APP-004017

DEVELOPMENT AND OPERATIONS OF A LIQUID MUD AND BULK PLANT IN THE PORT OF WALVIS BAY

ENVIRONMENTAL IMPACT ASSESSMENT AND MANAGEMENT PLAN

Prepared by:

Prepared for:

June 2024

Project:	**Environmental Impact Assessment And Management Plan For The Development And Operations Of A Liquid Mud and Bulk Plant In The Port Of Walvis Bay**	
Report Version/Date	Final 27 June 2024	
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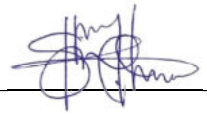
Report Approval	 **André Faul** Conservation Ecologist	

I Victor Joseph acting as the Proponent's representative (Baker Hughes Energy Services Namibia (Pty) Ltd), hereby confirm that the project description contained in this report is a true reflection of the information which the Proponent has provided to Geo Pollution Technologies. All material information in the possession of the proponent that reasonably has or may have the potential of influencing any decision or the objectivity of this assessment is fairly represented in this report.

Signed at  on the 5th day of July 2024

Baker Hughes Energy Services Namibia (Pty) Ltd Company Registration Number

SUMMARY

Introduction

Baker Hughes Energy Services Namibia (the Proponent) intends to develop and operate a liquid mud plant, dry bulk plant, and cement bulk plant, within the commercial harbour of the Port of Walvis Bay. The purpose of which will be to mix, condition, store and transfer drilling and completion fluids for oil wells, and storage and transfer of dry bulk powders required to produce drilling and completion fluids and, as part of dry bulk powders, supply cement to isolate, support and protect the casing inside a well.

The Proponent requested Geo Pollution Technologies (Pty) Ltd (GPT) to apply for an environmental clearance certificate (ECC) for the proposed facility and its operations. The ECC is required as per the Environmental Management Act No. 7 of 2007 (EMA). As part of the ECC application, an environmental assessment report and environmental management plan (ERMP) will be submitted to the Ministry of Environment, Forestry and Tourism's Directorate of Environmental Affairs.

Scope and Methodology

The environmental assessment is conducted to determine all environmental, safety, health and socio-economic impacts associated with the construction and operations of the facility. Relevant environmental data has been compiled by making use of secondary data, a reconnaissance site visit and a specialist radiation risk assessment. Potential environmental impacts and associated social impacts were identified and are addressed in this report.

Development and Operations

Exploratory and oil field development drilling is a complex process which is largely influenced by the environment in which it is performed. An important resource needed for drilling of wells, especially the extremely deep wells required for oil and gas extraction, is drilling and completion fluids. Drilling fluid (or drilling mud) is a viscous fluid used during drilling to, among others remove the rock fragments (drill cuttings) from the geological formations traversed by the drill, transport them to the surface, and release these fragments into the separation equipment; keep cuttings and weight material (barite) in suspension when circulation is interrupted; control subsurface pressures; stabilize the walls of the well, prevent the loss of fluids to the rock formations, and prevent the penetration of the formation fluids into the system; and cool and lubricate the drill bit.

Completion fluid is a brine liquid circulated through a completed well to clear any remaining solids in the well, as part of the process of preparing the well for production. Dry bulk powders can be products used to make drilling mud more dense or viscous, or it can be cement used to isolate, support and protect the casing inside a well.

Drilling fluid can either be water based or oil based mud and the Proponent intends to produce both water and synthetic oil based muds at the project site. The facility will host a combination of storage tanks, mixing tanks, pumps, mixing hoppers, generators, air compressors and support infrastructure. Chemicals will be received by truck and offloaded on berth 8. The products will remain packed and on wooden pallets, with a plastic cover or stretch film for protection against moisture, for the short period until they are used. Bulk dry powders will be received and stored in bulk dry powder tanks. For fluid production, water or synthetic oil will be pumped to the mixing tank and chemicals added either directly to the mixing tank or via the chemical mixing hopper. Throughout this process the fluid mixture will be circulated through the same tank. Once the fluid is ready, a sample will be taken for testing to determine if it meets the requirements as specified by the drilling and completion fluid technical team. If it does not meet the requirements, it will be adjusted until it meets the requirements. It is then pumped to the fluid storage tanks for temporary storage until it can be pumped to the platform supply vessel's tank for transport to the drilling rig. Used drilling fluids can be returned from the drilling rig to the liquid mud plant for reconditioning. This allows the drilling fluid to be used again and reduces resource requirements.

Public Participation
As part of the environmental assessment process, public consultation was performed. This entailed placing site notices, placing advertisements in two national newspapers, and notifying direct neighbours, identified interested and affected parties and relevant authorities. Four individuals from three organisations registered as interested and affected parties for the project. However, no comments or concerns were received.

Impacts
Positive impacts that will realise from the proposed facility and its operations, are mainly the provision of essential support services to the current offshore exploratory and well drilling industry; and other potential future exploratory drilling projects in the oil and gas industry. The development of Namibian oil resources shows promising results and will significantly benefit Namibia directly and indirectly in terms of employment, technological advancement, income generation and progress. The Proponent's project itself will be one of the first of its kind in Namibia. It will entail significant investments to be made, thus stimulating the local economy. New technology will be brought to Namibia and employment and skills transfer will benefit the local labour force.

The major concerns related to the operations of the facility, is that of potential health and safety impacts on workers and nearby receptors due to the exposure to, or inhalation of, chemicals. Noise and increased traffic will be associated with the construction and operational phases. Potential pollution of the environment can occur where chemicals and drilling fluids are not suitably contained. The potential for a fire exists due to the nature of chemicals stored on site. Bright lighting can affect birds flying at night and cause collisions of such birds with manmade structures.

Management of Impacts
Positive impacts can be enhanced by supporting local industries and contractors and appointment of local Namibian employees, as far as is practically possible. It should however be noted that the technologies are specialised and new to Namibia and may thus require international expertise in order to safely perform operations.

During construction and operations, noise levels should meet the minimum requirements of the Health and Safety Regulations of the Labour Act and World Health Organisation guidelines for community noise. Should traffic impacts be expected at any stage due to the delivery of equipment, traffic management should be conducted and trucks should not be allowed to block roads or the entrances to neighbouring properties. Fire detection and firefighting equipment should be present on site. Waste management must be performed and waste should be contained and regularly disposed of at an approved waste disposal facility.

The environmental management plan included in section 9 of this document should be used as an on-site reference document during all phases (planning, construction (care and maintenance), operations and decommissioning) of the facility. All monitoring and records kept should be included in a report to ensure compliance with the environmental management plan. A health, safety, environment and quality policy, or similar, should be used in conjunction with the environmental management plan. Operators and responsible personnel must be taught the contents of these documents. Municipal or national regulations and guidelines must be adhered to and monitored regularly as outlined in the environmental management plan.

Conclusion
Based on the findings of the environmental risk assessment, there is no evidence that suggest that the proposed project cannot continue at the proposed location. That being said, it remains imperative that all personnel is suitably trained to perform the various activities associated with the plant and an emergency response plan must be in place and all staff well versed on its contents. The environmental management plan as presented in this document should be adopted and the contents kept up-to-date as legislation, equipment and operational methods and conditions change.

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LIST OF ABBREVIATIONS

AIDS	Acquired Immune Deficiency Syndrome
CITES	Convention on International Trade in Endangered Species
ECC	Environmental Clearance Certificate
EIA	Environmental Impact Assessment
EMA	Environmental Management Act No 7 of 2007
EMP	Environmental Management Plan
EMS	Environmental Management System
ES	Environmental Classification
g/cm3	Gram per Cubic Centimetre
GPT	Geo Pollution Technologies
ha	hectare
HIV	Human Immunodeficiency Virus
IAPs	Interested and Affected Parties
IBA	Important Bird Area
IUCN	International Union for Conservation of Nature
kg	Kilogram
km/h	Kilometre per Hour
m^3	Cubic metre
MBL	Marine Boundary Layer
m/s	Meter per second
MEFT	Ministry of Environment, Forestry and Tourism
mm/a	Millimetres per annum
MSDS	Material Safety Data Sheet
NaCl	Sodium chloride
PPE	Personal Protective Equipment
ppm	Parts per million
SAH	South Atlantic High
SAH+	Subtropical High Pressure Zone
SO_2	Sulphur dioxide
WHO	World Health Organization

GLOSSARY

Alternatives - A possible course of action, in place of another, that would meet the same purpose and need but which would avoid or minimize negative impacts or enhance project benefits. These can include alternative locations/sites, routes, layouts, processes, designs, schedules and/or inputs. The "no-go" alternative constitutes the 'without project' option and provides a benchmark against which to evaluate changes; development should result in net benefit to society and should avoid undesirable negative impacts.

Assessment - The process of collecting, organising, analysing, interpreting and communicating information relevant to decision making.

Competent Authority - means a body or person empowered under the local authorities act or Environmental Management Act to enforce the rule of law.

Construction - means the building, erection or modification of a facility, structure or infrastructure that is necessary for the undertaking of an activity, including the modification, alteration, upgrading or decommissioning of such facility, structure or infrastructure.

Cumulative Impacts - in relation to an activity, means the impact of an activity that in itself may not be significant but may become significant when added to the existing and potential impacts eventuating from similar or diverse activities or undertakings in the area.

Environment - As defined in the Environmental Assessment Policy and Environmental Management Act - "land, water and air; all organic and inorganic matter and living organisms as well as biological diversity; the interacting natural systems that include components referred to in sub-paragraphs, the human environment insofar as it represents archaeological, aesthetic, cultural, historic, economic, palaeontological or social values".

Environmental Impact Assessment (EIA) - process of assessment of the effects of a development on the environment.

Environmental Management Plan (EMP) - A working document on environmental and socio-economic mitigation measures, which must be implemented by several responsible parties during all the phases of the proposed project.

Environmental Management System (EMS) - An Environment Management System, or EMS, is a comprehensive approach to managing environmental issues, integrating environment-oriented thinking into every aspect of business management. An EMS ensures environmental considerations are a priority, along with other concerns such as costs, product quality, investments, PR productivity and strategic planning. An EMS generally makes a positive impact on a company's bottom line. It increases efficiency and focuses on customer needs and marketplace conditions, improving both the company's financial and environmental performance. By using an EMS to convert environmental problems into commercial opportunities, companies usually become more competitive.

Evaluation - means the process of ascertaining the relative importance or significance of information, the light of people's values, preference and judgements in order to make a decision.

Flash Point - minimum temperature at which a liquid gives off vapour within a test vessel in sufficient concentration to form an ignitable mixture with the air near the surface of the liquid.

Hazard - Anything that has the potential to cause damage to life, property and/or the environment. The hazard of a particular material or installation is constant; that is, it would present the same hazard wherever it was present.

Interested and Affected Party (IAP) - any person, group of persons or organisation interested in, or affected by an activity; and any organ of state that may have jurisdiction over any aspect of the activity.

Mitigate - The implementation of practical measures to reduce adverse impacts.

Proponent (Applicant) - Any person who has submitted or intends to submit an application for an authorisation, as legislated by the Environmental Management Act no. 7 of 2007, to undertake an

activity or activities identified as a listed activity or listed activities; or in any other notice published by the Minister or Ministry of Environment and Tourism.

Public - Citizens who have diverse cultural, educational, political and socio-economic characteristics. The public is not a homogeneous and unified group of people with a set of agreed common interests and aims. There is no single public. There are a number of publics, some of whom may emerge at any time during the process depending on their particular concerns and the issues involved.

Rheology - The science of flow and deformation of matter. It describes the interrelation between force, deformation and time.

Scoping Process - process of identifying: issues that will be relevant for consideration of the application; the potential environmental impacts of the proposed activity; and alternatives to the proposed activity that are feasible and reasonable.

Significant Effect/Impact - means an impact that by its magnitude, duration, intensity or probability of occurrence may have a notable effect on one or more aspects of the environment.

Stakeholder Engagement - The process of engagement between stakeholders (the proponent, authorities and IAPs) during the planning, assessment, implementation and/or management of proposals or activities. The level of stakeholder engagement varies depending on the nature of the proposal or activity as well as the level of commitment by stakeholders to the process. Stakeholder engagement can therefore be described by a spectrum or continuum of increasing levels of engagement in the decision-making process. The term is considered to be more appropriate than the term "public participation".

Stakeholders - A sub-group of the public whose interests may be positively or negatively affected by a proposal or activity and/or who are concerned with a proposal or activity and its consequences. The term therefore includes the proponent, authorities (both the lead authority and other authorities) and all interested and affected parties (IAPs). The principle that environmental consultants and stakeholder engagement practitioners should be independent and unbiased excludes these groups from being considered stakeholders.

Sustainable Development - "Development that meets the needs of the current generation without compromising the ability of future generations to meet their own needs and aspirations" – the definition of the World Commission on Environment and Development (1987). "Improving the quality of human life while living within the carrying capacity of supporting ecosystems" – the definition given in a publication called "Caring for the Earth: A Strategy for Sustainable Living" by the International Union for Conservation of Nature (IUCN), the United Nations Environment Programme and the World Wide Fund for Nature (1991).

1 INTRODUCTION

Baker Hughes is a global energy technology company who, amongst others, specialises in the provision of products and services for oil field development (oil well drilling, formation evaluation, completion, production and reservoir consulting). With the recent developments in oil and gas exploration in Namibia, the Proponent, through its locally established subsidiary, Baker Hughes Energy Services Namibia (Pty) Ltd (the Proponent), intends to develop and operate a liquid mud plant, dry bulk plant, and cement bulk plant, within the commercial harbour of the Port of Walvis Bay (Figure 1-1). The purpose of which will be to mix, condition, store and transfer drilling and completion fluids for oil wells, and storage and transfer of dry bulk powders required to produce drilling and completion fluids and, as part of dry bulk powders, supply cement to isolate, support and protect the casing inside a well.

The Proponent requested Geo Pollution Technologies (Pty) Ltd, as an independent environmental consultant, to conduct an environmental impact assessment (EIA) to comprehensively evaluate the potential environmental implications associated with the liquid mud and bulk plant. The EIA was undertaken to determine the potential impact of the construction, operational and possible decommissioning phases of the project on the environment. The environment being defined in the Environmental Management Act as "land, water and air; all organic and inorganic matter and living organisms as well as biological diversity; the interacting natural systems that include components referred to in sub-paragraphs, the human environment insofar as it represents archaeological, aesthetic, cultural, historic, economic, paleontological or social values".

This environmental assessment thus seeks to provide a comprehensive assessment of the proposed liquid mud and bulk plant's potential impacts on soil, water, air quality, biodiversity and human health. Through detailed analysis and assessment, preventative and mitigation measures are proposed, aimed at ensuring the facility's adherence to regulatory requirements and best practices, safeguarding both the environment and the surrounding community.

The environmental assessment was conducted to apply for the necessary environmental clearance certificate in compliance with Namibia's Environmental Management Act (Act No 7 of 2007).

Project Justification – Namibia has rich and diverse mineral resources and sees large investments into the extraction of raw materials. The recent offshore oil discoveries are promising for Namibia's future economic growth and have resulted in large scale offshore exploratory drilling. Such exploratory drilling, and potential future oil field development, requires crucial, specialised support services which are readily and reliably available. In order to capitalise on this, it is crucial that such services can be provided by locally established companies. The Proponent's proposed project, as support service to oil field development, can realise the following benefits:

- Local development of facilities that can service the exploratory oil and gas drilling industry.
- Capital investment through the acquisition infrastructure and equipment to develop the facility.
- Revenue generation and support of local businesses and contractors.
- Employment and skills development and training.
- Cost and time savings for the exploratory drilling industry by having access to locally produced drilling and completion fluids.
- Support for potential additional investments and development in the town and Namibia as a whole.

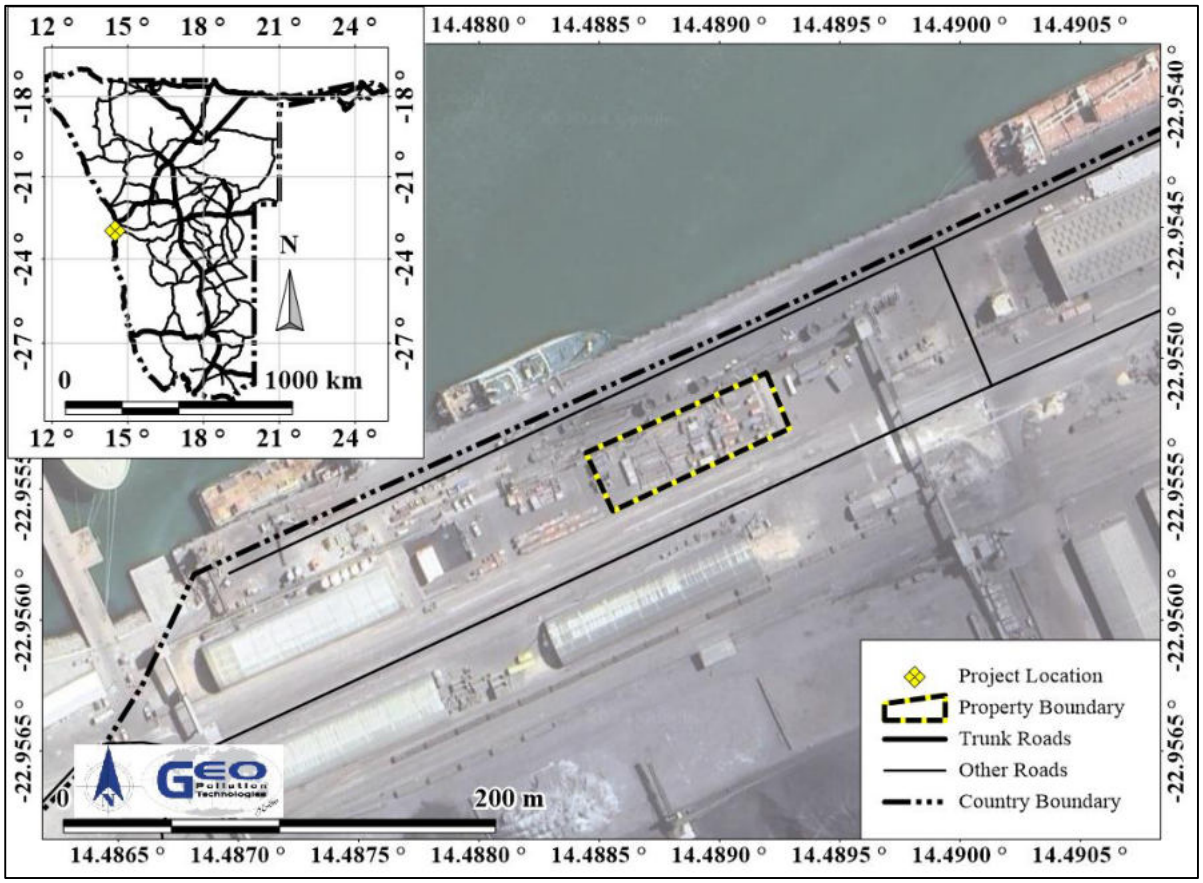


Figure 1-1 Project location

2 SCOPE

The scope of the environmental assessment is to:

- Comply with Namibia's Environmental Management Act (2007.
- Provide a description of the proposed project.
- Determine the potential environmental impacts emanating from the construction and maintenance, operations and possible decommissioning activities of the facility.
- Identify a range of management actions which could mitigate the potential adverse impacts to acceptable levels.
- Provide sufficient information to the Ministry of Environment, Forestry and Tourism (MEFT) to make an informed decision regarding the construction and maintenance, operations and possible decommissioning of the facility and the issuance of an ECC.

3 METHODOLOGY

The following methods were used to investigate the potential impacts on the social and natural environment expected from the construction and maintenance, operations and possible decommissioning activities of the facility:

- Baseline information about the site and its surroundings was obtained from existing secondary information as well as from a reconnaissance site visit.
- A detailed description of the proposed facility and its operations were obtained and presented in the EIA.
- As part of the EIA, interested and affected parties (IAPs) and authorities were consulted about their views, comments and opinions and these are put forward in this report.
- Based on gathered information and public and stakeholder consultation, an assessment of potential impacts was conducted and a management plan prepared.

