HALLIBURTON INDUSTRIES AG BACKGROUND INFORMATION DOCUMENT PROPOSED LIQUID MUD PLANT AND DRY BULK PLANT IN THE PORT OF WALVIS BAY, NAMIBIA

8 May 2024

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1.0 Introduction

Halliburton Industries Limited (Halliburton) provides a range of products and services to the energy industry, specialising in oil and gas exploration, drilling and production, as well as engineering and construction services. Halliburton is proposing to construct and operate a Liquid Mud Treatment and Completion Fluid Plant (LMTP) (Figure 1-1) at Berth 8 in the Port of Walvis Bay (hereafter referred to as the "proposed Project") (Figure 2-1). The plant will provide drilling and completion fluids to operators currently exploring for oil and gas offshore southern Namibia.



Figure 1-1: Example of an LMTP (Source: Halliburton, 2024)

2.0 Authorisation Requirements

The proposed Project triggers activities listed in the Government Notice (GN) No. 29 of the Environmental Impact Assessment (EIA) Regulations 2012, promulgated in terms of Section 56 of the Environmental Management Act, 2007 (No. 30 of 2007) (EMA) and, therefore, requires an Environmental Clearance Certificate (ECC) from the Ministry of Environment, Forestry and Tourism (MEFT), who are the regulatory authority, before these activities can commence. An EIA process must be undertaken in order for MEFT and the Ministry of Mines and Energy (MME) as the competent authority to consider an ECC application.

The activities listed in the EIA Regulations 2012 that are triggered by the proposed Project are as follows:

- 2.3 The import, processing, use, and recycling, temporary storage, transit, or export of waste.
- 9.1 The manufacturing, storage, handling, or processing of a hazardous substance defined in the Hazardous Substances Ordinance, 1974.
- 9.2 Any process or activity which requires a permit, licence, or other form of authorisation, or the modification of or changes to existing facilities for any process or activity which requires an amendment of an existing permit, licence or authorisation or which requires a new permit, licence or authorisation in terms of a law governing the generation or release of emissions, pollution, effluent or waste.
- 9.3 The bulk transportation of dangerous goods using pipelines, funiculars, or conveyors with a throughput capacity of 50 tonnes or 50 cubic meters or more per day.

9.4 The storage and handling of dangerous goods, including petrol, diesel, liquid petroleum gas, or paraffin, in containers with a combined capacity of more than 30 cubic meters at any one location.

Purpose Of This Document

This document has been prepared to inform you about:

- The proposed Project;
- The project alternatives considered;
- The biophysical, cultural, and socio-economic baseline environment of the proposed Project area;
- The EIA process being followed;
- Potential biophysical, cultural, and socio-economic impacts and related specialist input; and
- How you can have input into the environmental assessment process.

Who Are the Consultants?

SLR Consulting Namibia (Pty) Ltd (SLR), an independent firm of environmental consultants, has been appointed by Halliburton to manage the environmental authorisation process.

Your Role and How Can You Be Involved

You can be involved by:

- Registering as an interested and / or affected party (I&AP) on the stakeholder database.
- Reviewing this document and providing your initial comments to SLR to ensure all potential environmental and social impacts that need to be addressed during the EIA process are identified. Initial comments should reach SLR by 5 June 2024.

Registered I&APs will also be given the opportunity to review and comment on the Draft Scoping Report and Draft EIA Report and Environmental Management Plan (EMP).

How To Respond

Responses to this document can be submitted by means of the attached comments sheet, and/or by emailing to the project email listed below.

All comments received will be recorded and responded to in the Draft Scoping Report.

Who To Contact?

