texas Commission on Environmental Quality Acute Exposure Guideline Level-1 thresholds. Due to the extensive distance between Block 2814A and sensitive coastal receptors, as well as compliance with both international guidelines and thresholds, the potential impact on the air quality is considered to be of **LOW** significance.

The Project's annual greenhouse gas (GHG) emissions is estimated to be 24 065 tCO2e over a period of two years, with an average of 12 032 tCO2e per annum. While these calculations provide a useful indication of the scale of the Project's contribution, there are no accepted benchmarks which can be used to formally rate the significance of the Project's contribution. Due to these limitations, the project was compared to the European Bank of Reconstruction and Development thresholds as a proxy to rate the significance of the anticipated Project GHG emissions. Given the projects estimated contribution to Namibia's national GHG inventory of 12 032 tCO2e per annum, the significance of the Project's contribution to Namibia national GHG inventory is classed as **LOW**. Given the nature of the activity, relatively limited extent or area of influence, and relatively short duration (i.e., less than two years), it is highly unlikely that the Project will materially exacerbate the impacts of climate change on communities, priority ecosystem services, and natural habitat. Furthermore, given that the Project is likely to commence in 2025, and to be completed within two years, it is highly unlikely that the climate will be very different from what it is at present. It is, therefore, highly unlikely that climate change will pose a material risk to the Project.

5.2 Summary of Potential Impacts from Unplanned Events

Unplanned events may conceivably occur as a result of accidents or abnormal operating conditions, including faunal strikes, lost equipment, accidental spills from bunkering or vessel accident, loss of control of a well or a well blow-out.

5.2.1 Marine Fauna Collisions with Vessels and Anchor Lines

Faunal strikes with the project vessels, although unlikely, may occur during vessel transit between the drill site and port. The residual impact is considered to be of **VERY LOW** significance by keeping constant watch for cetaceans and turtles, as well as reducing vessel speed within 25 km of the coast or when sensitive marine fauna are in the vicinity.

The deployment/setting of anchors may lead to potential physiological injury or mortality to pelagic and neritic marine fauna due to collision with or entanglement in anchor lines/chains drifting in the water column. The impact replating to collisions with and entanglement with anchor lines is considered to be **INSIGNIFICANT**.

5.2.2 Accidental Loss of Equipment

The potential impacts associated with lost equipment to the seabed may be initially to crush benthic biota, where after it would provide a localised area of hard substrate in an area of otherwise unconsolidated sediments. The impact would be of very short-term duration as lost equipment will be retrieved or if left in place will offer hard substratum for colonisation by sessile benthic organisms or will likely sink into the sediments and be buried over time. Substantially sized equipment sinking to the seabed may also be an obstruction to the demersal trawl sector, if lost within the trawl grounds. Whereas floating equipment could become entangled with fishing gear designed to target the pelagic zone or surface waters (e.g. pelagic longlines).

The South African Navy Hydrographic Office (SANHO) will be notified of any hazards left on the seabed, who will in turn send out a Notice to Mariners with this information. The residual impacts on both marine fauna and commercial fishing are considered to be **INSIGNIFICANT**. A post drilling ROV survey of seafloor around the drill site is recommended during demobilisation. Dropped objects should be retrieved, where practicable, after assessing the safety and metocean conditions.

5.2.3 Minor Oil Spill Due to Vessel or Equipment Failure

Oil or diesel spilled in the marine environment would have an immediate detrimental effect on water quality. Being highly toxic, marine diesel released during an accidental spill (e.g., during bunkering, vessel or equipment damage) would negatively affect any marine fauna with which it comes into contact. In the unlikely event of a spill, the intensity of the impact would depend on whether the spill occurred in offshore waters where encounters with pelagic seabirds, turtles and marine mammals would be low due to their extensive distribution ranges, or whether the spill occurred closer to the shore where encounters with sensitive receptors will be higher. Due to the dominant winds and currents, a diesel slick in the area of interest would be blown in a north-westerly direction and away from the coast. A small diesel spill would likely only persist over the very short-term (days) with a negligible probability of reaching sensitive coastal habitats. However, in the case of a spill *en route* to the drill site, the spill may reach the shore affecting intertidal and shallow subtidal benthos and sensitive coastal bird species. Although the intensity of a nearshore spill may be higher than an offshore spill, the residual impacts on marine fauna and commercial fishing are considered to be of **LOW** significance. Key project controls include compliance with bunkering procedure, implementing the Shipboard Oil Pollution Emergency Plan and Emergency Response Plan.