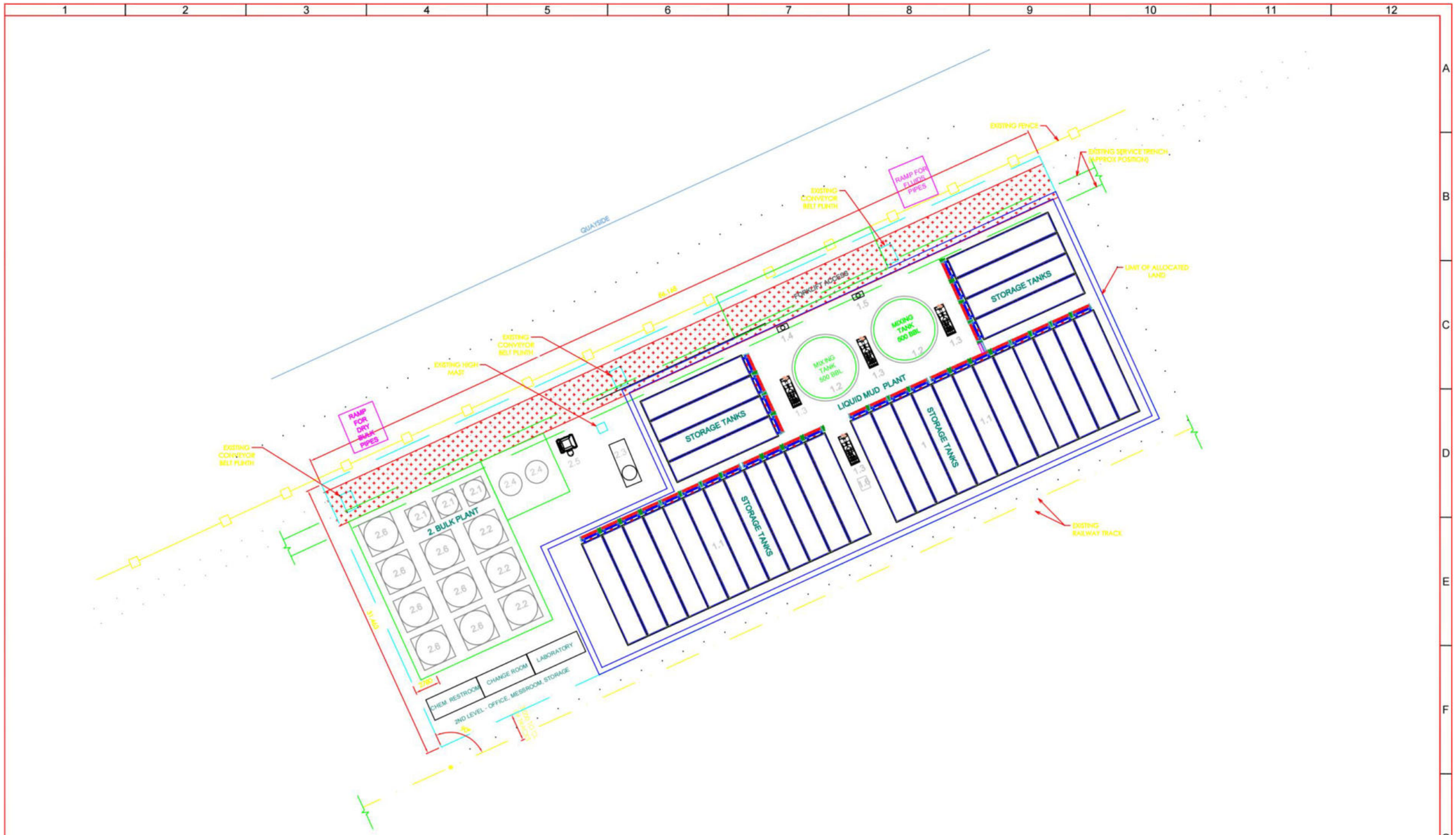
4 PROJECT DESCRIPTION

Exploratory and oil field development drilling is a complex process which is largely influenced by the environment in which it is performed. An important resource needed for drilling of wells, especially the extremely deep wells required for oil and gas extraction, is drilling and completion fluids. Drilling fluid (or drilling mud) is a viscous fluid used during drilling to, among others:

- Remove the rock fragments (drill cuttings) from the geological formations traversed by the drill, transport them to the surface, and release these fragments into the separation equipment.
- Keep cuttings and weight material (barite) in suspension when circulation is interrupted.
- Control subsurface pressures.
- Stabilize the walls of the well, prevent the loss of fluids to the rock formations, and prevent the penetration of the formation fluids into the system.
- Cool and lubricate the drill bit.
- Help sustain the weight of the drill string.
- To provide as much information as possible about the rock formations passed through and to minimise any adverse effect on the adjacent formation.
- Transmit the horsepower-force of hydraulic power to the drill.

Completion fluid is a brine liquid circulated through a completed well to clear any remaining solids in the well, as part of the process of preparing the well for production. Dry bulk powders can be products used to make drilling mud more dense or viscous, or it can be cement used to isolate, support and protect the casing inside a well.

Drilling fluid can either be water based or oil based mud and the Proponent intends to produce both water and synthetic oil based muds at the project site. Section 4.1 to 4.15 provide an overview of the location, different components and operations of the development. The general layout of the plant is presented in Figure 4-1.



LOC	QTY	DESCRIPTION	LOC	QTY	DESCRIPTION
1	1	LIQUID MUD PLANT	2	1	DRY BULK PLANT
1.1	32	455 BBL FLUID STORAGE TANKS	2.1	3	880 CU FT DRY BULK SILOS
1.2	2	500 BBL MIXING TANKS	2.2	3	2,400 CU FT DRY BULK SILOS
1.3	4	300 HP DIESEL PUMP SKIDS	2.3	1	400 CFM AIR COMPRESSOR SKID
1.4	1	SHEAR-MIXER HOPPER	2.4	2	160 CU FT CUTTING BOTTLE
1.5	1	SALT MIX HOPPER	2.5	1	DUST COLLECTOR
1.6	1	5M3 DIESEL STORAGE TANK	2.6	7	2,000 CU FT CEMENT BULK SILOS

MATERIAL					
REV	CHANGE NO	CHANGED	CHECKED	APPROVED	DATE
5	PCD-10	C. PULIDO	D. BEATON	V. JOSEPH	19-JUN-2024
4	PCD-04	C. PULIDO	D. BEATON	P. OBIAS	10-MAY-2024
3	PCD-03	C. PULIDO	D. BEATON	S. BRUCE	22-ABR-2024
2	PCD-02	C. PULIDO	D. BEATON	S. BRUCE	29-MAR-2024
1	PCD-01	C. PULIDO	D. BEATON	S. BRUCE	01-MAR-2024

HEAT TREATMENT | COATING | WELDING

DRAWING SPECIFICATIONS UNLESS OTHERWISE SPECIFIED
DO NOT SCALE PRINT
ALL DIMENSIONS IN MILLIMETERS
DECIMAL X. = ±1.6mm, .X = ±.25mm, .XX = ±.13mm
ANGULAR = ±1°
SURFACE FINISH 125 RMS
REMOVE ALL BURRS AND BREAK SHARP EDGES

APPROVED FLUIDS | PAINT | TANK LINING | ID NUMBER | THREAD PREP. | MISC

Baker Hughes
THIRD ANGLE PROJECTION
DRILLING AND COMPLETION FLUIDS

MAT'L NO.
DRAWN C. PULIDO
CHECKED D. BEATON
APPROVED V. JOSEPH
ISSUED 19-JUN-2024
SHEET 1 OF 1

REFERENCE P005-DCF-LMP-05
TITLE
General Layout
Liquid Mud Plant
Walvis Bay Port
Namibia

SIZE	DRAWING NUMBER	REVISION
A3	001	5

Figure 4-1 Site layout

4.1 LOCATION

The liquid mud and bulk plant will be located within the commercial harbour of the Port of Walvis Bay which is managed by the Namibian Ports Authority (Namport). It will be developed on berth 8 of the port which is located towards the western side, near the new container terminal. It will cover 2,712 m^2.

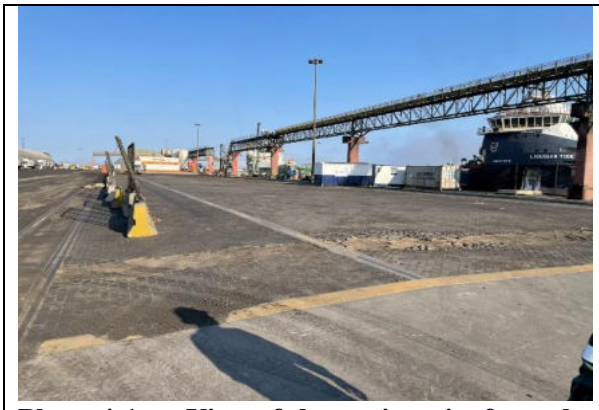


Photo 4-1 **View of the project site from the south eastern border**

Photo 4-2 **View of the project site from the south western corner towards the north east**

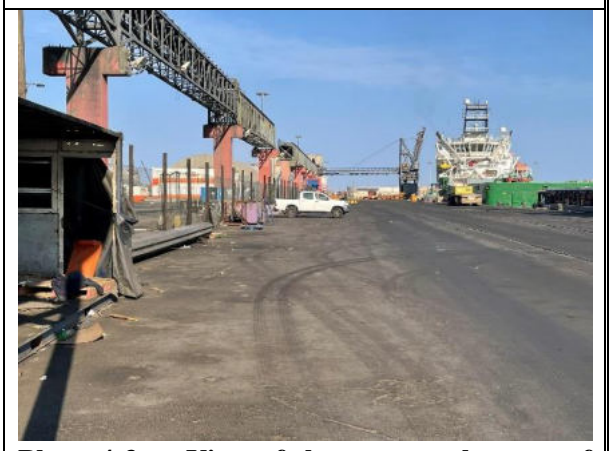


Photo 4-3 **View of the quay to the west of the site from the north-eastern corner of the site**

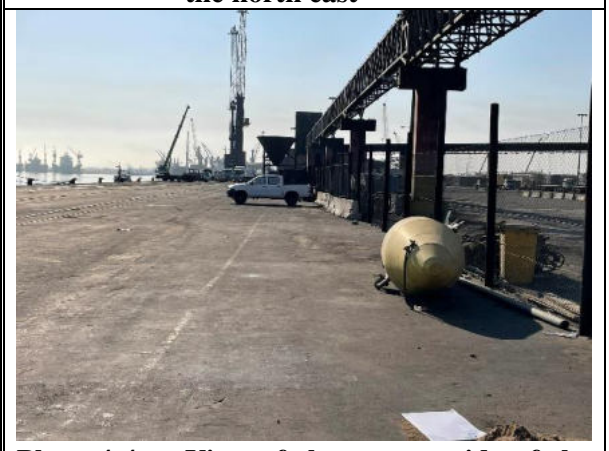


Photo 4-4 **View of the eastern side of the quay, from the north western corner of the site**

4.2 INFRASTRUCTURE

4.2.1 Liquid Mud Plant

The liquid mud plant will have combined storage capacity for 2,384.74 m^3 of water and synthetic oil based drilling fluids and completion fluids. Storage will be in carbon steel, atmospheric, horizontal tanks (Photo 4-5). Two atmospheric, metallic vertical fluid mixing tanks of 79.49 m^3 each will be present for the mixing of the fluids (Photo 4-6). Together with the tanks, chemical mixing hoppers (Photo 4-7), diesel driven centrifugal pumps (Photo 4-8) and a reticulation network make up the main components of the liquid mud plant. The entire plant will be located in a bund with an impermeable membrane placed over geotextile on the existing interlocking paving on berth 8. The bund will have a volume of at least 110% of the largest tank within the bund area. Areas in the bund with human traffic will be covered by heavy duty track mats to prevent damage to the impermeable membrane.

Photo 4-5 Drilling and completion fluid storage tanks

Photo 4-6 Fluid mixing tank

Photo 4-7 Chemical mixing hopper

Photo 4-8 Diesel driven centrifugal pump

4.2.2 Dry Bulk Storage

The dry bulk storage will cover approximately 400 m^2. The dry bulk plant for storage of products such as barite, bentonite and calcite.

The dry bulk plant will have three silos of 24.92 m^3 and three silos of 67.96 m^3 each for a total volume of 278.64 m^3. A cutting silo will also be present and will be used to open and empty bulk bags of dry bulk products and pumping it to their respective storage silos. Each silo will be connected to a bag filter system that traps any dust contained in the air existing the silos as they are filled. The dust trapped in the filters will be collected and returned to the silos so that no product is wasted.

An air compressor with 2 m^3 air storage tank and 12.3 bar operating pressure will be used to provide pressure to transport bulk dry products (pneumatic transport) through a network of pipes (pneumatic transport) to their respective silos as well as from silos to platform supply vessels, trucks or the liquid mud plant. All reticulation will meet the required pressure specifications and the entire system will be fitted, among others, with pressure gauges and pressure release valves at critical points.

Silos will be fitted with an electronic weight measuring system in order to determine the amount of product added or removed from the silos. All silos and the cutting table are electrically grounded to discharge any static electricity or lightning strikes. Bulk powder transport pipes have access points at strategic points such as curves or pressure drop points to allow for unclogging of the pipes if required.

An emergency shower and eyewash station will be placed next to the cutting table. Fire extinguishers will be placed at critical locations throughout the dry bulk storage area, such as at the compressors. Drip trays will also be placed under compressors and their motors for

containment of any lubricating oil spills. Emergency lighting will be present in case of power failures.

4.2.3 Cement Bulk Plant

The cement bulk plant used for dry bulk cement storage will consist of two silos of 62.3 m^3 each, two silos of 42.5 m^3 each, three silos of 39.6 m^3 each, two small multi-purpose silos of 12.75 m^3 each, one of cutting bottle of 6 m^3 and one of dust collector of 2 m^3 with a total volume of 365 m^3. The cutting bottle will be used to empty 1.5 ton bulk bags of dry bulk cement product. As each of cement bags weights 1.5 tons, the cutting bottle will be filled with five bags at a time and after which it will be pneumatically transported to the respective storage silos. One dust collector will be connected to all the silos and will function as filter system that traps any dust contained in the air existing the silos as they are filled. The dust trapped in the filters will be collected and returned to the silos so that no product is wasted.

Pneumatic transport of cement, safety features, emergency equipment, etc. will all be in place exactly the same as for the dry bulk storage section.

MSDS is provided and placed in front of every silo along with a stand board or plate to state the contents of the silo (e.g. 50T G Cement or Zero Ton (empty)). This allows all operational personnel to know the exact contents of each silo.

4.2.4 Fuel Storage

The Proponent will install an aboveground diesel storage tank to supply fuel to the diesel driven centrifugal pumps. The installation of the storage tank will adhere to the requirements of the Petroleum Products Act. The steel tank has 5 m^3 capacity (Photo 4-9) and will be placed inside a bunded area to prevent contamination of the environment.

Photo 4-9 Diesel storage tank

4.3 OPERATIONS

4.3.1 Liquid Mud Plant

Drilling and completion fluids are comprised of three main phases:

1) The liquid phase of fluid is referred to as the continuous phase or dispersing phase. It also makes up the largest part of the fluid. For water based fluid, the continuous phase is potable water to which the active solids phase is added. For the synthetic oil based fluid, olefin will be used as continuous phase.

2) The active solids phase are solid materials added to the continuous phase which react with each other and with the continuous phase, thus altering the physicochemical properties of the fluid. Active solids phase components include viscosifiers such as bentonite, pH controllers such as lime or caustic soda, refiners, filtrate reducers and emulsifiers;

3) The inert solids phase are solids that do not react chemically with the continuous or solids phases, but changes the physical and technological characteristics of the fluid. This include weighting agents which increases the density of the fluid (e.g. barite or calcite) and loss circulation materials that prevent fluid loss during drilling in permeable substrate (e.g. micas or cellulose fibres).

The formulations of drilling fluid systems vary depending on the type of fluid and the application. The petrophysical, chemical and structural characteristics of the rock formations that will be traversed during the drilling of an oil or gas well must be considered. The exact composition and characteristics of the fluid to be mixed is specified by the drilling and completion fluids technical team and it is the responsibility of the fluid engineer to combine the appropriate volumes and types of active and inert solids to the continuous phase (water) to meet the required specifications.

The fluid engineer actively controls a series of physicochemical characteristics of the system, such as weight (density), viscosity (apparent and plastic), yield strength, resistance of gels, filtrate, concentration of solids, pH, electrical resistivity, etc. To control these factors, and maintain optimal fluid performance, the fluid engineer combine a series of processes (dilution, concentration, etc.) and chemical treatments with various products. Among others, these include:

- Densifiers: Barite, calcite, hematite, sodium chloride salts; potassium chloride, calcium bromide, etc.
- Viscosifiers: Bentonite, polyacrylamides, carboxymethyl cellulose polymers, xantan gum, etc.
- pH controllers: Lime, caustic soda, etc.
- Dispersants: tannins, phosphates.
- Flocculants: Caustic soda, lime, sodium chloride, etc.
- Defoamers: Silicone or alcohol based.
- Other special products such as tracers and anti-corrosion agents may also be present.

Figure 4-2 provides an overview of the liquid mud plant operations.

All active and inert solid phase products, required for the preparation of water based fluids, will be ordered from local suppliers at the time when they are required. Potable water will be supplied by Namport via the internal potable water reticulation network as obtained from NamWater. Once an order for drilling or completion fluid is received, the fluid engineer determines the required products and their volumes and a mixing recipe for the fluid is prepared. These products will be received in various types and sizes of packaging, ranging from 25 kg bags to 1,500 kg bulk bags and 20 litre drums to 8,000 litre bulk tanks. A warehouse in the vicinity of berth 8, in an area provided by Namport, will store chemicals, and by only receiving the products at the time they will be used, negates the need for additional permanent storage space at the liquid mud plant itself.

4.3.2 Water Based Fluids and Brines

Water-based fluids are those that have water as the continuous phase. Water-based fluids have salinity less than 1,000 ppm of sodium chloride equivalent. The plant is expected to use water-based fluid with a maximum density of 1.92 g/cm^3. Saltwater fluids or brines have salinity greater than 1,000 ppm of sodium chloride equivalent and can be natural seawater or brines with salts additives such as sodium chloride, potassium chloride, calcium chloride, etc. Water-based fluids and brines have no flash point and thus presents no fire risk. The plant is expected to use the following types of brines for a maximum density of 1.74 g/cm^3:

- Sodium Chloride
- Calcium Chloride
- Calcium Bromide
- Calcium Bromide / Calcium Chloride

4.3.3 Synthetic Oil-Based Fluids

The synthetic oil-based fluid will have olefin as its d continuous phase at a concentration of 60 to 80%. Olefins (also called alkenes) are compounds of hydrogen and carbon that contains one or more pairs of carbon atoms linked by a double bond. They are unsaturated hydrocarbons (C_nH_{2n}) with an average density of 0.77 g/cm^3 and a flash point of more than 93 ºC in a closed vessel (Pensky-Martens method).

Synthetic fluids typically have an aqueous portion (emulsion) that is almost always brine. Fluids can be emulsion water/oil itself when the water content is less than 10%; and invert emulsion, when the water content exceeds 10%, and can reach up to 45%. The stability of the water emulsion (brine) in oil is obtained by adding an emulsifier whose volume percentage is in the order of 3% and with a flash point of 93 °C.