SLR contact: Stephanie Strauss

Tel: +264 61 231 287

Address: 8 General Murtala Muhammed Street, Eros, Windhoek

Email: halliburtoneia@slrconsulting.com



Figure 2-1: Locality Map

3.0 Overview of the Proposed Project

The plant will be comprised of four components, namely:

- A <u>warehouse (Figure 3-1)</u>, where inputs required in the process (fluid mixing, reconditioning and bulking operations) and resulting products will be stored.
- A <u>liquid bulk area</u>, which will be used for the mixing of new drilling fluids (or drilling muds) (Figure 3-2) and reconditioning used fluids (treatment of "waste"), where these fluids will be stored in horizontal tanks (Figure 3-3). The types of fluids to be stored include synthetic and water-based drilling fluids, brine completion fluids and base fluids.
- A <u>dry bulk area</u>, where the bulking of products, such as barite, bentonite and calcium carbonate, will be undertaken. These products will be stored in large bags and then emptied into vertical bulk storage silos from where they will be transferred into supply vessel storage tanks through hoses. The product is then transferred from supply vessel storage tanks to the drilling unit's bulk tanks for offshore mixing of drilling fluids.
- A <u>laboratory unit</u>, where the fluids mixed at the LMTP and those received back from the drilling unit are quality controlled. The laboratory also provides engineering and support to operations offshore.



4.0 Scope of Activity

2024)

The operations at the LMTP are summarised in Figure 4-1.

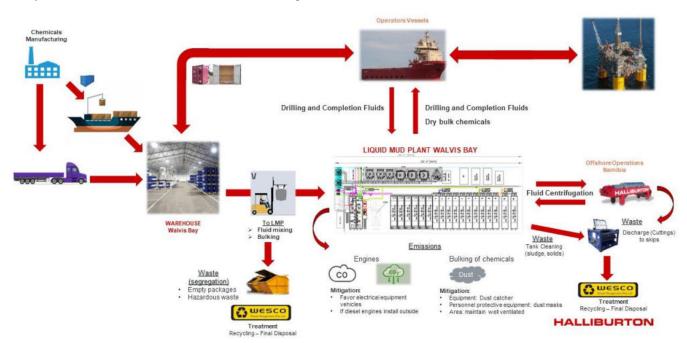


Figure 4-1: LMTP process flow (Source: Halliburton, 2024)

4.1 Delivery of chemicals to the warehouse

Chemicals to be used for mixing at the LMTP will be delivered and stored in the warehouse. The chemicals will be sourced locally or where not locally available, will be imported into Namibia. The chemicals required will include Synthetic-Based Drilling Fluid (synthetic / water / salt / chemicals); Water-Based Drilling Fluid (water / salt / chemicals); Brine Completion Fluid (salt / water); and Base Fluid (mineral oil). Liquids will generally be supplied to

the warehouse in 55-gallon (208-litre) drums or 1 000-litre intermediate bulk containers (IBCs). The drums / containers will be stored in a bunded storage area of the warehouse. The dry chemicals will be supplied either in large bags (1 – 1.5 metric ton) or palletized sacked material (25 kg sacks). All chemicals required will be transported from the warehouse to the LMTP, as required for fluid mixing and reconditioning, and the dry bulk plant for bulking operations.

4.2 Processes at the LMTP

4.2.1 Fluid mixing and reconditioning

Fluid mixing and reconditioning will include:

- Fluid mixing: Base fluid (water, mineral oil) is transferred to the mixing tanks. The base fluids are circulated on a mixing line via the mixing hopper where chemicals are added either in sacked, drums or large bag units.
- Fluid storage: Batches of the mixed fluid is then transferred to the horizontal storage tanks for storage.
- Fluid shipment: Fluids are then transferred to storage tanks on supply vessels via transfer pumps and hoses.
- Fluid backload: Excess fluids from the drilling unit are sent back to shore and received at the LMTP using the supply vessels and stored in the onshore horizontal storage tanks.
- Fluid reconditioning: Depending on fluid conditions, chemical treatment (similar operation to mixing) and cleaning (using centrifuges) is performed to ensure the fluid can be re-used and waste is reduced.

4.2.2 Dry Bulking

The products required will be stored initially in large bags at the warehouse. The bags are emptied into bulk storage silos via a cutting hopper using pressurised vessels. Powder is then transferred (blown through a hose) from the LMTP bulk powder storage tanks on to supply vessel storage tanks at customer request, from where it will be transferred to bulk tanks on the drilling unit for mixing offshore. Bentonite is mixed for initial drilling, barite and calcium carbonate are added for density and bridging. During this process, all dust emissions are collected in industry approved dust collectors engineered to minimize personnel and environmental exposure to dust emissions.