5.2.4 Well Blow-Out

The greatest environmental threat from offshore drilling operations, although unlikely, is a major spill of crude oil and/or natural gas occurring either from a loss of well control or blow-out. Oil spilled from a well can severely impact the offshore marine environment and also have impacts on the coastal environment where coastal community livelihoods, fishing,

recreation, marine ecology, and estuaries are likely to be affected. However, the probability of a well blow-out occurring is considered to be extremely unlikely.

Various oil spill scenarios were modelled for this project using two oil types (condensate-type oil and a light oil) at locations representative of the depth range and metocean dataset of the block. The results of the oil spill modelling indicate that in the event of a light oil spill the oil would drift up to 137 km on the surface and up to 170 km in the water column (1% probability) in a NW direction in Season 3, away from the coast, with no chance of shoreline oiling. Considering a condensate-type oil spill, the oil would remain in the water column (no sea surface oiling), travelling up to 52 km (1% probability) in a NW direction away from the coast in Season 4.

In the event of a spill incident, an emergency response system will be implemented by the operator to mitigate the consequences of the spill. The operator will ensure all the required measures are in place to deal with a blow-out event, including the preparation and implementation of project- and campaign-specific oil spill contingency plan (OSCP), which will be aligned with the National OSCP and approved by MME. Modelling confirms that the extent of oil on the surface reduces if surface oil spill response is applied.

Oil spilled in the marine environment would, nevertheless, have an immediate detrimental effect on water quality, with the toxic effects potentially resulting in mortality (e.g., suffocation and poisoning) of marine fauna or affecting faunal health (e.g., respiratory damage). The presence of a large oil slick would influence commercial fishing operations, and could result in some losses related to ended or interrupted income streams.

In the event of a large oil spill, the residual impact on marine ecology is of **HIGH** significance, whereas the impact on commercial fisheries is of **MEDIUM** significance. The potential impact of a well blow-out on loss of income and employment from tourism is assessed as **INSIGNIFICANT**, as oil moves NW away from the coast with no chance of shoreline oiling. The impact on social dynamics will largely depend on the effectiveness with which a blow-out is responded to, either strengthening or diminishing societal trust in the industry's ability to deal with complex undertakings. The effective addressing of and communication in relation to the blow-out, the residual impact on social dynamics is considered to be of **LOW** significance. The significance of a potential impact on intangible cultural heritage is considered **VERY LOW** as there is limited cultural heritage connectivity to the sea (especially offshore areas) and oil is not expected to reach nearshore areas.

The release of gaseous pollutants to the atmosphere from an unlikely blow-out may cause a short-term reduction in local air quality. Dispersion modelling predicts that peak concentrations associated with an unlikely blow-out occur within 1 km from the drilling location, well offshore of the nearest onshore receptors at Oranjemund (~144 km east) and Lüderitz (~150 km north-east). Although modelling predicted the 1-hour non-methane volatile organic compounds (NMVOC) and benzene concentrations to temporality exceed the Texas Commission on Environmental Quality thresholds, this occurs offshore and not at any onshore sensitive receptors. Due to the extensive distance between Block 2814A and sensitive coastal receptors, as well as the temporary nature of these unlikely releases, the potential impact on the air quality is considered to be of **LOW** significance.

The Project's annual GHG emissions is estimated to be 24 065 tCO2e over a period of two years, with an average of 12 032 tCO2e per annum. While these calculations provide a useful indication of the scale of the Project's contribution, there are no accepted benchmarks which can be used to formally rate the significance of the Project's contribution. Due to these limitations, the project was compared to the European Bank of Reconstruction and Development thresholds as a proxy to rate the significance of the anticipated Project GHG emissions. Given the projects estimated contribution to Namibia's national GHG inventory of 12 032 tCO2e per annum, the significance of the Project's contribution to Namibia national GHG inventory is classed as **LOW**. It was calculated the GHG emissions related to an

unlikely well blow-out could potentially be between 1,601,064 tCO2e and 1,601,599 tCO2e depending on the oil type. As such, the significance of an unlikely blow-out contribution to Namibia national GHG inventory would be classed as **HIGH**.

5.3 Cumulative Impacts

Activities that could possibly lead to cumulative impacts include:

- Shipping, as the block overlaps with a busy shipping route off the African West Coast, leading to potential cumulative noise impacts on marine fauna;
- Fishing, as large pelagic longline, demersal trawl, demersal longline and pole-line fisheries periodically overlap with the project area, leading to potential cumulative noise and behavioural impacts on marine fauna; and
- Oil and gas exploration / appraisal, which is underway in the southern Namibian and northern South African West Coast regions, including a potential application for a production right in Block 2913B (TEEPNA). Concurrent activities could lead to potential cumulative impacts on marine fauna and habitats related to noise, physical disturbance and changes in water quality. This could add to the cumulative impact on fisheries.