Other products and additives are added to the fluid to control specific rheological and physicochemical characteristics, including:

- Ingredients: Barite, calcium carbonate
- Viscosifiers: Xanthan gum, organophilic clay, etc.
- Emulsifiers
- Alkalinity agents
- Filtration loss controllers
- Flat rheology agents

4.3.4 Drilling and Completion Fluid Production

Active and inert solids will be received by truck and offloaded on berth 8. The products will remain packed and on wooden pallets, with a plastic cover or stretch film for protection against moisture, for the short period until they are used (See section 4.3.5 for operations related to bulk dry chemicals). For fluid production, water or synthetic oil will be pumped with the centrifugal pumps to the mixing tank and active and inert solids added either directly to the mixing tank or via the chemical mixing hopper. Throughout this process the fluid mixture will be circulated through the same tank. Once the fluid is ready, a sample will be taken for testing to determine if it meets the requirements as specified by the drilling and completion fluid technical team. If it does not meet the requirements, it will be adjusted until it meets the requirements. It is then pumped to the fluid storage tanks for temporary storage until it can be pumped to the platform supply vessel's tank for transport to the drilling rig. Used drilling fluids can be returned from the drilling rig to the liquid mud plant for reconditioning. This allows the drilling fluid to be used again and reduces resource requirements.

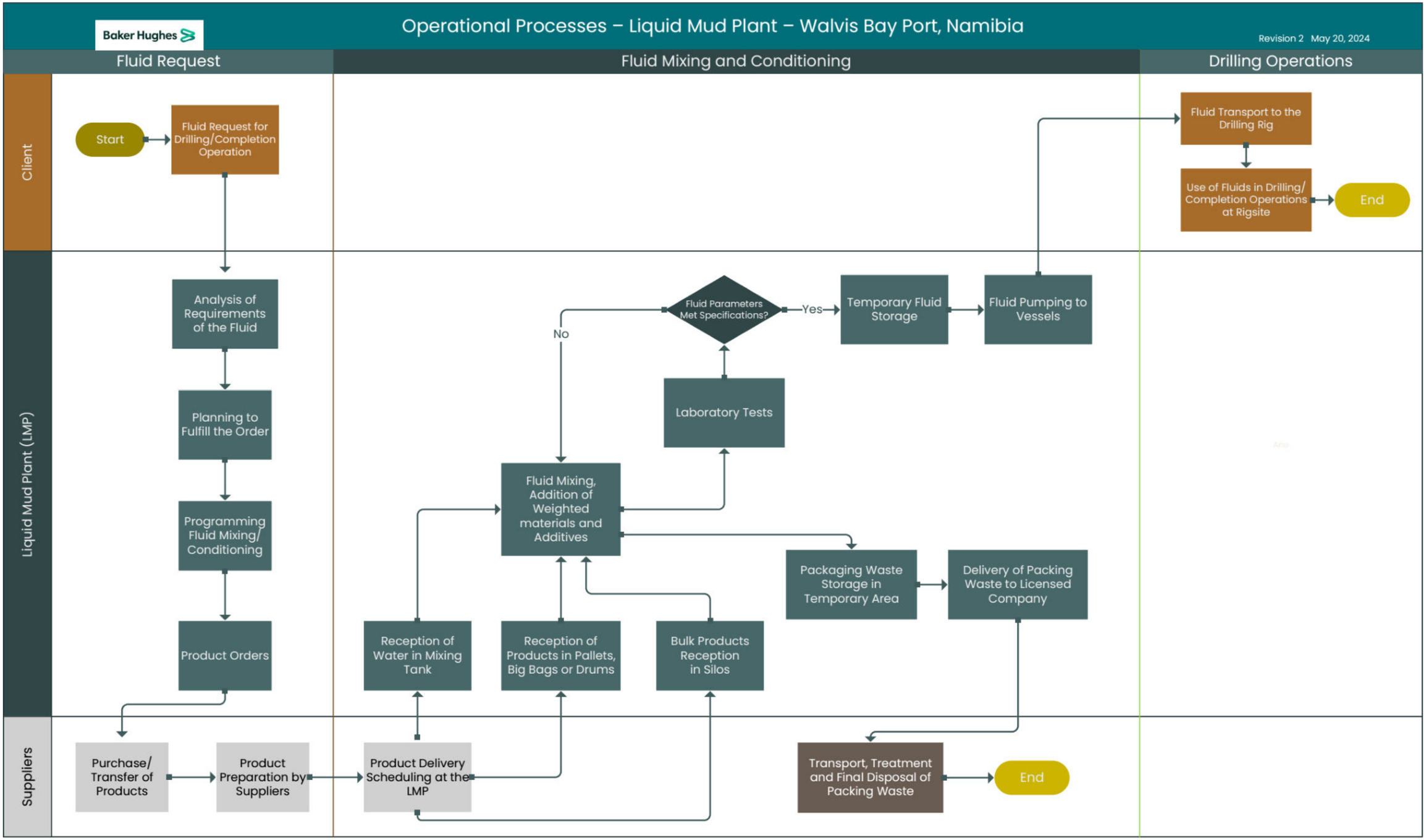


Figure 4-2 Water based liquid mud plant operational process

4.3.5 Dry Bulk Storage

Dry bulk products will be received as bulk cargo in bulk trucks or in bulk bags of 1,000 to 1,500 kg. From bulk trucks the products will be pneumatically transferred directly to the storage silos. Bulk bags will arrive on trucks and will be offloaded using forklift. The bag will be lifted above the cutting silo and emptied into the silo via a hopper. When complete, the cutting silo will be closed, pressurised and the material pneumatically transferred to the storage silos.

The dry bulk products remain in the silos until they are needed in the liquid mud plant or at the drill rig. Silos will then be pressurised and the product pneumatically pumped to the platform support vessel or the liquid mud plant.

Silos will periodically be inspected, maintained and cleaned and access will be via manholes on the tanks.

Photo 4-10 Dry bulk powder silos

4.4 Fuel Supply

Initially, the Proponent may keep small volumes of diesel on site, either in a small bowser or 200 litre containers. Once a more permanent diesel tank is constructed, diesel will be delivered to the tank with a tanker truck or bowser. Frequent tank dips and reconciliations will be carried out in order to ensure timely diesel orders to refill the tank.

4.5 Tank and Pipeline Cleaning

During normal operations of the plant, and particularly if the composition of the fluids change, cleaning of tanks and pipelines will be required. The configuration of the plant is however planned in such a way that it can mix the different fluids in independent, separate systems. A specialized company will be contracted for tank and pipeline cleaning and all waste will be discarded at an approved waste disposal facility through the contractor.

4.6 Safety

Strict protocols will be in place to ensure the protection of workers' and nearby receptors' health and safety. Storage tanks where drilling fluids are stored will be vented to allow for the escape of any vapour generated through evaporation inside the tanks. Access to the production area will

be controlled. Warning signs and signage will indicate the risk areas as well as the need to use personal protective equipment (PPE), access restrictions, no smoking, indications of electrical hazards, etc. It will be the responsibility of the plant supervisor to ensure that only authorized personnel enter the premises, as well as to keep escape routes clear and visible. PPE will include safety hats, goggles, and boots; rubber gloves (Neoprene) long shaft or equivalent; gas masks with an activated carbon filter when necessary; neoprene apron or similar or disposable protective coveralls; and hearing protectors when near motors and compressors. Engine noise monitoring will be carried out annually during occupational health and hygiene measurements.

Any spilled products will be dealt with immediately using the spill cleaning kits, including absorbent material (saw dust, clay, etc.), on site. Cleaning tools (shovels, wheelbarrows, etc.) as well as containers to pack the collected material for correct treatment and final disposal, by a contracted company, will also be on site.

Other safety and environmental control equipment include:

- Tank level indicators
- Pressure release valves
- Emergency eyewash and shower station
- Safety signs
- Guardrail and belt arrest falls on tank ladders
- Spill cleaning kits
- Fire extinguishers (CO_2 and dry chemical powder)
- Safety cables on all hoses
- Hoses certified annually by hydrostatic test
- Certified pressure gauges in fluid lines
- Grounding of all tanks and equipment
- Restricting access to critical plant parts
- Emegency lights
- Colour coding of pipes
- Marking and identification of all pipes
- Protection for moving parts of equipment.
- Operations manuals.
- Emergency plans
- Safety information of the products handled (MSDS, packaging).

4.7 LIQUID EFFLUENTS AND LIQUID WASTE MANAGEMENT

A modified container on site will act as ablution facility and sanitary waste will be collected and disposed of by a third party licensed contractor. Industrial liquid waste will not be produced actively at the facility and any spills or rainwater that may accumulate in the bund area will be re-used in the fluid production process. Should any liquid waste be produced that requires disposal, it will be disposed of by a reputable waste handling contractor for safe disposal at an appropriate waste disposal facility.

4.8 SOLID WASTE

Packaging and containment material will be the main type of waste produced. Differentiation can be made between contaminated and uncontaminated solid waste. Contaminated drums will be returned to the Proponent's distribution centre or disposed of at an approved hazardous waste disposal facility or recycler. Empty bags that cannot be re-used will also be disposed of at an approved waste disposal facility or recycler. Uncontaminated and general waste will be disposed of at the municipal waste disposal facility for general waste.

All waste will be contained and temporarily stored until it can be collected by a third party contractor for appropriate handling and disposal.

4.9 ATMOSPHERIC EMISSIONS

The main expected sources of air emissions will be:

- Solid particles during emptying of bulk dry powders such as barite and bentonite into the cutting silo. Emission will be minimized by associating all silos and pipes with a bag filter. The cutting silo will also be installed inside a cutting house, built on a metal support structure with a roof and walls, reducing the action of the wind on suspended particles.
- Dust during the emptying of bags in the hopper of the fluid mixing system. To control this source of emission, a chemical hopper will be used for the fluid mixing system. The hopper operation is based on a venturi system that generates strong suction of the material, reducing emissions to a minimum. Chemical hoppers will also be installed in well-ventilated areas and employees will constantly wear dust masks as part of their PPE.
- Greenhouse gas emissions of exhaust gases from forklifts and diesel engines.

4.10 NOISE CONTROL

The main continuous sources of noise during plant operations will be forklifts, generators, compressors, diesel driven pumps and trucks in the vicinity of the plant (receiving materials). The evaluation of the effect of noise on employees will be carried out while the plant is in operation.

4.11 FIRE FIGHTING SYSTEM

An emergency fire prevention and response plan will be implemented for the facility. It will be drafted taking cognisance of the emergency plan of Namport. The firefighting measures will be developed and adapted to the characteristics of the location, including as a minimum:

- Emergency plan.
- Portable fire extinguishers.
- Alarm systems and detectors.
- Safety warnings.
- Inspection and monitoring system.
- Emergency lights.

Portable fire extinguishers will be strategically positioned throughout the plant area, as directed by the Baker Hughes health, safety and environment (HSE) department.

Fire extinguishers will be inspected by the plant operator before each operation. At least once a month the fire extinguishers will be inspected by the HSE technician or the rental Supervisor. This monthly inspection will be recorded on the body of the extinguishers. All fire extinguishers will be refilled and certified by an accredited company.

4.12 LIGHTNING PROTECTION SYSTEM

The design and execution of the lightning protection system will be by a qualified company, including the electrical grounding mesh system of the tanks, silos and plant components. Before going into operation, the system will be certified by a qualified professional.

4.13 ELECTRICAL INSTALLATIONS

The main equipment of the fluid and bulk plants, such as pumps and compressors, were designed to be driven by electric motors. A total of approximately 166.4 kW of installed capacity and 207.9 kVA are estimated. Electricity will be supplied through a direct contract with Namport. In addition, the plant will have a 500 kVA diesel standby generator.

4.14 OFFICE AND LABORATORY

The plant will have the following office and laboratory resources:

- One six meter container adapted for office space
- One six meter container adapted to a fully equipped laboratory for drilling and completion fluid testing
- One six meter refectory container
- One six meter chemical restroom container
- One six meter container for spare parts and tool storage
- One six meter ablution container

4.15 EMPLOYMENT

The operation of the plant will be carried out by a team composed of approximately twelve employees (one supervisor and four plant operators per shift), but this may vary based on the volume of services required. Operations will be from Monday to Sunday, 24 hours a day in 12-hour shifts. This will however also vary according to production needs and will likely not require 24 hour operations.

5 ALTERNATIVES

The Proponent was provided with space within the commercial harbour by Namport. The location of the site at Berth 8 is ideal to supply platform support vessels which can dock at Berth 8 with drilling and completion fluids. No alternative location for the project is therefore proposed.

No alternatives to the design and operations are proposed as long as the facility adheres to industry best practice standards and the applicable legislation as prescribed for the storage of potentially dangerous goods such as hydrocarbon based fluids. The practice of reduce, re-use, recycle should be adopted as an alternative to simply disposing of all waste at a landfill. The no-go option will negate all benefits, risks and possible impacts of the proposed project, should it be considered.

6 ADMINISTRATIVE, LEGAL AND POLICY REQUIREMENTS

To protect the environment and achieve sustainable development, all projects, plans, programmes and policies deemed to have adverse impacts on the environment require an environmental assessment, as per the Namibian legislation. The legislation and standards provided Table 6-1 to Table 6-2 govern the environmental assessment process in Namibia and/or are relevant to the facility.

Table 6-1 Namibian law applicable to the facility and related operations

Law	Key Aspects
The Namibian Constitution	♦ Promote the welfare of people ♦ Incorporates a high level of environmental protection ♦ Incorporates international agreements as part of Namibian law
Environmental Management Act Act No. 7 of 2007, Government Notice No. 232 of 2007	♦ Defines the environment ♦ Promote sustainable management of the environment and the use of natural resources ♦ Provide a process of assessment and control of activities with possible significant effects on the environment
Environmental Management Act Regulations Government Notice No. 28-30 of 2012	♦ Commencement of the Environmental Management Act ♦ List activities that requires an environmental clearance certificate ♦ Provide Environmental Impact Assessment Regulations
Namibia Ports Authority Act Act No. 2 of 1994	♦ Provides for the establishment of the Namibian Ports Authority to undertake the management and control of ports ♦ Outlines the functions of the Namibian Ports Authority among which is the protection of the environment
Marine Resources Act Act No. 27 of 2000	♦ Provides for the conservation of the marine ecosystem and the responsible administration, conservation, protection and promotion of marine resources on a sustainable basis
Water Resources Management Act Act No. 11 of 2013	♦ Provides for management, protection, development, use and conservation of water resources ♦ Prevention of water pollution and assignment of liability

Law	Key Aspects
Local Authorities Act Act No. 23 of 1992, Government Notice No. 116 of 1992	♦ Define the powers, duties and functions of local authority councils ♦ Regulates discharges into sewers
Public and Environmental Health Act Act No. 1 of 2015, Government Notice No. 86 of 2015	♦ Provides a framework for a structured more uniform public and environmental health system, and for incidental matters ♦ Deals with Integrated Waste Management including waste collection disposal and recycling; waste generation and storage; and sanitation
Petroleum Products and Energy Act Act No. 13 of 1990, Government Notice No. 45 of 1990	♦ Regulates petroleum industry ♦ Makes provision for impact assessment ♦ Petroleum Products Regulations (Government Notice No. 155 of 2000) ♦ Prescribes South African National Standards (SANS) or equivalents for construction, operation and decommissioning of petroleum facilities (refer to Government Notice No. 21 of 2002)
Labour Act Act No 11 of 2007, Government Notice No. 236 of 2007	♦ Provides for Labour Law and the protection and safety of employees ♦ Labour Act, 1992: Regulations relating to the health and safety of employees at work (Government Notice No. 156 of 1997)
Atmospheric Pollution Prevention Ordinance Ordinance No. 11 of 1976	♦ Governs the control of noxious or offensive gases ♦ Prohibits scheduled process without a registration certificate in a controlled area ♦ Requires best practical means for preventing or reducing the escape into the atmosphere of noxious or offensive gases produced by the scheduled process
Hazardous Substances Ordinance Ordinance No. 14 of 1974	♦ Applies to the manufacture, sale, use, disposal and dumping of hazardous substances as well as their import and export ♦ Aims to prevent hazardous substances from causing injury, ill-health or the death of human beings
Pollution Control and Waste Management Bill (draft document)	♦ Not in force yet ♦ Provides for prevention and control of pollution and waste ♦ Provides for procedures to be followed for licence applications
Foreign Investment Act 27 of 1990 (as amended by Foreign Investment Amendment Act 24 of 1993)	♦ Provides for the promotion of foreign investment in Namibia ♦ Considers environmental impacts associated with foreign investments.
Draft Wetland Policy of 2003	♦ Considering the proximity of the Walvis Bay Lagoon, a RAMSAR site, the Wetland Policy of 2003 is of importance and includes protection and conservation of wetlands and ecosystems.
National Marine Pollution Contingency Plan of 2017	♦ Coordinated and integrated national system for dealing with oil and other spills in Namibian waters.
Namport Safety, Health, Environment and Quality Policy	♦ Provides guidance to all members responsible for managing Safety, Health, Environment and Quality related aspects. ♦ Ensures compliance with all applicable legal SHEQ and related requirements.

Table 6-2 Municipal by-laws, guidelines and regulations

Municipal By-laws, Guidelines or Regulations	Key Aspects
Integrated Urban Spatial Development Framework for Walvis Bay	♦ Overall vision to transform Walvis Bay to being the primary industrial city in Namibia ♦ Aims to ensure that appropriate levels of environmental management is enforced for all developments in Walvis Bay
Integrated Environmental Policy of Walvis Bay (Agenda 21 Project)	♦ Indicates the directions that the Municipality of Walvis Bay will move towards in the forthcoming years to fulfil its responsibilities to manage the environment of Walvis Bay together with the town's residents and institutions ♦ Strong focus on conservation and protection of environment
Municipal By-law 19 and 20 on Effluents Entering Sewers	♦ Regulates the discharge of effluent into sewers and prohibits the introduction of certain wastes or products including steam into the sewers system.
Town Planning Scheme No. 35	♦ Manages and regulates development related to land use ♦ Proposes and identifies areas for specific future land use

Table 6-3 Relevant multilateral environmental agreements for Namibia and the project

Agreement	Key Aspects
Benguela Current Convention of 2013	♦ The Convention is a formal treaty between the governments of Angola, Namibia and South Africa that sets out the countries' intention "to promote a coordinated regional approach to the long-term conservation, protection, rehabilitation, enhancement and sustainable use of the Benguela Current Large Marine Ecosystem, to provide economic, environmental and social benefits."
Convention on Biological Diversity (CBD)	♦ Primary goal is the conservation of biodiversity ♦ Prescribes the precautionary principle ♦ Parties to the convention are obliged to: ♦ Establish a network of protected areas; o Create buffer areas adjacent to these protected areas using environmentally sound and o sustainable development practices; and o Rehabilitate degraded habitats and populations of species.
The Convention on Wetlands of International Importance especially as Waterfowl Habitat (referred as the RAMSAR Convention)	♦ It is a framework for international cooperation in the conservation and wise use of wetlands and their resources. ♦ Recognizes the Walvis Bay Nature Reserve – a tidal lagoon consisting of Pelican Point, adjacent intertidal areas, sandbars serving as roosting sites and mudflats exposed during low tide (12,600 ha) as a Wetland of International Importance.
UN Convention for the Prevention of Marine Pollution from Land-based Sources	♦ Concerns itself with the protection of marine fauna and flora by preventing marine pollution from land-based sources. ♦ Contracted parties, are committed to take all possible steps to prevent pollution of the sea as well as the direct or indirect introduction of substances or energy by humans into the marine environment resulting in such adverse effects as harm to living resources and to marine ecosystems, hazards to human health, damage

Agreement	Key Aspects
	to services/ facilities or interference with other legitimate uses of the area.
International Convention on Oil Pollution Preparedness, Response and Cooperation of 1990	♦ International maritime convention establishing measures for dealing with marine oil pollution incidents nationally and in co-operation with other countries.
Abidjan Convention of 1981	♦ The Convention for Cooperation in the Protection, Management and Development of the Marine and Coastal Environment of the Atlantic Coast of the West, Central and Southern Africa Region ♦ Provides an overarching legal framework for all marine-related programmes in West, Central and Southern Africa.
Stockholm Declaration on the Human Environment, Stockholm 1972.	♦ Recognizes the need for a common outlook and common principles to inspire and guide the people of the world in the preservation and enhancement of the human environment

Hazardous substances and fuel storage are listed as activities requiring an environmental clearance certificate as per the following points from Section 9 of Government Notice No. 29 of 2012:

- 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."
- 9.4 "The storage and handling of a dangerous goods, including petrol, diesel, liquid petroleum gas or paraffin, in containers with a combined capacity of more than 30 cubic metres at any one location."
- 9.5 "Construction of filling stations or any other facility for the underground and aboveground storage of dangerous goods, including petrol, diesel, liquid petroleum gas or paraffin."