4.3 Dispatch of products from the warehouse

All the products will be stored in the warehouse from where they will be dispatched to customer locations for offshore delivery using supply vessels. The fluids, bulk powders and palletized chemicals to be used on offshore drilling operations will be stored initially at the LMTP and will include bulk fluids and palletized materials (i.e. offshore treatment chemicals for maintaining fluid stability).

Bulk fluids and powders the will be supplied from the LMTP storage tanks to supply vessels include barite, BARACARB (calcium carbonate), bentonite, BaraXcel (Synthetic Fluid), Base Fluid (Mineral Oil) and Brines.

Palletized material, including BARAZAN / BARAZAN D, Guar Gum, PAC-RE, STARCIDE, EZ-MUL NT, Lime, ADAPTA, Baravis IE 489, RHEMOD L, and TAU MOD, will also be produced at the plant. These chemicals will be containerized at the warehouse and dispatched to the drilling unit as deck cargo on the supply vessel.

4.4 Water and power supply

It is estimated that the LMTP will require approximately 3.8 mega litres of water and 115 000 litres of diesel on a quarterly basis (every three months). It must be noted that the utility requirements at the LMTP are highly dependent on the activity levels and the types of fluids being produced for a particular customer (drilling contractor). These utility requirements will, therefore, fluctuate depending on the varying output from the LMTP. Diesel and electricity usage will depend on access to the local grid or whether onsite generation through the two dedicated LMTP generators is required.

4.5 Air Emissions and Management

In terms of emission sources, the following are anticipated:

- Exhaust fumes from diesel generators, compressors, and transfer pumps. All diesel driven units will conform to global industry standards in relation to diesel fume emissions.
- Dust from bulking of barite and bentonite powders, which will be controlled through the presence of dust collector vessels installed within the bulk powder system.
- Minor fumes while mixing sacks and fluids. Minor dust / fume emissions which will be minimised through the venturing mixing systems. All personnel within the vicinity are required to wear industrial face masks as a minimum.

4.6 Waste and Waste Management

The following waste sources are anticipated:

- Empty packaging: oil drums, aerosol cans, big bags, sacks, etc.
- Wash water from cleaning the tanks (sludge oily water);

• Synthetic contaminated waste from the centrifugal reconditioning of Synthetic-Based Mud.

Halliburton will make use of a service provider (WESCO) for waste management. WESCO will be responsible for the collection of waste (hazardous and general) and disposing of the waste at the appropriately registered waste disposal sites.

4.7 Accidental spill prevention

Accidental spills can potentially occur during various operations and will be prevented or managed as follows:

 Accidental spills during mixing and storage: In line with industry standards, all installed tanks will be leak tested prior to use. All storage areas containing liquids will conform with the global industry standard of bunding, and all bunding will have capacity to hold as a minimum, 110% of the largest storage vessel capacity. Halliburton will install moveable concrete bunding slabs (Figure 4-2) around each liquid storage area covered by impermeable leak proof membrane.

Daily inspections will be conducted to identify any damage potentially reducing efficiency of bunds. In addition, spill kits will be available at key locations, including the warehouse, liquid storage areas, and seafront / manifold / transfer area, and personnel will be trained to use them efficiently and safely.



Figure 4-2: Moveable concrete bunding slabs (Source: Halliburton, 2024)

- Accidental spills during transfers of drilling fluids and bulk powders from the LMTP to supply vessels: The
 LMTP will be required to supply drilling fluids and bulk powders to customer supply vessels on a frequent basis
 in line with operational requirements. Halliburton will follow strict standards in relation to bulk transfer hose
 management to comply with global industry standards. All hoses will be certified on a yearly basis and visually
 inspected prior to every transfer in order to check for signs of wall damage of wear.
- Accidental spill prevention (containment measures): In addition to storage bunding and strict transfer hose quality assurance and quality control procedures, Halliburton will follow a wide range of safeguards to prevent any accidental fluid release. Tanks will all be equipped with laser volume indicators and maximum fill level alarms to accurately track fluid volumes at all times. In the event of minor fluid leak within the bunded area, spill kits containing absorbent pads, squeegees, brushes, and shovels to safely clear up any spillage will be available.