Mining and recreational use, which are primarily situated in nearshore areas, are not expected to contribute to cumulative impacts with this project.

5.3.1 Biophysical

Impacts footprints of different exploration / appraisal wells on the benthos, due to seabed disturbance from drilling and settling of cuttings on the seabed, are long-term and additive, but relatively small. Other notable impacts on the seabed arise from trawling fisheries, as evidenced in the Endangered threat status of the ecosystem in Block 2814A areas that are regularly trawled (in the NW portion of the block). As the trawled area constitutes a relatively narrow north-south aligned corridor that is ~10-20 km wide, it is unlikely that many, if any, of the proposed appraisal wells will be drilled in this already more sensitive area. Given the relative uniformity, lower biodiversity richness and vast extent of the deepwater habitat primarily affected by the project, and the small cumulative seabed footprint of current offshore activities, the overall cumulative impact of offshore activities on the benthos type located within most of Block 2814A is considered **LOW**.

Noise is the most important aspect that could lead to cumulative impacts on faunal behaviour, although noise levels would return to ambient once drilling is complete. It is highly likely that other exploration / development activities in the region will take place concurrently to the project, resulting in cumulative noise impacts, particularly on mammal behaviour and, to a lesser degree, on fish. Other impacts on marine fauna behaviour arise from shipping, which generates less intense but more commonly present noise across the wider region. Given the relative low density of fauna in the vast offshore environment, the relatively short duration of appraisal-related noise (hours for VSP and months for the drilling of each exploration well) and limitations on the number of possible concurrent exploration / development activities that would contribute to a cumulative impact, the overall cumulative impact of noise on faunal behaviour and injury is considered to be of **LOW** and **VERY LOW** significance, respectively.

5.3.2 Socio-Economic

Project impacts on fisheries could arise as a result of behavioural impacts on fish, the implementation of a safety zone around the drill unit and infrastructure remaining on the seabed after decommissioning. Although behavioural impacts could result in some localised displacement of fish, fish would remain in the overall region. Shipping will have some effect on fisheries by determining areas where nets and lines can, and cannot, viably be deployed for longer periods of time. However, fishing and shipping are ongoing activities and thus known quantities in the offshore environment. Fishing itself also impacts on future fishing viability to the extent that unsustainable fishing pressure would reduce future catch rates. Given the limited overlap of current offshore exploration / development focus areas off southern Namibia

with fisheries, the limited impact thereof on fish, the relatively short duration of exploration / appraisal activities and limitations on the number of possible concurrent activities that would contribute to a cumulative impact, the overall cumulative impact from offshore activities on fisheries is considered **LOW**, and **VERY LOW** on any potential reduction in income from commercial fishing..

Exploration / appraisal activities generate (or sustain) some local employment and, more notably, procurement spend over the short-term. Whereas potential development activities would sustain the spend over the long-term. Additional exploration / appraisal campaigns would proportionally increase this benefit. In this regard, the cumulative requirements of several concurrent campaigns could have a distorting effect in the local and regional economy through significantly increased (short-term) demand for certain goods and services and labour. In the worst case this could lead to local inflationary pressures on wages, goods and services and make them less affordable for other businesses or individuals. This could crowd out such businesses or reduce the living standard of people who do not benefit from the offshore exploration boom and cannot afford goods at higher prices. The implementation of subsequent (rather than concurrent) exploration / appraisal campaigns may have a lower but longer-term, and hence more sustained, benefit. Commercial shipping and fishing, through employment generation on vessels and at ports, also generate important and more sustained employment in Namibia. Given the considerable investment associated with offshore exploration / development, the considerable level of current activity. the importance of fishing and the relatively small size of the Namibian and regional economy and population, the overall cumulative benefit of offshore activities on jobs and procurement spend is considered **MEDIUM positive**.

Concurrent exploration / development activities in other blocks within the region could lead to potential cumulative impacts on shipping efficiency. Given that exploration / appraisal activities are temporary and of relatively short duration, and limitations on the number of possible concurrent exploration / appraisal activities that would contribute to a cumulative impact, the overall cumulative impact of offshore activities on commercial shipping is considered **VERY LOW**.