7 THE RECEIVING ENVIRONMENT

This section summarises the most important environmental characteristics of the study area, as well as a short statement on the potential impacts/implications of the port operations on each.

7.1 LOCALITY AND SURROUNDING LAND USE

The commercial harbour of the Port of Walvis Bay is situated centrally on the west coast of Namibia. The port town of Walvis Bay is the biggest coastal town of Namibia and originated around the harbour. The harbour holds its value due to the natural deep waters of the bay, protected by the Pelican Point sand spit. Walvis Bay was originally established as mainly a fishing and port town and these two industries remain the main driving forces behind the town's economy. The port is surrounded by a variety of land uses including residential, business and industrial (Figure 7-1). The port itself, and therefore the area where the Proponent will be located, is zoned for harbour and railway use and surrounding port users constitute similar industries.

Of specific importance near the harbour are the Walvis Bay Lagoon, the salt works and the southern part of the bay west of the lagoon, which are the key components of a 12,600 ha Ramsar site (Wetland of International Importance). On land, Walvis Bay is further mostly surrounded by the Dorob National Park which falls under the management of the Ministry of Environment, Forestry and Tourism (Figure 7-2).

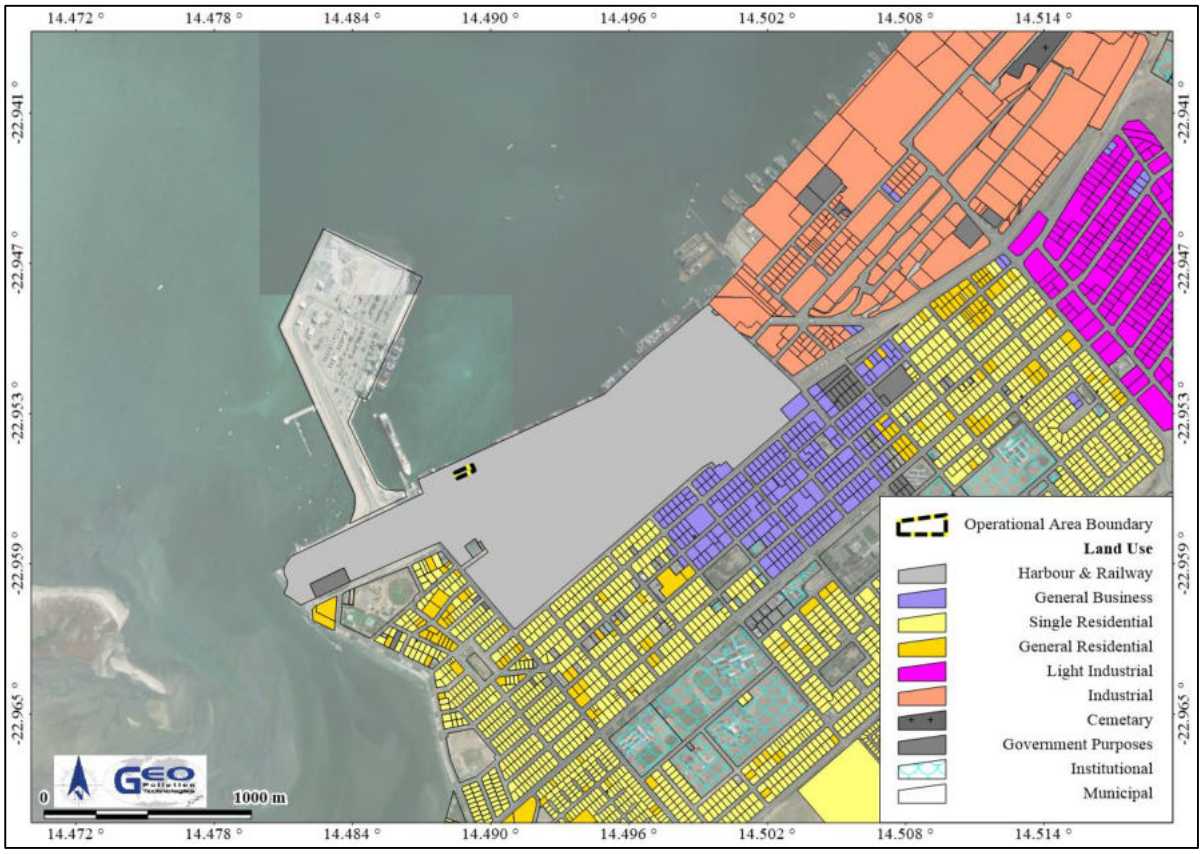


Figure 7-1 Land use

Figure 7-2 Land use in the greater Walvis Bay area

Implications and Impacts

On its land side, the port is surrounded by residential, commercial and industrial properties. Noise emanating from the Proponent's activities may negatively impact on residents directly neighbouring the port. In addition, development and operations of the port may lead to increased traffic impacts.

The Proponent will operate near a sensitive environment, the Walvis Bay Lagoon (RAMSAR Site) and environmental consideration should take its sensitivity into account.

7.2 CLIMATE

Namibia's climate is dominated by dry conditions for most of the year and particularly so in the west. The location of Namibia with respect to the Intertropical Convergence Zone, Subtropical High Pressure Zone and Temperate Zone is what determines the climate, with the Subtropical High Pressure Zone being the major contributor to the dry conditions (Atlas of Namibia Project, 2002; Bryant, 2010), see Figure 7-3.

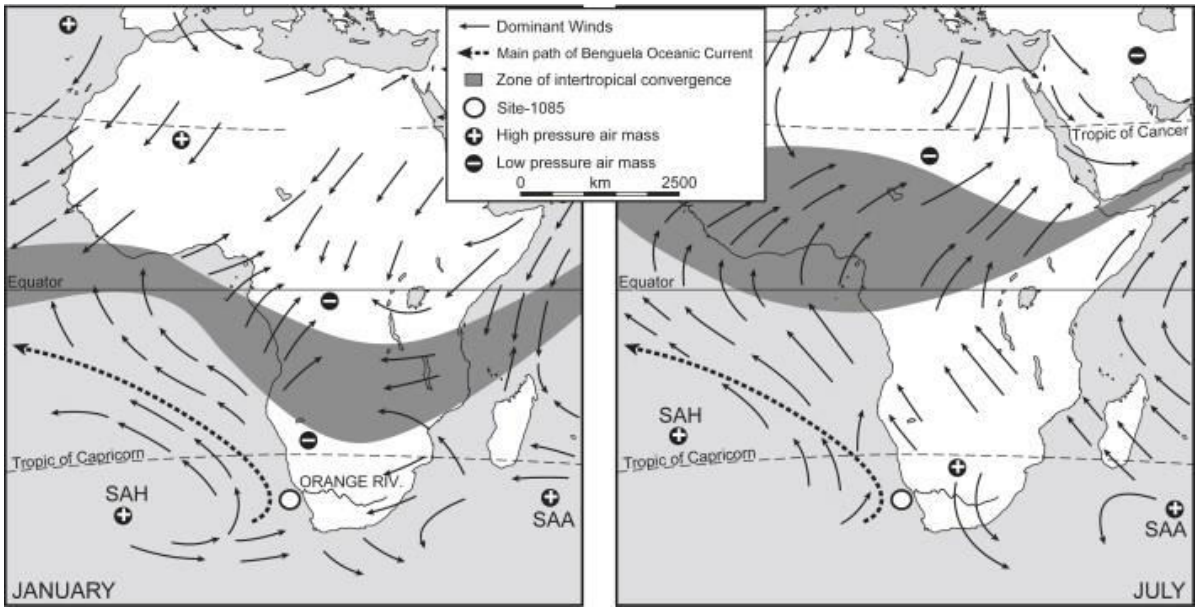


Figure 7-3 Map indicating the Intertropical Convergence Zone, Subtropical High Pressure Zone (SAH+), Benguela Current and Temperate Zone south of Tropic of Capricorn (not indicated) (from: http://www.meteoweb.eu)

Precipitation over Namibia is mainly controlled by the South Atlantic High (SAH), a high pressure cell (anticyclone) situated west of Namibia in the Subtropical High Pressure Zone. The SAH shifts during the year and is at higher latitudes in winter and lower latitudes in summer. In winter, as a result of being situated more north, the high pressure cell pushes any moisture originating from the Intertropical Convergence Zone northwards, preventing rain over Namibia. In summer, because the high pressure cell moves further south, and has less of an effect on the Intertropical Convergence Zone, moist air reaches Namibia, resulting in summer rains.

Studies indicate the presence of a thermal inversion layer at Walvis Bay. Originally this was thought to be at approximately 500 mamsl (Taljaard and Schumann 1940), but recent studies indicate it as low as 200 mamsl (Patricola and Chang, 2017; Corbett, 2018). A marine atmospheric boundary layer (MBL) exists offshore of the coastline that thins from more than 500 mamsl to 200 mamsl as it nears the coast (Figure 7-4). The MBL is a layer of cool, well-mixed, stable air that is capped by a thermal inversion (Patricola and Chang, 2016; Corbett 2018). This thermal layer or inversion layer will prevent the escape of pollutants such as smoke higher into the atmosphere. The MBL however contribute to high velocity wind speeds by funnelling the winds created by the SAH, resulting in what is referred to as the Benguela Low-Level Coastal Jet (Figure 7-4). Since the MBL overlap partially with the coastal plain, the wind generated by the Benguela Low-Level Coastal Jet also reaches inland, but diminishes relatively quickly further inland.

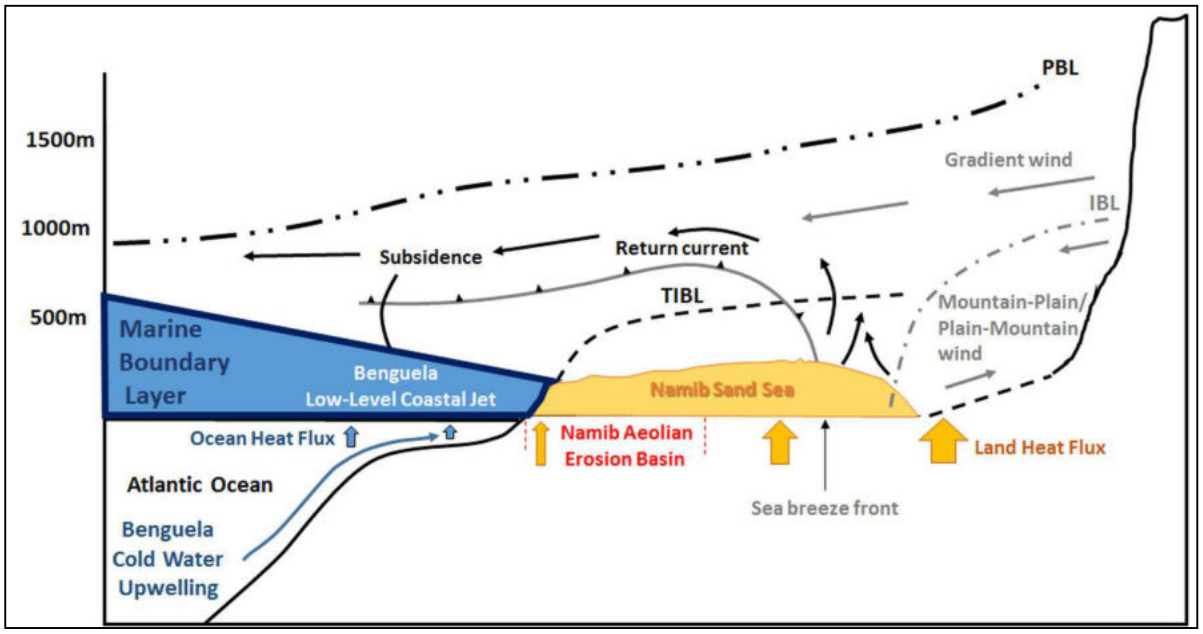


Figure 7-4 Marine atmospheric boundary layer (from: Corbett, 2018)

On a more localised scale, the climatic conditions on the central Namibian coast, and inland thereof (coastal plains), are strongly influenced by the cold Benguela Current, the SAH and the relatively flat coastal plains that are separated from the central highlands by a steep escarpment.

The anticlockwise circulation of the high pressure SAH and the action of the earth's Coriolis force results in strong southerly (longshore) winds blowing northwards up the coastline of Namibia (Bryant, 2010; Corbett, 2018). This longshore wind is responsible for upwelling of the cold, deep waters of the Benguela Current. As a result of the temperature difference between the cold surface water of the Benguela Current and the warm coastal plains, the southerly wind is diverted to a south south-westerly to south-westerly wind along the coast. At Walvis Bay the temperature gradient that forms over the warmer darker sands south of the Kuiseb River, compared with the cooler, lighter coloured gravel plain to the north of the river, leads to the formation of cyclonic circulation (localised low-pressure systems) centred over the dune area, due to warm air that rises over the dune area. This, together with topographical changes and land-use, causes a local deflection of wind flow over the Walvis Bay area, from south to southwest in Walvis Bay (Figure 7-5), to more southwest to westerly further inland, as well as reduced wind speeds. The more low speed, westerly winds are for example experienced at the Walvis Bay Airport (Rooikop).

The winds are strongest in early to mid-summer (September to January) when the SAH is at its strongest and most persistent, and the temperature difference between the sea and the desert plains are at its greatest. Wind speeds then occasionally exceed 32 km/hr and usually peaks late morning to early afternoon. In winter, the SAH loses strength and the southerly to south-westerly winds are at their weakest. Winter winds do not have enough strength to reach far inland. Autumn to winter conditions do however promote the formation of east wind conditions (berg winds) that can reach speeds of more than 50 km/hr and transport a lot of sand. East winds occur when the inland plateau is cold with a localised high pressure cell, while a low pressure system is present at the coast. The high pressure cell forces air off the escarpment and as the air descents, it warms adiabatically as well as create a low pressure system due to the vertical expansion of the air column. The warm air flows toward the coastal low and as it passes over the Namib plains, it heats up even further. The wind manifests itself as very strong, warm and dry wind during the mornings to early afternoon, but dissipate in the late afternoon.

Throughout the year the prevailing night time regional wind is a weak easterly wind. This results when the mainland cools to below the temperature of the coastal water. This results in a coastal low versus an onshore high pressure system with first no wind in the early evening, when temperatures between water and land is similar, and then weak easterly winds as the temperature

difference increase. Wind within the MBL remains dominated by the Benguela Low-Level Coastal Jet, causing a localised southerly wind over Walvis Bay, see Figure 7-4.

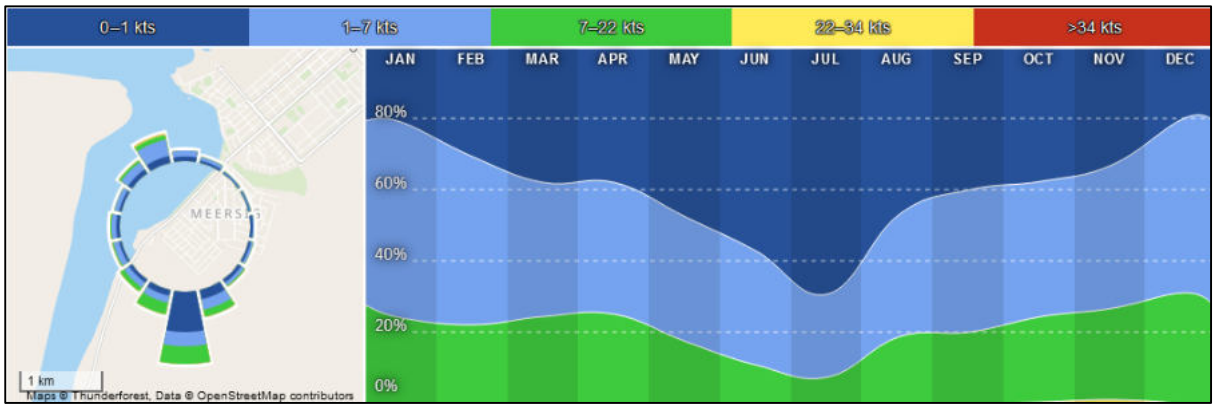


Figure 7-5 Wind direction and strength at the Walvis Bay Lagoon as measured between 2013 and 2024 (https://www.windfinder.com/windstatistics/walvis_bay_lagoon)

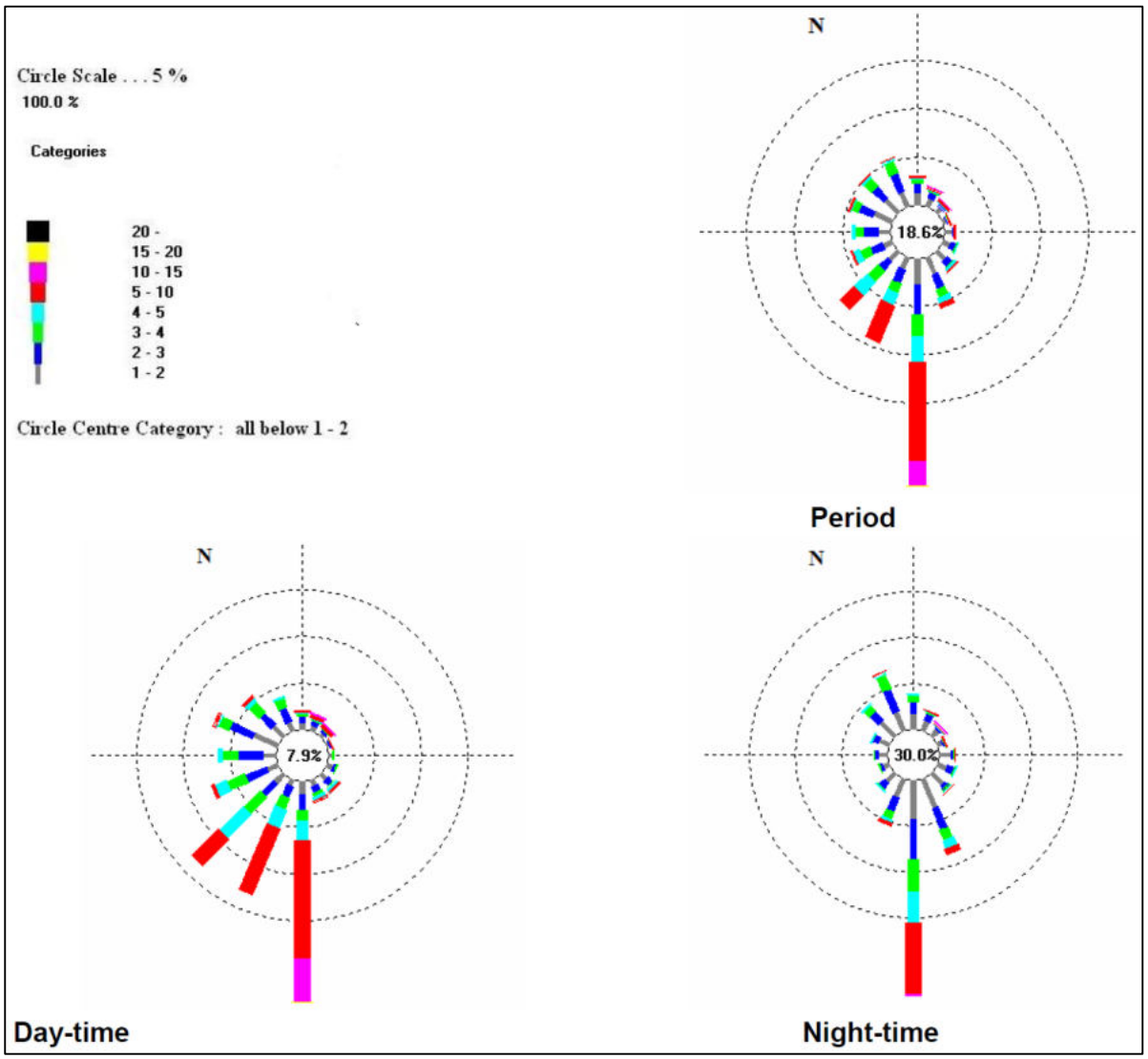


Figure 7-6 Period, daytime and night-time wind roses for Walvis Bay town for the period 2006 (Petzer, G. & von Gruenewaldt, R., 2008)

Temperature at Walvis Bay is strongly regulated by the cold Benguela current. As a result, there is typically limited variation between diurnal and seasonal temperatures. Average annual temperatures are approximately 18 °C to 19 °C with the maximum temperature seldom above 30 °C and minimums rarely below 5 °C (Figure 7-7). The only real temperature extremes are

experienced during east wind conditions in the autumn to early winter months when temperatures can reach the upper thirties or even low forties. This results in these months having an average maximum temperature ranging from 30 °C to 35 °C. As one moves inland from Walvis Bay, daytime temperatures increases rather quickly while night time temperatures can get significantly colder in the desert environment.