4.8 Project Timelines

The project will be implemented in three-phases as follows:

- Pre-Construction phase activities (which included site selection, permitting and design)
- Construction phase activities (approximately 6 months).
- Operational phase activities (approximately 5 years).

5.0 **Project Alternatives**

The site was identified by NAMPORT as the only suitable site due to its short distance from the jetty, where the product from the LMP will be loaded onto vessels. The LMP products will be pumped from the LMP to the jetty, and pumping fluids over a longer distance would be a challenge. If the LMTP is installed far from the jetty, the pressure loss will be high and result in unsafe working conditions. Furthermore, operations will be unfeasible due to additional costs of pipelines and civil work. As such, no site alternatives have been explored.

6.0 Need and Desirability

The proposed Project directly supports the current exploration operations off southern Namibia and potentially future production well drilling. Thus, at the national level, the motivation for the proposed Project is economic and strategic in nature as it will contribute to the government's efforts of exploring for oil and gas and potentially meeting its the oil and gas needs. The potential national and regional level socio-economic benefits of the proposed Project include:

- Investment: The capital costs for the proposed Project are approximately USD10.5 million.
- Taxes: The proposed Project will contribute to Namibia's economy through taxes and royalties.
- Employment: At the local level, the proposed Project is expected to have a positive socio-economic benefit through employment of locals, particularly for unskilled and semi-skilled labour (up to 22 people during peak operation). Although specialist and skilled labour may be recruited outside the local boundaries due to the skills scarcity, local communities will benefit through on-the-job training leading to skills development and transfer. Skills development is a requisite for human resource development and will have a lasting impact on the local economy. The proposed Project will support local development through:
 - Hiring nationals from local communities, schools / universities;
 - Skill training for the local people;
 - Support local businesses:
 - Purchase of products and equipment when available locally; and
 - Use of local contractors on project (e.g. WESCO) and support the development of their skills/portfolio if possible.

7.0 Overview of Baseline Environment

This section provides a general overview of the key biophysical, cultural, and socio-economic attributes of the proposed Project area. The information in this section has been obtained from the Port of Walvis Bay EMP (Source: Geo Pollution Technologies, 2023). The proposed Project is situated on the Port of Walvis Bay (Figure 2-1), and it must be noted that the location of the proposed Project is disturbed surrounded by other port activities.

7.1 Biophysical Environment

Walvis Bay falls within an Important Bird Area NA014 and NA013. The Walvis Bay Lagoon is a 12 600 ha wetland of international importance and Ramsar site. This area is important for bird breeding and feeding and both as an over-wintering area for Palaearctic migrant wader species as well as for African species such as Greater and Lesser Flamingos, Great White Pelican and Chestnut-Banded Plovers. The Walvis Bay area is also characterised by marine mammals such as the Common Bottlenose Dolphins, the Namibian endemic Heaveside's Dolphins, Dusky Dolphins, Humpback Whales, Southern Right Whales and Pigmy Right Whales; as well as Cape Fur Seals.





7.2 Cultural Environment

No heritage or cultural resources are anticipated to occur on site as the area is already transformed.

7.3 Socio-Economic Environment

Walvis Bay has a population of 67 201 and is steadily increasing. Between the years 2000 to 2015, the population grew by 78.8%. The town's economy is closely tied to its port operations that are managed by the Namibian Port Authority (Namport). Key economic activities include shipping, fishing, and tourism. Walvis Bay supports a diverse economy including industrial development largely centred around the Namibian Export Processing Zone and secondary / service sector businesses (finance, retail, accommodation and food). The fishing industry is however considered a critical economic sector (Walvis Bay Municipality, 2020) and provides an estimate 8 000 local jobs. The port handles imports and exports, serving as a gateway for landlocked countries in Southern Africa. The port uses an active road and rail network to transport cargo including mineral ores, chemicals, vehicles and general goods.