Offshore activities are deemed to have a limited impact on intangible cultural heritage due to limited ritual connectivity to the offshore environment. Terrestrial and nearshore areas are more important in that regard and may be affected by a range of activities taking place along the Namibian coastline, including (diamond) mining, fishing, port operations and tourism. Offshore exploration / development may contribute towards some of those pressures, such as increased activity at established ports. Given the reported limited impact of offshore activities on intangible cultural heritage, the overall cumulative impact from offshore activities on intangible cultural heritage is considered **LOW**.

Emission of atmospheric pollutants from the project is generally below guideline levels, and similar concentrations can be expected from other offshore exploration / appraisal projects. Significant cumulative impacts with concurrent drilling activities are highly unlikely as emission concentrations will reduce quickly in the offshore environment and will not persist long enough to create cumulative impacts with subsequent nearby drilling activities. The overall cumulative impact on air pollution is considered **LOW**.

5.4 Implications of the No-Go Alternative

The No-Go alternative represents the option not to proceed with the proposed appraisal well drilling activities. This would leave the project area of influence in its current state, except for ongoing natural variations and changes caused by other human activities (e.g., fishing, commercial shipping, approved exploration and possibly production activities, mining, cable laying, etc.). It thus represents the current status quo against which all potential project-related impacts are assessed.

Opting for the No-Go alternative means that none of the impacts anticipated from normal appraisal drilling operations would occur. Additionally, the No-Go alternative would preclude the risks associated with accidental drilling-related events.

The No-Go alternative also precludes the opportunity of gaining a better understanding of the presence and nature of Namibia's indigenous resources (at least in Block 2814A, noting that exploration and appraisal has been authorised under separate ECCs in other license blocks offshore southern Namibia).

In this sense the No-Go Alternative precludes the realisation of aspects associated with the need and desirability of the Project, which appears desirable in itself, given the importance of energy to economic activity and growth and the importance of fiscal income and economic growth to ensuring a prosperous and stable society in Namibia, coupled with the complexity and fluidity of global trends and supply chains, retaining optionality and diversification in national income, economy and energy supply.

Precluding the opportunity of potential future domestic oil and gas development in Block 2814A only would appear unreasonable if exploration and development activities continue elsewhere, provided that the impacts associated with appraisal drilling in Block 2814A are broadly in line with those of other exploration / appraisal activities. No particular sensitivities that present fatal flaws were identified in Block 2814A as part of this impact assessment. Based on the impact assessment, all potential negative impacts of planned operations are deemed environmentally acceptable and sustainable in that they do not threaten the viability of any populations or habitats.

6.0 Need and Desirability

This section summarises the need for, and desirability, of the proposed appraisal activities based on its 'fit' with the policy and planning framework adopted by the Namibia administration.

6.1 Energy-Related Plans and Polices

Policies are careful to frame the need for locally produced hydrocarbon products in the Namibian economy in the context of, and as a supplement to, the desired increase in renewable energy generation capacity. In this sense the use of petroleum products, notably gas, is not deemed contradictory to, and rather supportive of, the continued development of renewable energy in Namibia. Appraisal for hydrocarbon resources, such as the current project, is one necessary step in the process of potentially increasing the gas resource base, if appraisal results in the identification of viable resources and required production permits are obtained (as noted previously BW Kudu already has a valid Petroleum Production Licence). **The proposed appraisal activities are thus in keeping with, and furtherance of, energy-related plans and policy in Namibia.**

6.2 Economy-Related Plans and Polices

Promoting economic growth is a key proclaimed goal of the Namibian Government, with a focus on increased energy security, in conjunction with a declared intent to mitigate the effects of climate change and diversify the energy mix away from fossil fuels while exploring the use of natural gas, including indigenous resources, as a less carbon intensive transitional fuel. Policy clearly lays out the social need for economic development and opportunities, and that this should be achieved through a managed energy transition that includes a mix of energy sources, including fossil fuels for some time, and possibly the production of indigenous oil and gas resources. Appraisal of indigenous resources will improve the knowledge of potential oil and gas resources in Namibia and thereby improve the Government's capability to plan scenarios in this regard. **The proposed appraisal activities are deemed in keeping with, and furtherance of, economy-related plans and policy in Namibia.**

6.3 Climate Change-Related Plans and Policies

Namibia's policies aim to reduce GHG emissions while ensuring enough energy for growth. Provided that a project has a broadly neutral or net positive effect on Namibia's overall GHG emissions, it could be deemed broadly in line with climate change-related plans and policies. **The proposed appraisal activities generally do not emit significant quantities of GHGs, and the proposed activities are thus not deemed incompatible with such policies.**

6.4 Summary

Namibia's policies recognise the need to progressively reduce GHG emissions while, at the same time, ensuring a stable and sufficient energy supply and enabling just and enabling just and inclusive economic growth. Appraisal of indigenous hydrocarbon resources is in principle compliant with and in furtherance of several energy, economy and resource-related policies and plans, and is not incompatible with climate change-related policies and targets.