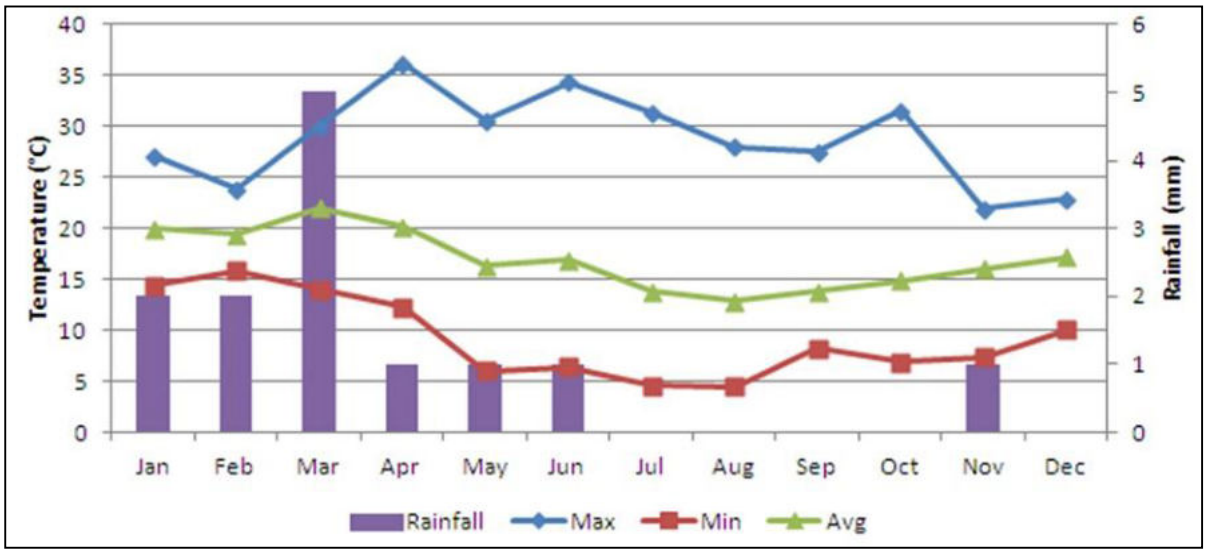


Figure 7-7 Temperature and rainfall at Walvis Bay (from: uMoya-NILU, 2020)

As explained above, the SAH severely limits the amount of rainfall over Namibia and especially at the coast and over the Namib Desert. As such, the average annual rainfall in Walvis Bay is below 50 mm (Figure 7-7), with 100% variation in annual rainfall. Infrequent, heavy rainfall does occur and typically results in rather chaotic conditions as Walvis Bay, and other coastal towns, has not been developed to cater for large volumes of storm water. Fog plays a very significant role as source of water for many plants and animals along Namibia's coast and the Namib Desert. Walvis Bay has up to 900 hours of fog per year and it results from the cold Benguela water cooling the humid air above it to such a temperature that the water vapour condenses to form fog and low level clouds (Mendelsohn et al., 2002).

Implications and Impacts

Due to the ability of the strong winds to carry dust to sensitive receptors, wind is an important factor to be considered for the Proponent's operations. Wind is predominantly a strong south-westerly wind with occasional northerly winds. This means dust pollution originating at the Proponent will normally be carried northeast, away from receptors such as surrounding neighbours, but towards the ocean and to vessels that may be berthed nearby. During east winds, contaminants carried by wind will travel towards the new container terminal and the lagoon entrance.

In terms of climate change and sea level rise, the port should be safe in the short to medium term future.

7.3 CORROSION ENVIRONMENT

The Namibian coastline is well known for being a very corrosive environment, which may be attributed to the frequent occurrence of salt-laden fog, periodic winds and abundance of aggressive salts (dominantly sodium chloride and sulphates) in the soil. The periodic release of hydrogen sulphide (H_2S) from the ocean is also expected to contribute to corrosion potential. Figure 7-8 presents corrosion comparison data for a number of locations in southern Africa, including Walvis Bay. The combination of high moisture and salt content of the surface soil can lead to rapid deterioration of metal and concrete structures.

Figure 7-8 Twenty year corrosion exposure results in southern African towns (Callaghan 1991)

Implications and Impacts

Chemical weathering of metal and concrete structures is a concern. Due to the extreme corrosive environment the choice of building materials is important and regular maintenance is essential to maintain the integrity of all infrastructure.

7.4 FAUNA OF THE BAY

7.4.1 Birds

Walvis Bay and the surrounds fall within Important Bird Area (IBA) NA012 and NA013 (http://datazone.birdlife.org; Simmons et al. 1999). Important Bird Area NA012 can be regarded as the most important coastal wetland area in southern Africa. Of note is the Walvis Bay Lagoon, the salt works and the southern part of the bay west of the lagoon, which are the key components of the 12,600 ha RAMSAR site (Wetland of International Importance. It is important 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 sewerage ponds, situated about 3 km southeast of the study area, are regarded as sensitive artificial wetland. Although a manmade fresh water source, it is an attraction for pelicans and flamingos. The artificial wetland also support 53% of the duck and geese population in the area. The wetland is formed by the constant inflow of semi-purified water and supports extensive stands of reeds. There are flight paths for birds between the sewerage ponds, the lagoon and the offshore bird breeding platform (Ghwano Island) north northeast of the harbour.

Important Bird Area NA013 consist of the coastal area between Walvis Bay and Swakopmund, and is approximately 30 km long and 700 m wide. Bird counts on this exceed 13,000 shorebirds of approximately 31 species, most of which are Palearctic migrants. IBA NAO13 is not only the richest shoreline in terms of shorebird density anywhere in southern Africa, but also supports the densest colony of breeding Damara Terns known (Scott & Scott 2013). Important in this area is the guano platform, or bird island, that provides roosting and breeding sites to large numbers of birds.

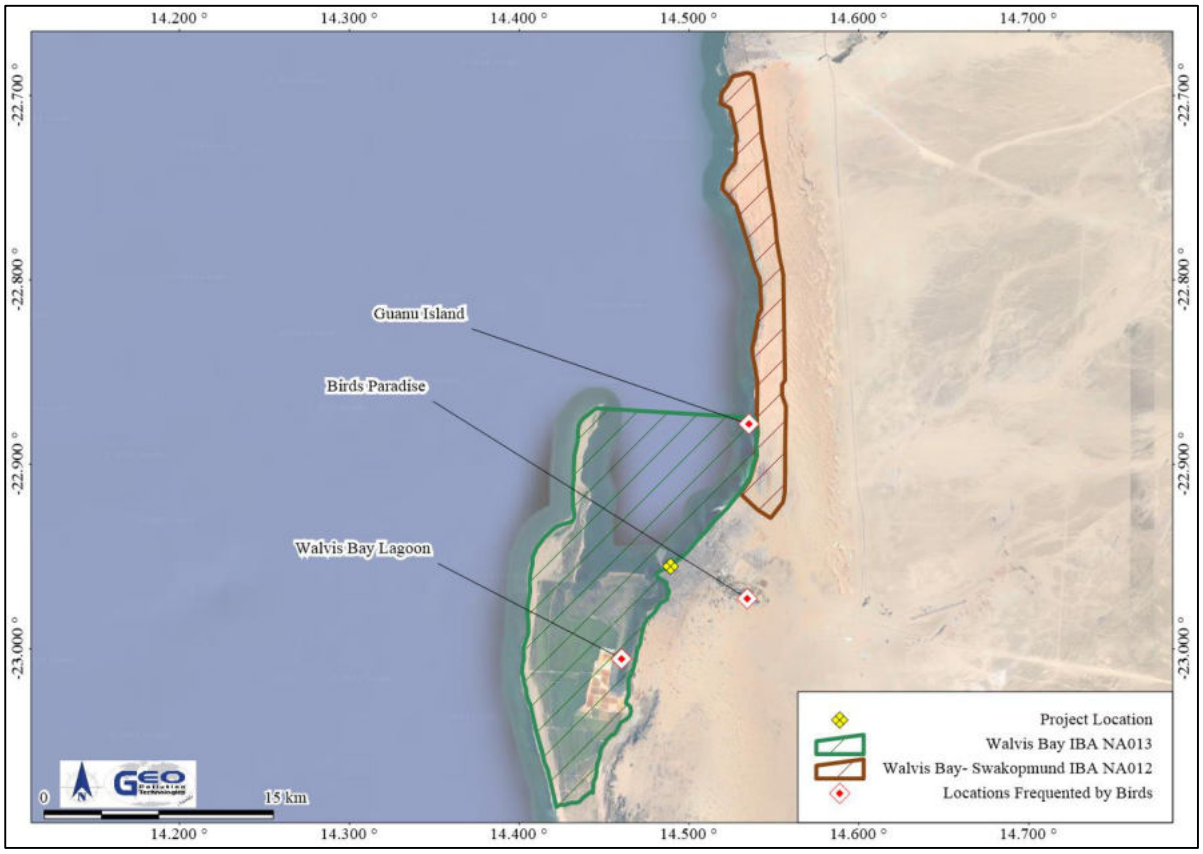


Figure 7-9 Areas of importance for birds

Implications and Impacts

The aforementioned areas surrounding the harbour are important bird breeding and bird feeding grounds. Pollution events, specifically oil spills, can have serious negative effects on species like the Bank Cormorant. Bright lights used at night, such as leading lights, has the potential of disorientating birds like flamingos that fly at night. This may lead to collisions with man-made structures.

7.4.2 Marine Animals

The marine mammals occurring at various times in the Walvis Bay area are cetaceans: Common Bottlenose Dolphins, the Namibian endemic Heaviside's Dolphins, Dusky Dolphins, Humpback Whales, Southern Right Whales and Pigmy Right Whales; as well as Cape Fur Seals. The Common Bottlenose Dolphin, Heaveside's dolphin and Cape Fur Seal are seen most frequently (daily), the Pigmy Right Whale less frequently (monthly) and the rest infrequently as they are seasonal or infrequent visitors. The Common Bottle Nose Dolphin with a population of less than a 100 individuals is thought of as quite unique in being one of the smallest mammal populations in Africa.

Namibia has quite a large population of Cape fur seals. A large colony are present at Pelican Point. Historically, Cape fur seal populations showed significant declines in population numbers due to overharvesting. However, the Namibian population has shown significant increases over the last two decades with new populations of seals establishing all along the coast.

The Namibian coastal waters are home to five species of turtles and all five species are listed as threatened under the IUCN which is controlled through CITES. The most common occurring turtles near the proposed development are the Leatherback Turtle and Green Sea Turtle, with the Hawksbill Sea Turtle occurring occasionally.

Implications and Impacts

Whales, dolphins and seals are often considered as flagship species to which people attach great inherent value. This is evident from the million dollar tourism industry based on the presence of these

mammals. Pollution may have a negative impact on locally occurring populations. Increased ship traffic may also result in more frequent ship strikes with whales, dolphins and turtles. Excessive noise producing events in the marine environment may also negatively impact on marine mammals. Pollution of the marine environment may negatively impact on all marine animals.

7.5 SOCIO ECONOMIC ENVIRONMENT

According to the preliminary results of the 2023 population and housing census, Walvis Bay has an urban population size of 51,618 and a total population (urban and rural combined) of 103,115 (Namibia Statistics Agency, 2024). Walvis Bay is the principal port of Namibia, and is an import/export facility for processed fish, mining products and beef, amongst others. The area is linked to Namibia's air, rail and road network, making the port well situated to service Zambia, Zimbabwe, Botswana, southern Angola and South Africa. The port and related industries provide secure employment to residents of the area. The fishing industry is the major employer of low skilled workers on a permanent and seasonal basis. The total employment of this sector is estimated at 2% of the total Namibian workforce. Based on the 2011 census, unemployment in Walvis Bay was at 21.8%, which is well below the Namibian rate of 37%. Economic activities relate mostly to businesses related to the harbour. The town is known as a business and industrial area.

The waters of the bay and lagoon at Walvis Bay provides the local and national community with a range of benefits. Small scale purse-seine fishing for mainly mullet occurs north of the town. Fish factories make use of the harbours water for the processing of fish. Tourists frequent Walvis Bay and especially the lagoon and bay where sightseeing and sunset boat tours to view seals, dolphins and whales and the rare sunfish (*Mola mola*), are very popular. Bird watching along the eastern shore of the lagoon is also a major tourist attraction. Mariculture, especially for mussels and oysters, has become important for both local and international markets. All the aforementioned beneficial uses of the bay's natural environment would be seriously jeopardised if major environmental impacts occurred in the bay.

Table 7-1 Demographic characteristics of Walvis Bay, the Erongo Region and Nationally (Namibia Statistics Agency, 2024)

	Walvis Bay Urban	Erongo Region	Namibia
Population (Males)	26,212	122,322	1,474,224
Population (Females)	25,406	117,884	1,548,177
Population (Total)	51,618	240,206	3,022,401
Population Density (persons/km^2)	2,730.8	3.8	3.7

Walvis Bay is considered to have a high HIV vulnerability. Local and foreign businessmen, fishermen as well as truck drivers are mobile workers which have been identified to make more use of sex workers. There is a higher concentration of such local and foreign labourers in Walvis Bay. The town is also a destination site for internal migrants looking for work in the construction and fishing sectors. Such workers also make use of transactional sex which is supplied by mostly women, to supplement their income. The high prevalence to engage in commercial sex, increases the HIV probability and risk profile of the mobile and local community.

Implications and Impacts

Some skills development and training may also result during the dredging phase and revenue will be generated and livelihoods sustained.

The spending power of locals is likely to increase which may increase the occurrences of social ills such as alcohol or drug abuse.

7.6 CULTURAL, HERITAGE AND ARCHAEOLOGICAL ASPECTS

Walvis Bay does not have particularly rich heritage features or archaeologically significant aspects. The port area where the Proponent will be located has been developed long ago. No other object or building of specific archaeological or cultural significance is nearby.

Implications and Impacts

No implications or impacts expected.

8 PUBLIC CONSULTATION

Consultation with the public forms an integral component of an environmental assessment investigation and enables interested and affected parties (IAPs) e.g. neighbouring landowners, local authorities, environmental groups, civic associations and communities, to comment on the potential environmental impacts associated with projects and to identify additional issues which they feel should be addressed in the environmental assessment.

Public participation notices were advertised twice for two weeks in the national papers: Republikein and Namibian Sun on 10 and 17 June 2024. A site notice was placed at the site to be developed in the port area as well as at one of the local shops in town. Interested and affected parties were identified and notified of the project. Notification letters were hand delivered to available neighbours as well as the Municipality of Walvis Bay and Namport. See Appendix A for proof of the public participation processes. Four individuals from three organisations registered as IAPs for the project. No concerns regarding the project were raised during the public consultation phase.

9 ASSESSMENT AND MANAGEMENT OF IMPACTS

The purpose of this section is to assess and identify the most pertinent environmental impacts that are expected from the operational, construction (also upgrades, maintenance, etc. – see glossary for "construction") and potential decommissioning activities of the facility. An EMP based on these identified impacts are also incorporated into this section. For each impact an Environmental Classification was determined based on an adapted version of the Rapid Impact Assessment Method (Pastakia, 1998). Impacts are assessed according to the following categories: Importance of condition (A1); Magnitude of Change (A2); Permanence (B1); Reversibility (B2); and Cumulative Nature (B3) (see Table 9-1). Ranking formulas are then calculated as follow: Environmental Classification = A1 x A2 x (B1 + B2 + B3).

The environmental classification of impacts is provided in Table 9-2. The probability ranking refers to the probability that a specific impact will happen following a risk event. These can be improbable (low likelihood); probable (distinct possibility); highly probable (most likely); and definite (impact will occur regardless of prevention measures).

Table 9-1 Assessment criteria

Criteria	Score
Importance of condition (A1) – assessed against the spatial boundaries of human interest it will affect	
Importance to national/international interest	4
Important to regional/national interest	3
Important to areas immediately outside the local condition	2
Important only to the local condition	1
No importance	0

Criteria	Score
Magnitude of change/effect (A2) – measure of scale in terms of benefit / disbenefit of an impact or condition	
Major positive benefit	3
Significant improvement in status quo	2
Improvement in status quo	1
No change in status quo	0
Negative change in status quo	-1
Significant negative disbenefit or change	-2
Major disbenefit or change	-3
Permanence (B1) – defines whether the condition is permanent or temporary	
No change/Not applicable	1
Temporary	2
Permanent	3
Reversibility (B2) – defines whether the condition can be changed and is a measure of the control over the condition	
No change/Not applicable	1
Reversible	2
Irreversible	3
Cumulative (B3) – reflects whether the effect will be a single direct impact or will include cumulative impacts over time, or synergistic effect with other conditions. It is a means of judging the sustainability of the condition – not to be confused with the permanence criterion.	
Light or No Cumulative Character/Not applicable	1
Moderate Cumulative Character	2
Strong Cumulative Character	3

Table 9-2 Environmental classification (Pastakia 1998)

Environmental Classification	Class Value	Description of Class
72 to 108	5	Extremely positive impact
36 to 71	4	Significantly positive impact
19 to 35	3	Moderately positive impact
10 to 18	2	Less positive impact
1 to 9	1	Reduced positive impact
0	-0	No alteration
-1 to -9	-1	Reduced negative impact
-10 to -18	-2	Less negative impact
-19 to -35	-3	Moderately negative impact
-36 to -71	-4	Significantly negative impact
-72 to -108	-5	Extremely Negative Impact

9.1 RISK ASSESSMENT AND ENVIRONMENTAL MANAGEMENT PLAN

The EMP provides management options to ensure impacts of the facility are minimised. An EMP is a tool used to take pro-active action by addressing potential problems before they occur. This should limit the corrective measures needed, although additional mitigation measures might be included if necessary. The environmental management measures are provided in the tables and descriptions below. These management measures should be adhered to during the

various phases of the operation of the facility. This section of the report can act as a stand-alone document. All personnel taking part in the operations of the facility should be made aware of the contents in this section, so as to plan the operations accordingly and in an environmentally sound manner.

The objectives of the EMP are:

- to include all components of construction activities (upgrades, maintenance, etc.) and operations of the facility;
- to prescribe the best practicable control methods to lessen the environmental impacts associated with the project;
- to monitor and audit the performance of operational personnel in applying such controls; and
- to ensure that appropriate environmental training is provided to responsible operational personnel.

9.2 IMPLEMENTATION OF THE EMP

Various potential and definite impacts will emanate from the construction, operations and decommissioning phases. The majority of these impacts can be mitigated or prevented. The impacts, risk rating of impacts as well as prevention and mitigation measures are listed below.

As depicted in the subsections below, impacts related to the operational phase are expected to mostly be of low to medium significance and can mostly be mitigated to have a low significance. The extent of impacts are mostly site specific to local and are not of a permanent nature. Due to the nature of the surrounding areas, cumulative impacts are possible and include noise pollution, traffic impacts and impacts on birds flying at night (bright lighting).