The port handles fuel and vehicle imports, passenger traffic from cruise liners, and offers support and logistics services that range from ship repair and maintenance, various storage facilities, small craft harbour, to fishing operations and mariculture.

The expansion of the Walvis Bay port has led to an increase in cruise liners visiting the area. A new container terminal was constructed, complete with a dedicated berth for cruise vessels. This berth can accommodate ships up to 300 meters in length, with a draft of -11 meters. Not only does this enhance the port's capacity for handling passenger traffic, but it also allows Namport to divert passenger activity away from the central hub of the port, specifically berths one to eight (Geo Pollution Technologies, 2023).

Ultimately, Berth 8 of the Port of Walvis Bay, identified by Namport as an ideal location for the LMTP, is a suitable location aligned with the activities of the designated area.

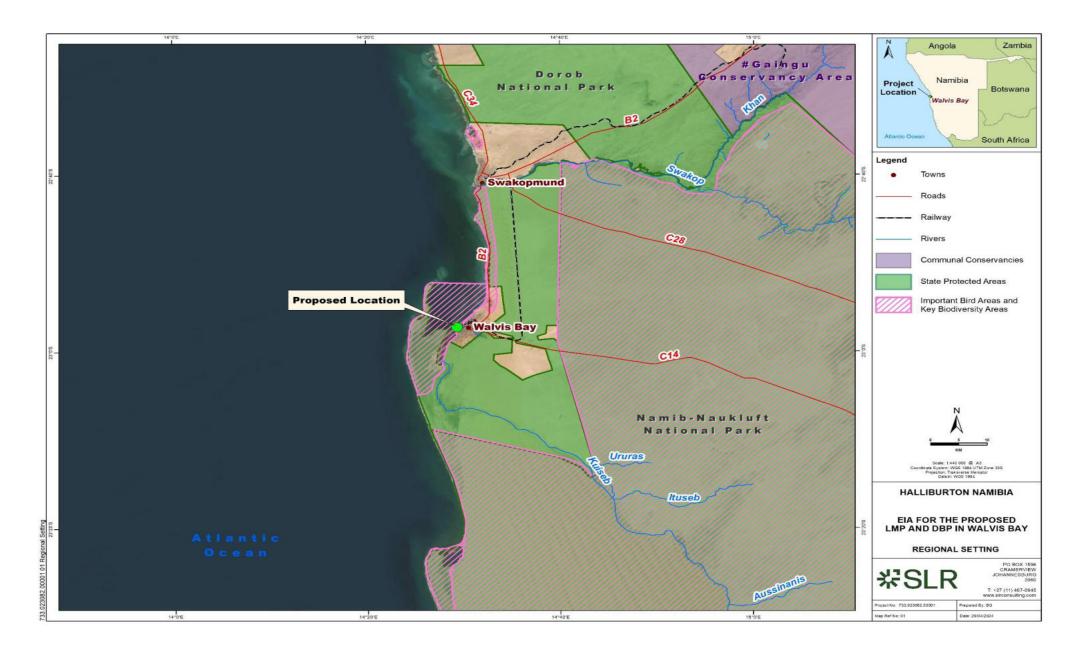
8.0 Specialist Studies to Inform the EIA Process

Based on the limited nature of anticipated impacts as a result of the disturbed environment of the port, three specialist studies will be identified to assess the key potential impacts related to:

- Visual / sense of place,
- Air quality due to fugitive emissions; and
- Marine ecology due to accidental spills.

Figure 8-1: Regional setting





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9.0 Environmental Impact Assessment Process

9.1 Introduction

The EIA Regulations 2012 set out the procedures and documentation that need to be complied when undertaking an EIA process. The anticipated tasks and timing for the current EIA process are presented in Figure 9-1 below.