Given the importance of energy to economic activity and growth and the importance of economic growth to ensuring a prosperous and stable society in Namibia, coupled with the complexity and fluidity of global trends and supply chains, retaining optionality and diversification in national income, economy and energy supply appears desirable in itself.

Notwithstanding the likely continued demand for (and supply of) hydrocarbon resources globally and in Namibia (although the production of hydrocarbons is not proposed as part of the current application), and the in-principle compliance of appraisal drilling with Namibian policies, the need and desirability of a particular activity (or project) is also determined by the acceptability of residual environmental and social impacts of the proposed activities. The residual impacts indicate the sustainability of a specific project, which is an important criterium of policy. Based on the impact assessment**.** all potential negative impacts of planned operations range from **INSIGNIFICANT to LOW** significance with the implementation of the recommended mitigation measures, except for the impact related to the smothering and disturbance of benthic fauna on unconsolidated sediments, which is assessed to be MEDIUM significance. The majority of potential impacts can be adequately mitigated with the implementation of the proposed mitigation measures (as included in the Environmental and Social Management Plan, ESMP), which are in line with current industry good practice and specialist understanding of the local environment. On the basis of these findings, potential impacts are deemed environmentally acceptable and sustainable in that they do not threaten the viability of any populations or habitats. This is a reflection of the project's offshore location with relatively limited human activity, where benthic habitats are largely 'Least Threatened' and zones of impact are far removed from sensitive coastal receptors.

In the unlikely event of a major oil spill, impacts on marine fauna and commercial fishing (assuming a spill does occur) are deemed to be of **HIGH** and **MEDIUM** significance with mitigation, somewhat moderated by the fact that an oil plume is not predicted to reach the shore in the event of a major spill. An incident of this nature is highly unlikely, but it is critical that the operator applies the highest standards to prevent and also prepare an effective response to such potential events (as is the case with all operations involving risk). Preparation of such response measures are required in terms of industry standards, Namibian requirements and the mitigation measures included in the ESMP.

7.0 Conclusion

The work undertaken in support of this application for an ECC has been completed in line with the applicable regulatory framework. Several potential impacts are associated with the proposed appraisal well drilling activities. The assessment process followed included the undertaking of three technical modelling studies and five specialist assessments deemed necessary to adequately identify and assess these potential impacts.

The overall finding of the ESIA are as follows: on the basis of the nature, duration (mostly short-term) and extent (mainly localised), the majority of residual impacts related to normal operations range from **INSIGNIFICANT to LOW** significance with the implementation of the recommended mitigation measures, except for the impact related to the smothering and disturbance of benthic fauna on unconsolidated sediments, which is assessed to be **MEDIUM** significance. The majority of potential impacts can be adequately mitigated with the implementation of the proposed mitigation measures (as included in the ESMP), which are in line with current industry good practice and specialist understanding of the local environment. On the basis of these

findings, there is no reason the project should not proceed.

However, as noted previously, the greatest potential environmental risk from offshore drilling operations is a major spill of crude oil and/or natural gas occurring either from a blow-out or loss of well control (unplanned event). Although the probability of a blow-out occurring is highly unlikely, the impacts of a well blow-out on nearshore communities and marine ecology / fishing, should it occur, range from **LOW to HIGH** significance. If these unplanned impacts were to occur, their highly significant nature might be deemed unacceptable. However, it's important to note that the significance ratings of these unplanned events cannot be directly compared with the potential impacts of normal operations. This is because the ratings do not account for the low probability of such events occurring in the first place. The impact assessment ratings do not consider the probability of occurrence. Considering this low probability, and assuming that industry best practice and mitigation measures are implemented, the project's environmental and socio-economic impacts are considered acceptable.

Based on the findings of the ESIA and associated technical and specialist studies, SLR is of the opinion that this ESIA Report is sufficiently robust and provides sufficient information for MME and MEFT to make an informed decision on the proposed project taking into consideration the significance of potential impacts and National strategic policy issues relating to energy and climate change. SLR recommends that the commitments presented in the ESMP should be conditional to the ECC, should the application be approved.

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OPPORTUNIY TO COMMENT ON THE DRAFT ESIA REPORT

Send comments to SLR by scanning the QR code below, following to associated link to the online form or submit using the contact details provided below.

Comment period closes on **14 March 2025**.

QR Code and Link for the online Registration / Comment Form

https://forms.office.com/e/Fe8nP3nL9y

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