9.2.1 Planning

During the phases of planning for construction, operations and decommissioning of the facility, it is the responsibility of Proponent to ensure they are and remain compliant with all legal requirements. The Proponent must also ensure that all required management measures are in place prior to and during all phases, to ensure potential impacts and risks are minimised. The following actions are recommended for the planning phase and should continue during various other phases of the project:

- Ensure that all necessary permits from the various ministries, local authorities and any other bodies that may govern the construction (maintenance) and operations of the facility are in place and valid.
- Ensure all appointed contractors and employees enter into an agreement which includes the EMP. Ensure that the contents of the EMP are understood by the contractors, sub-contractors, employees and all personnel present or who will be present on site.
- Make provisions to have a Health, Safety and Environmental (HSE) Coordinator to implement the EMP and oversee occupational health and safety as well as general environmental related compliance at the site.
- Make provisions to have a community liaison officer on site who will handle complaints and community input, and through whom, where reasonable, monitoring data can be requested. Communicate the contact details of the community liaison officer to neighbours and potential interested and affected parties when the project is initiated.
- Have the following on site where reasonable to deal with all potential emergencies:
    - Risk management / mitigation / EMP/ emergency response plan and HSE manuals;
    - Adequate protection and indemnity insurance cover for incidents;
    - Comply with the provisions of all relevant safety standards;
    - Procedures, equipment and materials required for emergencies.
- If one has not already been established, establish and maintain a fund for future ecological restoration of the project site should project activities cease and the site is decommissioned and environmental restoration or pollution remediation is required.
  Establish and / or maintain a reporting system to report on aspects of construction activities, operations and decommissioning as outlined in the EMP.

9.2.2 Employment

Appointment of consultants already realises during the planning phase. This include those responsible for design, engineering and permitting (e.g. environmental permitting). During the construction phase, various contractors will be appointed to, among others, transport building materials and equipment to the site, upgrade, construct and install various components of the facility and related support infrastructure, installation of services, etc. Local consultants, contractors, and their employees, are thus supported, and their livelihoods sustained, during the planning and construction phases. Some aspects may require expertise not locally available, in which case foreign consultants or contractors may be used.

As the proposed project is a completely new venture, it will require appointment of a completely new employee base. This will include unskilled, semi-skilled and specialist employees to perform all tasks from site cleaning, security, office administration to the specialised activities involved with determining the drilling fluids' composition and characteristics. Employment will be sourced locally, however specialised skills may not be locally available and may be sourced from outside of Namibia.

Project Activity / Resource	Nature (Status)	(A1) Importance	(A2) Magnitude	(B1) Permanence	(B2) Reversibility	(B3) Cumulative	Environmental Classification	Class Value	Probability
Planning / Construction	Sustaining employees in the construction industry during the construction phase as well as for future maintenance and upgrades	2	1	2	2	2	12	2	Definite
Daily Operations	Permanent employment opportunities and periodic appointment of consultants and third party contractors	3	1	3	2	2	21	3	Definite
Indirect Impacts	Decrease in overall unemployment at a National level	3	1	3	2	1	18	3	Definite

Desired Outcome: Provision of employment to local Namibians.

Actions

Mitigation:

- The Proponent must employ local Namibians where possible. If the skills exist locally, employees must first be sourced from the town, then the region and then nationally.
- Appointment of highly specialised foreign contractors must be in line with the requirements of the Ministry of Home Affairs, Immigration, Safety and Security.

Responsible Body:

- Proponent

Data Sources and Monitoring:

- Labour Act
- Immigration Control Act
- Bi-annual summary report based on employee records with employee contracts on file.

9.2.3 Skills, Technology and Development

During various phases of construction and operations, training will be provided to a portion of the workforce. Skills are transferred to an unskilled workforce for general tasks. The technology required for the development of the facility is often new to the local industry, aiding in operational efficiency. Development of people and technology are key to economic development.

Project Activity / Resource	Nature (Status)	(A1) Importance	(A2) Magnitude	(B1) Permanence	(B2) Reversibility	(B3) Cumulative	Environmental Classification	Class Value	Probability
Planning / Construction	Technological development and transfer of skills	2	1	2	2	1	10	2	Probable
Daily Operations	Technological development and transfer of skills	3	1	3	2	2	24	3	Definite

Desired Outcome: To see an increase in skills of local Namibians, as well as development and technology advancements in associated industries.

Actions

Enhancement:

- If the skills exist locally, contractors and employees must first be sourced from the town, then the region and then nationally. Deviations from this practise must be justified.
- Skills development and improvement programs to be made available as identified during performance assessments.
- Employees to be informed about parameters and requirements for references upon employment.

Responsible Body:

- Proponent
- Contractors

Data Sources and Monitoring:

- Record should be kept of training provided.
- Ensure that all training is certified or managerial reference provided (proof provided to the employees) inclusive of training attendance, completion and implementation.
- Bi-annual summary report based on records kept.

9.2.4 Revenue Generation

The project will change the way revenue is generated and paid to the national treasury. An increase of skilled and professional labour will result from the operations of the project and related wages and salaries will be paid. Revenue will be generated through the contracting of port and related contractors' services. The presence of the facility may ultimately contribute to local opportunities for new businesses to establish and thus growth and economic development in the town's business sector.

Project Activity / Resource	Nature (Status)	(A1) Importance	(A2) Magnitude	(B1) Permanence	(B2) Reversibility	(B3) Cumulative	Environmental Classification	Class Value	Probability
Planning / Construction	Contribution to local economy through appointment of consultants and contractors	2	1	2	2	2	12	2	Definite
Daily Operations	Supporting the local economy and an increase in revenue generated and taxes paid to the National treasury	3	2	3	2	2	42	4	Definite
Indirect Impacts	Opportunities for the establishment of new businesses and service providers	3	1	3	2	1	18	3	Probable

Desired Outcome: Contribution to the local and national economy. Contribution to national treasury.

Actions

Enhancement:

- Employ local Namibian contractors and employees as far as practically possible. If the skills exist locally, contractors and employees must first be sourced from the town, then the region and then nationally.
- Remuneration of employees, contributions to social security, payment of taxes, etc. in line with Namibian legislation.
- Support local businesses and suppliers of services if available.

Responsible Body:

- Proponent

Data Sources and Monitoring:

- Bi-annual summary report based on employee records.

9.2.5 Demographic Profile and Community Health

The project is reliant on labour during the construction and operational phases. Local construction teams in Walvis Bay will be used for all construction, general maintenance and upgrade activities. The scale of the construction portion of the project is limited and it is not expected to create a change in the demographic profile of the local community. Community health may be exposed to factors such as communicable disease like HIV/AIDS and alcoholism/drug abuse, associated with increased spending power of the labour force. Foreign persons in the area may increase the cumulative risk of communicable disease in Walvis Bay.

Positive impacts will related to employees and contractors' increased economic resilience and improved livelihoods.

Project Activity / Resource	Nature (Status)	(A1) Importance	(A2) Magnitude	(B1) Permanence	(B2) Reversibility	(B3) Cumulative	Environmental Classification	Class Value	Probability
Without Preventative / Mitigation Measures									
Construction / Operations	Communicable disease and alcoholism/drug abuse	2	-1	2	2	1	-10	-2	Probable
Indirect Impacts	The spread of disease	4	-1	3	2	1	-24	-3	Probable
After Preventative / Mitigation Measures									
Construction / Operations	Communicable disease and alcoholism/drug abuse	2	-1	2	2	1	-10	-2	Improbable
Indirect Impacts	The spread of disease	4	-1	3	2	1	-24	-3	Improbable

Desired Outcome: To prevent the in-migration and growth in informal settlements, prevent the spread of communicable disease and prevent / discourage socially deviant behaviour.

Actions:

Prevention:

- Employ local people from the area where possible, deviations from this practise should be justified appropriately.
- Adhere to all municipal by-laws relating to environmental health which includes, but is not limited to, sanitation requirements for workers on site.
- Appointment of reputable contractors.

Mitigation:

- Educational programmes for employees (especially truck drivers) on HIV/AIDs and general upliftment of employees' social status.

Responsible Body:

- Proponent

Data Sources and Monitoring:

- Facility inspection sheet for all areas which may present environmental health risks, kept on file.
- Bi-annual summary report based on educational programmes and training conducted.
- Bi-annual report and review of employee demographics.

9.2.6 Health, Safety and Security

Activities associated with the construction and operational phases are reliant on human labour and therefore exposes them to health and safety risks. Activities such as the operation of machinery, unsafe stacking, falling from heights and handling of hazardous chemicals (inhalation of dust and potential health effects chemicals), poses risks to employees. If not contained, windblown dust may further pose health risk to nearby receptors. This includes passengers disembarking from cruise ships who walk from the ship, through the harbour area, to town.

Security risks are related to unauthorized entry, theft and sabotage.

Project Activity / Resource	Nature (Status)	(A1) Importance	(A2) Magnitude	(B1) Permanence	(B2) Reversibility	(B3) Cumulative	Environmental Classification	Class Value	Probability
Without Preventative / Mitigation Measures									
Construction	Physical injuries, exposure to chemicals and criminal activities	1	-3	2	2	2	-18	-3	Highly Probable
Daily Operations	Physical injuries, exposure to chemicals and criminal activities	1	-3	3	2	2	-21	-3	Highly Probable
After Preventative / Mitigation Measures									
Construction	Physical injuries, exposure to chemicals and criminal activities	1	-3	2	2	1	-15	-2	Probable
Daily Operations	Physical injuries, exposure to chemicals and criminal activities	1	-3	3	2	1	-18	-3	Probable

Desired Outcome: To prevent injury, health impacts and theft.

Actions

Prevention:

- All Health and Safety standards specified in the Labour Act, or better, should be followed.
- Clearly label dangerous and restricted areas as well as dangerous equipment and products.
- Transfer pipelines must be secured to prevent pipe whiplash during accidental decoupling while under pressure.
- Provide all employees with required and adequate personal protective equipment (PPE) including dust masks and protective clothing for workers in close proximity to, or working with, the dust producing cargo. Accidental inhalation, ingestion, dermal or eye contact with dust must be prevented at all times.
- Ensure that all personnel receive adequate training on operations of equipment / handling of industrial cargo.
- Regularly check and service the dust filtering systems to ensure optimal working conditions.
- Equipment on site must be stored in a way that does not encourage criminal activities (e.g. locked away to prevent theft).
- Security procedures and proper security measures must be in place to protect workers.
- Strict security that prevents unauthorised entry into the site, especially during times when passenger vessels visits the port.

Mitigation:

- Selected personnel should be trained in first aid and a first aid kit must be available on site. The contact details of all emergency services must be readily available.
- Implement and maintain an integrated health and safety management system, to act as a monitoring and mitigating tool, which includes operational, safe work and medical

procedures, permits to work, emergency response plans, housekeeping rules, MSDS's and signage requirements (PPE, flammable etc.).
- Implement emergency response procedures in case of incidents.
- Emergency wash stations in case of accidental exposure to chemicals or dust.

Responsible Body:
- Proponent
- Contractors

Data Sources and Monitoring:
- Port captain (schedule of planned passenger vessel visits).
- Industry standards and protocols, etc.
- A bi-annual report should be compiled of all incidents reported. The report should contain dates when training were conducted and when safety equipment and structures were inspected and maintained.

9.2.7 Traffic

The operations of the client will increase the volume of trucks accessing the port area. This will increase traffic on the roads through town, to and from the port. Heavy motor vehicles may result in an increased, cumulative impact on the road surface of the area, especially when turning on these roads. Trucks may block neighbouring business' entrances and increase the likelihood of accidents and incidents.

Project Activity / Resource	Nature (Status)	(A1) Importance	(A2) Magnitude	(B1) Permanence	(B2) Reversibility	(B3) Cumulative	Environmental Classification	Class Value	Probability
Without Preventative / Mitigation Measures									
Construction	Traffic impacts during delivery of large equipment and building materials	2	-2	2	2	2	-24	-3	Probable
Daily Operations	Increase traffic, road wear and tear and accidents	2	-2	3	2	2	-28	-3	Probable
After Preventative / Mitigation Measures									
Construction	Traffic impacts during delivery of large equipment and building materials	2	-1	2	2	2	-12	-2	Improbable
Daily Operations	Increase traffic, road wear and tear and accidents	2	-1	3	2	2	-14	-2	Improbable

Desired Outcome: Minimum impact on traffic and no transport or traffic related incidents.

Actions

Mitigation:

- Trucks delivering or collecting goods should not be allowed to obstruct any traffic in surrounding areas and the town.
- Trucks associated with the facility should not be allowed to park or overnight in the port area or near the entrance/exit gates, and may only overnight at areas designated for this purpose.
- Adhere to The Road Traffic and Transport Regulations of 2001 and all other applicable legislation related to road transport and maximum axle loads.
- If any traffic impacts are expected, traffic management should be performed to prevent these.
- The placement of signs to warn and direct traffic will mitigate traffic impacts.

Responsible Body:

- Proponent

Data Sources and Monitoring:

- The Road Traffic and Transport Regulations, 2001.
- Any complaints received regarding traffic issues should be recorded together with action taken to prevent impacts from repeating itself.
- A bi-annual report should be compiled of all incidents reported, complaints received, and action taken.

9.2.8 Air Quality Related Impacts

Reduced air quality as a result of exhaust gases (greenhouse gases) of diesel pumps as well as trucks visiting the property. This may have localised health impacts, but are expected to disperse relatively quickly due to the prevailing south-westerly winds in Walvis Bay. It will however still contribute to greenhouse gas emissions that in turn contribute to climate change. The contribution of greenhouse gas emissions from pumps and trucks related to this project is not considered to be significant, but does have a cumulative nature when considering the entire operational area of the port.

Air quality as a result of windblown dust can cause health effects, especially through chronic inhalation of such dust, in the nearby communities. The risk is related to the toxic/irritant nature respirable fractions (PM10) and thoracic fraction (PM2.5) of dust when chemicals and dry bulk cargo are not contained.

Project Activity / Resource	Nature (Status)	(A1) Importance	(A2) Magnitude	(B1) Permanence	(B2) Reversibility	(B3) Cumulative	Environmental Classification	Class Value	Probability
Without Preventative / Mitigation Measures									
Construction	Construction dust	2	-2	2	2	2	-24	-3	Definite
Daily Operations	Dust from debagging activities, containment failure and greenhouse gas emissions	2	-2	3	2	2	-28	-3	Definite
After Preventative / Mitigation Measures									
Construction	Construction dust	2	-1	2	2	2	-12	-2	Definite
Daily Operations	Dust from debagging activities, containment failure and greenhouse gas emissions	2	-1	3	2	2	-14	-2	Definite

Desired Outcome: To prevent health impacts and to reduce greenhouse gas emissions.

Actions

Prevention:

- All cargo must be suitably contained and secured to prevent product loss and dust.
- Forklift operators and operators of the liquid mud and bulk plant and associated storage facilities must be suitably trained.
- Regularly check and service the dust filtering systems to ensure optimal working conditions.
- Ensure that all debagging operations (bag cutting) is within an enclosed space and that all debagging personnel wear adequate PPE.

Mitigation:

- Spilled products must be cleaned immediately.
- All diesel engines of pumps and vehicles must be serviced regularly and make use of technology to reduce emissions. This include selective catalytic reduction, diesel particulate filters and diesel oxidation catalysts.

Responsible Body:

- Proponent
- Contractors

Data Sources and Monitoring:

- Any complaints received regarding dust must be recorded, investigated and the problem rectified.
- Any incidents must be recorded with action taken to prevent future occurrences.

- A bi-annual report should be compiled of all incidents and complaints reported. The report should contain dates when safety equipment and structures were inspected and maintained.

9.2.10 Fire

Construction and operational activities may increase the risk of the occurrence of fires if proper maintenance and housekeeping are not conducted. Some chemicals used on site are flammable and chemical or dry bulk cargo dust (fines) suspended in the air can become flammable, and even explosive, if present in excessive quantities.

The coal conveyor traversing the site presents a special risk as it can generate static electricity when operational and failing bearings may generate significant heat. Flammable vapours or suspended dust fines can then potentially ignite.

Project Activity / Resource	Nature (Status)	(A1) Importance	(A2) Magnitude	(B1) Permanence	(B2) Reversibility	(B3) Cumulative	Environmental Classification	Class Value	Probability
Without Preventative / Mitigation Measures									
Construction	Fire and explosion risk	2	-2	2	2	1	-20	-3	Probable
Daily Operations	Fire and explosion risk	2	-2	3	2	1	-24	-24	Probable
After Preventative / Mitigation Measures									
Construction	Fire and explosion risk	2	-1	2	2	1	-10	-2	Improbable
Daily Operations	Fire and explosion risk	2	-1	3	2	1	-12	-2	Improbable

Desired Outcome: To prevent property damage, possible injury and impacts caused by uncontrolled fires.

Actions:

Prevention:

- Prepare and regularly update the firefighting and prevention plan and equipment according to the materials stored on site, keeping in mind the activities on neighbouring properties.
- Share the requirements for firefighting on site with Namport.
- Ensure all materials are stored strictly according to MSDS instructions. This include segregation of incompatible products.
- Maintain regular site, mechanical and electrical inspections and maintenance. This should include ensuring that all grounding (earthling) structures are in place.
- Clean all spills / leaks immediately.
- Stop operations if dust containment fails and dust becomes airborne. Operations can continue once the cause is rectified.
- Schedule operations to not coincide with operations of the coal conveyor.
- Ensure sufficient firefighting and fire prevention measures are in place for the specific products being stored and handled on site. This includes specific fire suppressants compatible with the materials used/stored.

Mitigation:

- A holistic fire protection and prevention plan is needed for flammable products. This plan must include an emergency response plan, firefighting plan and spill recovery plan, and should include specific substances handled at the site. The plan should consider risks posed to and by neighbouring properties.
- Maintain firefighting equipment, implement good housekeeping and conduct personnel training (firefighting, fire prevention and responsible housekeeping practises).

Responsible Body:

- Proponent
- Contractors

Data Sources and Monitoring:

- A register of all incidents must be maintained. This should include measures taken to ensure that such incidents do not repeat themselves.
- A bi-annual report should be compiled of all incidents reported. The report should contain dates when fire drills were conducted and when fire equipment was tested and training given.

9.2.11 Noise

Noise pollution will exist due to heavy motor vehicles accessing the site to load and offload cargo, forklifts offloading and moving cargo, diesel driven pumps, etc. As the site is situated in a port area, noise impacts are expected. The cumulative impact of noise sources originating from the port is however a nuisance in the nearby residential areas. The construction and future maintenance or upgrade phases may generate excessive noise for short periods of time.

Project Activity / Resource	Nature (Status)	(A1) Importance	(A2) Magnitude	(B1) Permanence	(B2) Reversibility	(B3) Cumulative	Environmental Classification	Class Value	Probability
Without Preventative / Mitigation Measures									
Construction	Excessive noise generated from construction activities – nuisance and hearing loss	2	-2	2	2	2	-24	-3	Highly Probable
Daily Operations	Noise generated from the operational activities – nuisance and hearing loss	2	-2	3	2	2	-28	-3	Highly Probable
After Preventative / Mitigation Measures									
Construction	Excessive noise generated from construction activities – nuisance and hearing loss	2	-1	2	2	2	-12	-2	Probable
Daily Operations	Noise generated from the operational activities – nuisance and hearing loss	2	-1	3	2	2	-14	-2	Probable

Desired Outcome: To prevent any nuisance and hearing loss due to noise generated.

Actions

Prevention:

- The Health and Safety Regulations of the Labour Act and World Health Organization (WHO) guideline on maximum noise levels (Guidelines for Community Noise, 1999) to prevent hearing impairment for workers on site and not to be a nuisance to communities should be considered during the construction and operational phases.
- Confine noise generating operational activities to daytime hours as far as possible.
- At night, the nuisance created by audible warning signals on trucks and forklifts should be prevented by switching to a flashing light or 'broadband white noise' system.

Mitigation:

- Hearing protectors as standard PPE for workers in situations with elevated noise levels.
- All machinery, such as diesel driven pumps, must be regularly serviced to ensure minimal noise production.