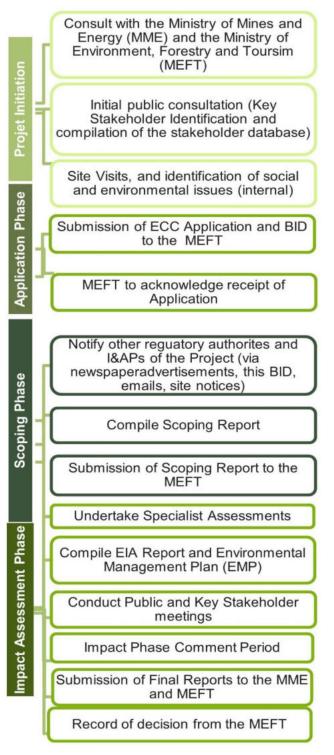


Figure 9-1: Scoping and EIA Process

9.2 Public Consultation Process

The purpose of the public consultation process is to notify I&APs of the proposed Project and to provide them with the opportunity to raise issues or concerns regarding the proposed Project. In this regard, I&APs will be identified and included in a stakeholder database. This BID is released into the public domain for a 21-day period to announce the commencement of the EIA process and obtain initial comments. I&APs have been notified of the proposed Project through a variety of platforms, which including site notices, newspaper advertisements, and email and SMS notifications.

The Draft EIA Report (inclusive of EMP and specialist assessments) will also be made available for a review and comment (30-days). All registered I&APs will be informed of the availability of these reports, which will be made available using on SLR's website and the Walvis Bay Public Library. Non-technical Summaries of these reports will also be prepared, which will be distributed via email to all registered I&APs. The reports will be updated to include all comments received during the public review periods and submitted to MEFT (as the regulatory authority) and MME (as the competent authority) for acceptance and decision-making purposes.

I&APs involved in the EIA process are listed below:

I&APs currently identified for inclusion on the Project database

Landowners, Land Users and Other I&APs

- Surrounding landowners, land users and communities.
- Non-government organisations and associations (including Earth Life Namibia, Namibian Environment & Wildlife Society, Namibia Nature Foundation).
- Namport tenants.
- Parastatals.

Competent Authority

• Ministry of Mines and Energy

Regulatory Authority

• Ministry of Environment, Forestry and Tourism.

Commenting Authorities

- Department of Water
- Namport

Local Authorities

- Walvis Bay Municipality
- Walvis Bay Town Council
- Erongo Regional Council

Please register to be included on the Project database and let us know of any additional stakeholder which you think we should add to the database.

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8 May 2024

Particulars of the Inter	ested and Affected Party Date		
Name			
Organisation/Company	·		
Postal Address			
	Postal Code		
Telephone Number			
E-Mail Address			
	terested & affected party (I&AP) so that I may receive further s during the environmental authorisation process	YES 🗆	
	How would you like to receive your notification	s?	
E-mail:			
Post:			
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Please write y	our comments and questions here (please use separa	ate sheets if you	ı wish)
Please include	the following of my colleagues/friends/neighbours as	s i&aps for this	project:
	Please return completed forms to:		
SLR contact:	Stephanie Strauss		
Tel:	+264 61 231 287		
Email:	halliburtoneia@slrconsulting.com		
information in accordance of details as an Interested and that as an I&AP for this Pro- for this and/or other Social contact you regarding this a permitted or required by ES safeguards in order to prote access or disclosure of Per	information to be registered as an I&AP for this Project you cor with the Protection of Personal Information Act 4 of 2013. If you d Affected Party (IAP) for this Project, you will be included in the ject you authorise SLR to retain and use your Personal Informa and Environmental Impact Assessments (ESIA) and that you can and/or other ESIA processes. SLR will not process your Person SIA processes, or as required by law or public policy. SLR will u ext Personal Information, and to reasonably prevent any damage sonal Information, other than as required for ESIA processes of your Personal Information to be deleted from the I&AP databa	register and suppl e SLR I&AP databa ation as part of a co onfirm your accepta al Information, othe se reasonable, app ge to, loss of, or una r as required by an	y your contact use. It is assumed ontact database ance for SLR to er than as propriate security authorised y Law or public

THANK YOU FOR YOUR CONTRIBUTION!!



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