Responsible Body:

- Proponent
- Contractors

Data Sources and Monitoring:

- Health and Safety Regulations of the Labour Act and WHO Guidelines.
- Maintain a complaints register.
- Bi-annual report on complaints and actions taken to address complaints and prevent future occurrences.

9.2.12 Waste production

Various waste streams will result from the operational phase and development of the facility. Waste may include hazardous waste associated with the handling of hazardous products and contaminated packaging material (e.g. during construction and maintenance). Domestic waste will be generated by the facility and related operations. Waste presents a contamination risk and when not removed regularly, may become a fire hazard. Construction waste may include building rubble and discarded equipment. Contaminated soil and water is considered as a hazardous waste.

Project Activity / Resource	Nature (Status)	(A1) Importance	(A2) Magnitude	(B1) Permanence	(B2) Reversibility	(B3) Cumulative	Environmental Classification	Class Value	Probability
Without Preventative / Mitigation Measures									
Construction	Excessive waste production, littering, illegal dumping, contaminated materials	1	-2	2	2	2	-12	-2	Definite
Daily Operations	Excessive waste production, littering, contaminated materials	1	-2	3	2	2	-14	-2	Definite
After Preventative / Mitigation Measures									
Construction	Excessive waste production, littering, illegal dumping, contaminated materials	1	-2	2	2	2	-12	-2	Definite
Daily Operations	Excessive waste production, littering, contaminated materials	1	-1	3	2	2	-7	-1	Definite

Desired Outcome: To reduce the amount of waste produced, and prevent pollution and littering.

Actions

Prevention:

- Waste reduction measures should be implemented and all waste that can be re-used / recycled must be kept separate.
- Ensure adequate temporary waste storage facilities are available.
- Ensure waste cannot be blown away by wind.
- Prevent scavenging (human and non-human) of waste.

Mitigation:

- Waste should be disposed of regularly and at appropriately classified disposal facilities, this includes hazardous material (empty chemical containers, contaminated rugs, paper, water and soil).
- See the material safety data sheets available from suppliers for disposal of contaminated products and empty containers.
- Liaise with the municipality regarding waste and handling of hazardous waste.
- Due to the nature of some hazardous materials, the containers they are packed in should be disposed of in an appropriate way at an appropriately classified waste disposal facility. See the material safety data sheets available from suppliers for disposal methods.
- To prevent people from using potentially contaminated containers for transport or holding of drinking water, all containers that will be discarded must be crushed or punctured prior to disposal.

Responsible Body:

- Proponent
- Contractors

Data Sources and Monitoring:

- A register of hazardous waste disposal should be kept. This should include type of waste, volume as well as disposal method/facility.
- Any complaints received regarding waste should be recorded with notes on action taken. All information and reporting to be included in a bi-annual report.

9.2.13 Ecosystem and Biodiversity Impact

The nature of the operational activities is such that the probability of creating a habitat for flora and fauna to establish is low. No significant impact on the biodiversity of the area is predicted as the site is void of natural fauna and flora. Excessive lighting used at night and especially those that are directed upwards may however blind birds like flamingos that fly at night. This may result in disorientation of birds and collisions with structures. Further impacts will mostly be related to pollution of the marine environment.

Project Activity / Resource	Nature (Status)	(A1) Importance	(A2) Magnitude	(B1) Permanence	(B2) Reversibility	(B3) Cumulative	Environmental Classification	Class Value	Probability
Without Preventative / Mitigation Measures									
Construction	Impact on fauna and flora. Loss of biodiversity due to pollution	2	-1	2	2	2	-12	-2	Improbable
Daily Operations	Impact on fauna and flora. Loss of biodiversity due to pollution and the impact of lighting on birds	2	-2	3	2	2	-7	-28	Probable
After Preventative / Mitigation Measures									
Construction	Impact on fauna and flora. Loss of biodiversity due to pollution	1	-1	2	2	2	-6	-1	Improbable
Daily Operations	Impact on fauna and flora. Loss of biodiversity due to pollution and the impact of lighting on birds	1	-1	3	2	2	-7	-1	Improbable

Desired Outcome: To avoid pollution of and impacts on the ecosystem and biodiversity.

Actions.

Mitigation:

- Report any extraordinary ecological sightings to the Ministry of Environment, Forestry and Tourism.
- Mitigation measures related to waste handling and the prevention of groundwater, surface water and soil contamination should limit ecosystem and biodiversity impacts.
- Avoid scavenging of waste by fauna.
- The establishment of habitats and nesting sites at the facility should be prevented where possible.
- Lights used at night should be kept to a minimum and should be directed downwards to the working surfaces. If problem areas are identified, corrective action should be implemented to prevent future bird strikes.

Responsible Body:

- Proponent

Data Sources and Monitoring:

- Record any bird strikes and identify problem areas.
- All information of extraordinary ecological sightings to be included in a bi-annual report.

9.2.14 Groundwater, Surface Water and Soil Contamination

Cargo that are not contained can contaminate the environment. The entire property is paved and all storage and mixing facilities will be in suitably bunded areas. Pollution of soil and groundwater is thus not likely. However, dust that is not contained can reach sensitive receptors, like the nearby ocean, during times of strong wind. Oil, hydraulic fluid and fuel leaks from vehicles may also present a pollution risk. Pipes transferring products to vessels can burst and may lead to significant spills if pumping is not quickly stopped.

Project Activity / Resource	Nature (Status)	(A1) Importance	(A2) Magnitude	(B1) Permanence	(B2) Reversibility	(B3) Cumulative	Environmental Classification	Class Value	Probability
Without Preventative / Mitigation Measures									
Construction	Contamination from hazardous material spillages	1	-2	2	2	2	-12	-2	Probable
Daily Operations	Contamination from hazardous material spillages	3	-3	3	2	2	-54	-4	Probable
After Preventative / Mitigation Measures									
Construction	Contamination from hazardous material spillages.	1	-1	2	2	1	-5	-1	Improbable
Daily Operations	Contamination from hazardous material spillages	3	-2	3	2	1	-36	-3	Improbable

Desired Outcome: To prevent the contamination of water and soil.

Actions

Prevention:

- Regularly inspect and maintain all infrastructure, including pressure testing, to minimize the chances of infrastructure failure.
- Proper containment of chemicals, delivered to the plant prior to fluid mixing operations, to prevent dust blown into the surrounding environment.
- Training of operators must be conducted on a regular basis (e.g. forklift operators) to limit product containment damage due to incorrect handling.

Mitigation:

- Regularly inspect the bund area for any product spills and clean without delay. All outflow valves from the bund area must at all times be closed and only opened under supervision.
- Clean-up action must be taken immediately for all instances where chemicals or dust is not contained (e.g. spillages and torn bags) or spillages occur (e.g. trucks leaking fuel or oil, or paints and solvents during construction and maintenance)

Responsible Body:

- Proponent
- Contractors

Data Sources and Monitoring:

- The procedures followed to prevent environmental damage during service and maintenance, and compliance with these procedures, must be audited and corrections made where necessary.
- A report should be compiled bi-annually of all spills. The report should contain the following information: date and duration of spill, product spilled, volume of spill, remedial action taken, etc.

9.2.15 Visual Impact

This is an impact that not only affects the aesthetic appearance, but also the integrity of the facility. The site is within an area zoned for port use. The development of the site is in line with the port character.

Operations will be kept tidy and neat which will promote effectiveness and pollution prevention while being aesthetically pleasing. The project is located in close proximity to the docking area for passenger vessels and good housekeeping is important to maintain a good image of the Proponent and of Namport.

Project Activity / Resource	Nature (Status)	(A1) Importance	(A2) Magnitude	(B1) Permanence	(B2) Reversibility	(B3) Cumulative	Environmental Classification	Class Value	Probability
Without Preventative / Mitigation Measures									
Construction	Poor housekeeping and a disorganised construction site	2	1	2	2	1	-10	-2	Probable
Daily Operations	Poor housekeeping and maintenance	2	1	3	2	1	-12	-2	Probable
After Preventative / Mitigation Measures									
Construction	Poor housekeeping and a disorganised construction site	2	1	2	2	1	-10	-2	Improbable
Daily Operations	Poor housekeeping and maintenance	2	1	3	2	1	-12	-2	Improbable

Desired Outcome: To minimise aesthetic impacts associated with the facility.

Actions

Mitigation:

- Regular waste disposal, good housekeeping and routine maintenance on infrastructure will ensure that the longevity of structures are maximised and a low visual impact is maintained.
- All structures and infrastructure constructed on site should be in line with the visual character of the surroundings as far as practically possible.

Responsible Body:

- Proponent
- Contractors

Data Sources and Monitoring:

- A bi-annual report should be compiled of all complaints received and actions taken.

9.2.16 Cumulative Impact

The main cumulative impact associated with the operational phase is traffic frequenting the site, noise, and dust should it not be contained. This will have a cumulative impact on traffic flow on surrounding street areas and outside the port, noise at nearby residential areas and the environment.

The cumulative effect of lighting on birds due to various developments in and around the port may also increase the incidences of collisions and interference with bird flight paths at night.

Desired Outcome: To minimise all cumulative impacts associated with the facility.

Actions

Mitigation:

- Addressing each of the individual impacts as discussed and recommended in the EMP would reduce the cumulative impact.
- Reviewing biannual and annual reports for any new or re-occurring impacts or problems would aid in identifying cumulative impacts and help in planning if the existing mitigations are insufficient.

Responsible Body:

- Proponent

Data Sources and Monitoring:

- Review bi-annual summary reports based on all other impacts to gain an overall assessment of the impact of the operational phase.

9.3 DECOMMISSIONING AND REHABILITATION

Decommissioning is not foreseen during the validity of the environmental clearance certificate. Decommissioning was however assessed. Should decommissioning occur at any stage, rehabilitation of the area may be required. Decommissioning will entail the complete or partial removal of infrastructure not forming part of post decommissioning use. Any pollution present on the site must be remediated. The impacts associated with this phase include noise and waste production as structures are dismantled. Noise must be kept within Health and Safety Regulations of the Labour Act and WHO standards. Waste should be contained and disposed of at an appropriately classified and approved waste facility and not dumped in the surrounding areas. Future land use after decommissioning should be assessed prior to decommissioning and rehabilitation initiated if the land would not be used for future purposes. The EMP for the facility will have to be reviewed at the time of decommissioning to cater for changes made to the site and implement guidelines and mitigation measures.

9.4 ENVIRONMENTAL MANAGEMENT SYSTEM

The Proponent could implement an Environmental Management System (EMS) for their operations. An EMS is an internationally recognized and certified management system that will ensure ongoing incorporation of environmental constraints. At the heart of an EMS is the concept of continual improvement of environmental performance with resulting increases in operational efficiency, financial savings and reduction in environmental, health and safety risks. An effective EMS would need to include the following elements:

- A stated environmental policy which sets the desired level of environmental performance;
- An environmental legal register;
- An institutional structure which sets out the responsibility, authority, lines of communication and resources needed to implement the EMS;
- Identification of environmental, safety and health training needs;
- An environmental program(s) stipulating environmental objectives and targets to be met, and work instructions and controls to be applied in order to achieve compliance with the environmental policy;
- Periodic (internal and external) audits and reviews of environmental performance and the effectiveness of the EMS; and
- The EMP.

10 CONCLUSION

Mud plants supply drilling fluids to offshore oil drilling operations. Such plants needs to be located in port areas, on or near the docking areas where platform supply vessel's can be supplied with the required drilling fluids. Suitable locations for the placement of mud plans are thus limited.

Various potential and definite impacts will emanate from the construction, operations and decommissioning phases. The majority of the negative impacts can be mitigated or prevented, while positive impacts should be enhanced. Impacts related to the operational phase are expected to mostly be of low to medium significance and can mostly be mitigated to have a low significance. The extent of impacts are mostly site specific to local and are not of a permanent nature. Due to the nature of the surrounding areas, cumulative impacts are possible and include noise pollution, traffic impacts and impacts on birds flying at night (bright lighting).

This EMP report specifies some of the enhancement measures aimed at increasing the positive impacts of the project. This include maximising the appointment of Namibian companies and citizens for support services. The EMP also describes a monitoring programme to be carried out by the Contractor. Baseline studies to determine preconstruction concentrations of chemical of concern concentrations in the soil is advised where possible. Take care not to damage installed surface covers without permission of Namport.

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Appendix A: Proof of Public Consultation

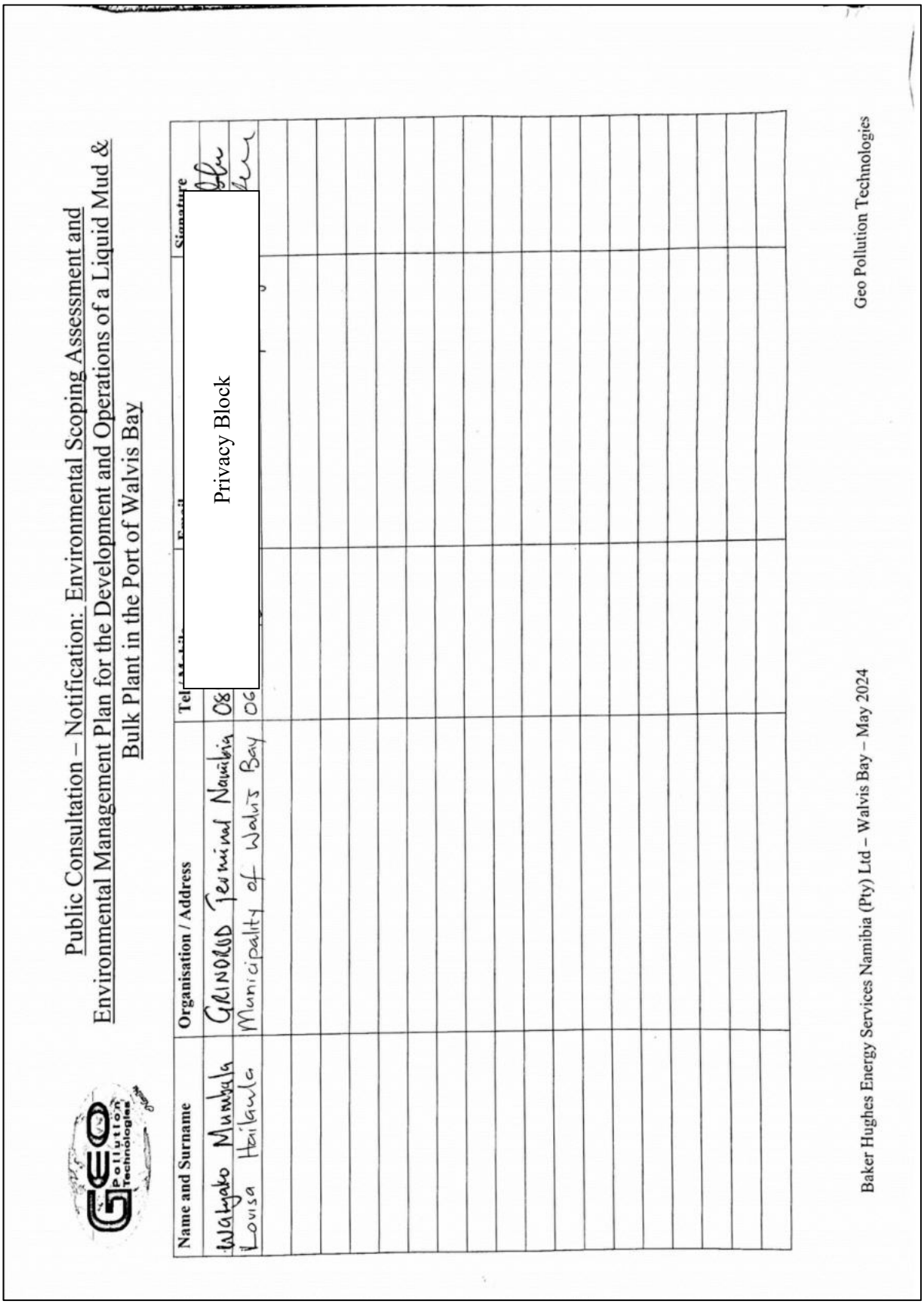
Notified IAPs

Name	Position	Organisation
Elzevir Gelderbloem	Executive: Port Engineering	Namport
Stefanus Gariseb	Manager: SHEQ	Namport
Shaheed Saban	Draughtsman	Namport
Antoine Berel	Vice President for sub-Saharan Africa	Halliburton
Joao Tiago	Manager - Angola & Namibia	Schlumberger
Lovisa Hailaula	Environmental Officer	Municipality of Walvis Bay
Watyako Mumbala	SHE Officer	Grindrod

Registered IAPs

Name	Position	Organisation	Date of Registration
Rauna Shikwaya	Environmental Coordinator (EMS)	Namport	2024-06-19
Stefanus Gariseb	Manager: SHEQ	Namport	2024-06-19
Ndelimona Iipinge	EIA Tracking and Monitoring in Namibia (EIA Tracker)		2024-06-19
Nadine Kohlstadt	Swakopmund Scientific Society	Swakopmund Scientific Society	2024-06-24

IAPs Notified by Hand Delivered Letter



Public Consultation – Notification: Environmental Scoping Assessment and Environmental Management Plan for the Development and Operations of a Liquid Mud & Bulk Plant in the Port of Walvis Bay

Name and Surname	Organisation / Address	Tel	Email	Signature
Wahyako Mumbala	GRINDROD Terminal Namibia	08	Privacy Block	
Louisa Hailavla	Municipality of Walvis Bay	06		

Baker Hughes Energy Services Namibia (Pty) Ltd – Walvis Bay – May 2024

Geo Pollution Technologies

Municipal Notification

GEO Pollution Technologies

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To: **Interested and / or Affected Party / Neighbour** **12 June 2024**

Re: **Environmental Scoping Assessment and Environmental Management Plan for the Development and Operations of a Liquid Mud & Bulk Plant in the Port of Walvis Bay**

Dear Sir/Madam

Geo Pollution Technologies (Pty) Ltd was appointed by Baker Hughes Energy Services Namibia (Pty) Ltd (the Proponent), to undertake an environmental assessment for the development and operations of a liquid mud plant, dry bulk plant, and cement bulk plant, within the commercial harbour of the Port of Walvis Bay (see location map on page 2). The assessment will be conducted according to the Environmental Management Act of 2007 and its regulations as published in 2012.

Project: Development and Operations of a Liquid Mud &n Bulk Plant in the Port of Walvis Bay

Proponent: Baker Hughes Energy Services Namibia (Pty) Ltd

Environmental Assessment Practitioner: Geo Pollution Technologies (Pty) Ltd

The purpose of the facility will be to mix, condition, store and transfer drilling and completion fluids, and storage and transfer of dry bulk powders, for oil well drilling projects. Drilling fluid can either be water based or oil based mud and ultimately, the Proponent intends to produce both types at the project site. The project will be developed in two main phases: Phase 1 being the water based liquid mud plant, the completion fluids plant, and the dry bulk powders plant; and Phase 2 the oil based mud plant, a mud rejuvenation plant and a small diesel storage facility for own use.

No major construction activities are foreseen and development of the plant comprise mainly of the placement of storage and mixing tanks, silos, installation of reticulation, pumps and air compressors, installation of spill containment infrastructure, and placement of containers for office space, ablutions, storage, etc. Some bulk chemicals will be stored on site in storage silos while others will be ordered on demand. Once an order for drilling or completion fluid is received, it will be prepared according to determined specifications and pumped to a platform support vessel, which will deliver the product to the drilling rig. Administrative tasks, site security and cleaning of the premises will continue on a daily basis to ensure the effective and clean operations of the facility. Environmental compliance monitoring and public liaison will continue throughout operations.

Interested and affected parties are invited to register with the environmental consultant to be provided with the opportunity to share comments, issues or concerns related to the project, for consideration in the environmental assessment. Registrations, requests for additional information, and comments and concerns should be submitted to Geo Pollution Technologies by 27 June 2024. Please register and provide comments at:

Fax: 088-62-6368 or **E-Mail:** bh@thenamib.com.

Should you require any additional information please contact Geo Pollution Technologies at telephone 061-257411.

Sincerely,
Geo Pollution Technologies

André Faul
Environmental Practitioner

MUNICIPALITY WALVIS BAY
General Manager
12 JUN 2024
Dept. of
Water, Waste & Environ. MGMT.

Press Notice: The Namibian Sun 10 and 17 June 2024

Sun
MONDAY 10 JUNE 2024 | NEWS | 3

NEWS IN SHORT

Unam law students inaugurate 'Graves into Gardens' project

A group of Unam law students, under the name Cicero Law Firm, has inaugurated a social project, 'Graves into Gardens', to beautify and plant trees at the Opoganda cemetery in an effort to preserve the historical site and promote environmental sustainability and community engagement. Cicero is a hypothetical law firm formed by a group of fourth-year law students at the University of Namibia (Unam) as part of the course work. Tuyenikelao Shipoke, a member of the firm, said the project is a way for the students to contribute to society. Miss Earth Namibia 2023, Martha Kautanevali, was officially appointed as the patron for the project. She said the goal of transforming neglected gravesites into a serene and dignified environment through tree planting, pathway creation and cleaning is not only a tribute to those who have passed but also a gift to their families and the community at large.

- PATRICIA COETZEE

'Healing Hands' exhibition opens at Bellhaus

The 'Healing Hands' exhibition opened on Thursday at Bellhaus Atelier and Galerie in Windhoek. The exhibition, featuring the works of Kudzanai Katererre and Marelize van Staden, showcases an evocative blend of printmaking and sculpting, chronicling the artists' personal quests for healing and resonating with the universal human experience. Gallery owner Andrea Behnsen, speaking at the event, encapsulated the exhibition's ethos: "In creating, we find the power to heal and reconnect with love." The exhibition can be viewed Monday through Friday from 09:00 to 12:30 and 14:00 to 17:30, and on Saturday from 09:00 to 12:30.
The exhibition marks a significant moment for Van Staden, a new face on the Namibian art scene. Following a devastating personal loss, Van Staden's healing process found its voice through crafting lino prints, initially in black and white, later enriched with delicate gold leaf inserts. Katererre's contributions draw from his rich background in sculpting to convey stories of endurance and spiritual renewal.

- MICHAEL KAYUNDE

• NAMIBIA REMAINS LARGEST AFRICAN RECIPIENT OF GERMAN AID

Nam, Germany sign N$380m cooperation agreements

Germany's official development assistance since Namibia's independence until 2023 amounts to **around N$32 billion, making it the largest recipient of German development cooperation in Africa.**

JEMIMA BEUKES
WINDHOEK

Namibia and Germany have signed agreements valued at 19 million euros (N$386 million) covering three new programmes focusing on climate-resilient water supply, climate-resilient groundwater management in northern Namibia and urban development in Lüderitz and Aus in the //Karas Region.

This was announced in a joint statement issued by the National Planning Commission (NPC) and the German embassy in Namibia last week, in which both sides agreed and committed to speeding up the implementation of the projects.

JOINT: Namibia and Germany committed to speeding up the implementation of the joint development projects. PHOTO: FILE

The commitments leading to the final agreements were made during government negotiations on development cooperation between Namibia and Germany in June 2023.

"Employment creation, poverty reduction and reducing inequality are central components of the relations between Namibia and Germany. Germany's official development assistance since Namibia's independence until 2023 amounts to around 1.6 billion euros (roughly N$32 billion). In per-capita terms, Namibia is thus the largest recipient of German development cooperation in Africa."

Development plans

The German government assured Namibia that it would align its future development cooperation with the ideas and goals formulated in Namibia's development strategies, such as the National Development Plans.

This, the statement highlighted, would be launched in April 2025 and would incorporate the Harambee Prosperity Plan as well as the United Nations' Sustainable Development Goals.

"Before the 2024 inter-governmental consultations, [we] conducted a field trip to monitor project progress and development impact in the areas of rural development, bush control and biomass utilisation; natural resource management; Namibian parks, environmental and climate change; the Benguela Marine Spatial Planning; and renewable energy under the Energy H2 Partnership Namibia/Germany (HyIron), as well as completed projects under the former Namibian-German Special Initiative Programme, which was finalised in 2017. The next bilateral negotiations on development cooperation are planned for September 2025 in Lüderitz, //Karas Region," the statement read.

jemima@nmh-hub.com.na

SWAKOP ANNOUNCES N$690M BUDGET

PRECIOUS NGHITAUNAPO
SWAKOPMUND

The Swakopmund municipality announced a close to N$700 million budget for the 2024–2025 financial year at a 4 June council meeting.

Operating expenses account for 84% of the total budget, totalling N$578 million, while capital expenditures account for 16%, amounting to N$112 million.

Chairperson of the management committee, Blasius Goraseb, said this year's budget priorities are designed with a clear focus on issues that are pivotal to Swakopmund's development.

Among the town's priorities are town planning, provision of serviced land and housing development, roads and street infrastructure, bulk wastewater infrastructure, beach development, bulk water infrastructure and the creation of employment opportunities.

"These are not merely expenses; they are investments in the future of Swakopmund, aimed at ensuring sustainable growth, enhanced quality of life and resilience in the face of future challenges for a very fast-growing town," Goraseb said.

Detailed outline

Under the current administration, a comprehensive structural plan has been devised to identify socio-economic opportunities for Swakopmund's growth and development.

This vision emphasises sustainability in terms of living standards and environmental stewardship, envisioning Swakopmund as a livable town characterised by accessibility, community amenities and economic opportunities.

Key initiatives include the development of a beach area for public use, urban planning to enhance connectivity and mobility and the promotion of the tourism, education, healthcare and clean technology sectors.

Moreover, the town is committed to fostering a smart city model that prioritises environmental sustainability and visionary development.

Council allocated N$29 million towards the planning and design of new roads and the upgrading and maintenance of existing roadways to improve safety. New roadways will be constructed to connect serviced areas and facilitate the development of new areas, such as DRC Extension 1. The council also indicated that stormwater systems would be upgraded.

Water matters

Collectively, N$37 million was allocated towards water and wastewater infrastructure.

Included in the bulk water infrastructure are plans to erect a water reservoir.

"We recognise the importance of foresight and planning, which is why we have budgeted for the investigation and design of a water reservoir for Vineta North, Mile 4, Ocean View and Northern Wedge Development. This reservoir will not only cater to the needs of our expanding community but will also ensure resilience in the face of future infrastructure challenges," Goraseb said.

Similarly, the installation and upgrading of the current sewerage systems will address current deficiencies and mitigate the risk of sewage overflows and infrastructure failures. By funding these projects, the municipality is not only addressing immediate infrastructure needs but also planning strategically for the community's future growth and resilience.

Social care

The construction of an emergency shelter has also been included in the budget.

The shelter will provide a haven during crises, ensuring the safety and well-being of community members in need. The facility will be equipped to offer essential services such as temporary housing and required care, ensuring that vulnerable people receive the assistance they need in times of distress.

It was also announced that, due to prevailing economic circumstances, the council is considering a tariff increase of 5% for service-related tariffs for the next fiscal year, except for tariffs related to senior citizens.

precious@erongo.com.na

NEWS IN SHORT

First Lady to hand over dignity packs

First Lady Sustjie Mbumba, who is also the president of the Organisation of African First Ladies for Development (OAFLAD), is scheduled to hand over dignity packs to teenage mothers at the Rundu Intermediate Hospital in the Kavango East Region on Wednesday.
According to a statement by the Office of the First Lady, OAFLAD's mission is to contribute to the health and well-being of children, youth and women through advocacy, resource mobilisation and strategic partnerships.
"The #WeAreEqual campaign focuses on four pillars, namely health, education, economic empowerment and gender-based violence, and collaborates with stakeholders to build a future that empowers all Africans," it read.
"Mbumba, as president of the OAFLAD, is currently implementing initiatives under the campaign, which was launched in Namibia in August 2023. These initiatives include a regional outreach and the distribution of hygiene packs to teenage and young mothers at state hospitals in both the Kavango East and Kavango West regions."

- NIKANOR NANGOLO

First Lady Sustjie Mbumba.
PHOTO: CONTRIBUTED

Gciriku's broken land promises

The Gciriku Traditional Authority's senior traditional councillor Festus Shikerete has voiced concerns over historical land issues and unfulfilled promises made to the Gciiriku community.
This according to a report by the Parliamentary Standing Committee on Natural Resources after it visited the Zambezi, Kavango East and Kavango West regions' green schemes.
According to Shikerete, in 1976, the traditional authority provided land to the government to start projects in Shitemo, with the promise that residents would produce their own food and generate their own income.
"The sad part was that people had to be relocated and were never compensated because the parents agreed to be relocated on the condition that their future generations would benefit and their children would be employed there," he said.
He added that those relocated were told to move and live on a riverbank where there is no space to cultivate.

- NIKANOR NANGOLO

• INITIATIVE TO MAKE TRUCK DRIVERS' JOBS EASIER

Oshikango: 24-hour border post to 'revive economy'

The launch of 24-hour operations at the border post "comes with new responsibilities and challenges", the minister said.

KENYA KAMBOWE
OSHIKANGO

BOOST: The Oshikango-Santa Clara border is now open 24 hours a day.
PHOTO: KENYA KAMBOWE

Home affairs minister Albert Kawana says the 24-hour operation of the Oshikango-Santa Clara border post will boost the tourism sector and assist in reviving the Namibian economy.
Kawana made the remarks last Friday during the launch of the 24-hour border initiative between Namibia and Angola, which he said will - among other things - bring an end to trucks having to overnight at the border post because it is closed when they arrive.
"After the economic devastation that was mainly caused by Covid-19 pandemic, it is important to adopt various measures aimed at reviving our economy," Kawana said. "The 24-hour operation at Oshikango-Santa Clara border post is but one such measure which is aimed at reviving our economy. I also believe that additional measures such as the introduction of [the requirement of] national identity documents in place of passports between Namibia and Angola will go a long way to promote unhindered movement of our nationals between our two countries."
The minister added that the launch of 24-hour operations at the border post "comes with new responsibilities and challenges".
"The public and truck drivers will be expecting the congestion of trucks waiting to be cleared to become a thing of the past. Trucks should be cleared speedily as soon as they arrive, regardless of the time they arrive."

Time is money

Kawana also touched on how the 24-hour operation of the Oshikango-Santa Clara border will boost business in both countries.
"The business community will be able to conduct business between the two countries on a 24-hour basis. As the saying goes, 'time is money'. This will no longer apply at the Oshikango-Santa Clara border post since services will be rendered on 24 hours a day," he said.
"Our truckers will no longer need to sleep at the border post waiting to be cleared in the morning when the border opens. The required goods and services will be delivered on time to consumers," Kawana said.
"It is, therefore, our hope that the volumes passing through the Oshikango-Santa Clara border post will increase. The strategic location of the border post allows the two countries to promote trade relations. At the same time, costs to the business community will be reduced because of sharing facilities."

Maximum benefit

Kawana added that Namibia is ready to launch more 24-hour borders with the Angolan government.
"In order to achieve maximum benefit, Namibia and Angola are working on opening more border crossing areas at places such as Otjimuhaka and Epupa-Montenengro in the Kunene Region, Mushangara-Mucusso in Kavango East, and Buabuata-Chetto and Sisuwe-Bico de Angola in Zambezi. The date for opening will be agreed upon by the two countries," he said.

Immigration ministry denies mistreatment of foreign nationals

NOT TRUE: The immigration ministry has urged the public to refrain from 'spreading misinformation that undermines its integrity'. PHOTO: CONTRIBUTED

STAFF REPORTER
WINDHOEK

The immigration ministry has denied allegations of mistreatment towards Angolan and South African nationals.
This comes after a whistleblower within the ministry made claims on social media, through activist Michael Amushelelo, regarding the treatment of foreigners by the ministry's executive director Etienne Maritz.
The whistle-blower alleged that Maritz "has been treating fellow Africans badly to the point that he told employees to put domicile [applications] on hold because he wants to prioritise Europeans first since his parents are from Germany".
He further allegedly gave employees instructions to "hand in domicile and permanent residency [documents from] eight Europeans and 16 Chinese nationals, while depriving Angolans and South Africans".

'Baseless allegations'

In a statement released last week, acting executive director Jackson Wandjiva said: "The ministry vehemently refutes these baseless allegations by a purported official. They are without merit and intended to mislead the public and undermine the trust in both the ministry and its dedicated staff members".
He added that the ministry would like to make it categorically clear that the immigration selection board (ISB) operates within a strict framework.
According to him, the ISB comprises six staff members from various government institutions and ministries, five secretariats and two legal support staff. These individuals, he said, act as a collective board mandated to scrutinise all permanent resident applications, making informed and unbiased decisions.
Decisions by the ISB are unanimous and reflect a collective assessment of each applicant's merits, he said.
Contrary to the allegations, Wandjiva said Maritz does not possess unilateral authority over the ISB's decisions and that each case is thoroughly reviewed and evaluated by the board members, ensuring the process is fair, accountable and transparent.

Press Notice: Die Republikein 10 and 17 June 2024

Swakopmund begroot N$690 miljoen vir 2024-'25

Belegging in ontwikkeling

Die Swakopmundse munisipaliteit wil in die komende finansiële jaar geld bestee aan huidige nood- en langtermyn ontwikkeling.

Precious Nghitaunapo

Die oorgroote meerderheid van die Swakopmundse munisipaliteit se jaarbegroting word aan bedryfskoste bestee.

Tydens 'n raadsvergadering het dit aan die lig gekom dat ongeveer N$578 miljoen, 84% van die munisipaliteit se begroting vir die 2024-'25 finansiële jaar, aangewys is vir bedryfsuitgawes. Kapitale uitgawes is N$112 miljoen. Die voorsitter van die munisipaliteit se bestuurskomitee, Blasius Goraseb, het daarop klem gelê dat die munisipale begroting voorkeur gee aan uitgawes wat noodsaaklik is om ontwikkeling in Swakopmund te bevorder.

Onder meer sal dorpsbeplanning, die voorsiening van gedienste grond, behuising, infrastruktuur vir paaie en riool, konstruksie, die ontwikkeling van strande en werkskepping voorkeur geniet.

"Dit is nie bloot uitgawes nie, dit is beleggings in die toekoms van Swakopmund wat gemik is op volhoubare groei, verhoogde lewenskwaliteit en om gereed te wees vir die uitdaging van 'n dorp wat versnelde groei in die gesig staar," het Goraseb gesê.

'n Omvattende struktuurplan is ook ontwerp om sosio-ekonomiese geleenthede vir Swakopmund se groei en ontwikkeling te identifiseer. Die volhoubaarheid van lewenstandaarde en omgewingsbewaring is ook 'n prioriteit en het ten doel om toegangklikheid, gemeenskapsgeriewe en ekonomiese geleenthede kenmerke van die kusdorp te maak.

Die bevordering van toerisme, onderwys, gesondheidsorg en skoon tegnologie is ook op die raad se agenda,

Blasius Goraseb
VOORSITTER

"Dit is nie bloot uitgawes nie, dit is beleggings in die toekoms van Swakopmund wat gemik is op volhoubare groei."

terwyl daar steeds 'n verbintenis is tot die bevordering van Swakopmund se slimstadmodel wat omgewingsvolhoubaarheid en visionêre ontwikkeling prioritiseer.

Die meerderheid van die begroting is toegeken aan infrastruktuur van paaie met N$29 miljoen wat aangewys is vir die beplanning en ontwerp van verskeie paaie en die ontwikkeling van nuwe areas soos DRC se uitbreiding een. Die raad het ook aangedui dat die stormwaterstelsels opgegradeer sal word.

'n Totaal van N$37 miljoen is geoormerk vir water- en rioolbestuur met onderskeidelik N$18 miljoen en N$19 miljoen wat hiervoor begroot is.

"Ingesluit in die infrastruktuur vir grootmaatwater, is planne om 'n waterreservoir op te rig. Ons besef die belangrikheid van vooruitsig en beplanning, daarom dat ons begroot het vir die ondersoek en ontwerp van 'n waterreservoir vir Vineta-Noord, Myl 4, Ocean View, asook verder noordwaarts. Die reservoir sal nie net voorsien in die behoeftes van ons gemeenskap wat uitbrei nie, maar sal ook gemoedsrus bied in die gesig van toekomstige uitdagings ten opsigte van infrastruktuur," sê Goraseb.

Die installering en opgradering van die huidige rioolstelsels sal huidige tekortkominge bespreek en die risiko van onder meer die oorloop van riool verminder. Deur hierdie projekte te finansier, beplan die raad nie net vir onmiddellike infrastruktuurbehoeftes nie, maar beplan ook strategies vir die gemeenskap se toekomstige groei.

Die bou van 'n noodskuiling is ook ingesluit in die raad se 2024-'25 begroting. Die noodskuiling sal 'n toevlug bied tydens krisisse, en die veiligheid en welstand van gemeenskapslede in nood verseker. Die geriewe sal toegerus wees om noodsaaklike dienste soos tydelike behuising en die nodige sorg te bied, en verseker dat kwesbare mense die hulp kry wat hulle nodig het in tye van nood.

Ten slotte het die raad in die lig van heersende ekonomiese omstandighede 'n tariefverhoging van 5% oorweeg vir diensverwante tariewe vir die 2024-'25 fiskale jaar, behalwe vir die tariewe wat verband hou met senior burgers wat in Swakopmund woon.

- republikein@republikein.com.na

FOTO TER ILLUSTRASIE/VERSKAF

DAGBREEK FOKUS OP LEERLINGE SE TALENTE

Yolanda Nel

Bewusmaking help die gemiddelde mens om te verstaan dat mense anders leef - nie uit eie keuse nie - maar as gevolg van verskeie beperkings.

Dit is die kernboodskap van Ndunge Iyambo van die Dagbreek Skool vir gestremde kinders op Nasionale Gestremdheidsdag wat vandag gevier word. Iyambo beklemtoon dat bewusmaking nie bloot daaroor gaan om mense in te lig nie, maar ook om kennis oor te dra en die ervarings te deel van diegene wat met gestremdhede leef, in veral intellektuele en leergestremdhede. Laasgenoemde is die primêre fokus by Dagbreek.

Individue wat met gestremdhede leef, moet dikwels alternatiewe maniere vind om hul daaglikse lewens te bestuur en wat baie mense sonder gestremdhede as vanselfsprekend kan aanvaar.

Deur bewustheid te verhoog, kan die samelewing deure open vir diegene met gestremdhede, sê Iyambo en hulle 'n stem en die erkenning gee wat hulle verdien.

"Hierdie begrip is noodsaaklik vir die suksesvolle integrasie van individue met gestremdhede in ons werksamelewings en om te verseker dat hulle toegang en geleenthede het om te floreer."

Volgens Iyambo skep Dagbreek nie net bewusmaking oor die bestaan van die skool nie, maar beklemtoon ook die unieke behoeftes van hul leerlinge wat met leergestremdhede en -afwykings leef.

"Ons skool kan nie soos 'n gemiddelde hoofstroomskool funksioneer nie. Ons het spesiale behoeftes wat op spesieke maniere voorsien moet word," het sy verduidelik.

Dagbreek soek dikwels borgskappe vir noodsaaklike items soos rolstoele en wat die behoefte aan finansiële en materiële ondersteuning beklemtoon om die studente te help.

"Bewusmaking by Dagbreek gaan daaroor om die ondersteuning te werf wat nodig is om studente van die beste sorg en opvoeding te voorsien."

Iyambo het die konsep van Dagbreek as 'n bategebaseerde skool verduidelik. Anders as hoofstroomskole wat daarop fokus om te verbeter wat 'n kind nie kan doen nie, kyk die onderwysers waartoe elke kind in staat is en fokus daarop.

"Ons soek die kind se talente, hul sterk punte, en koester dit," het sy verduidelik.

As 'n kind uitblink in sang, fokus Dagbreek daarop om daardie talent te ontwikkel. Net so met 'n kind wat lief is vir diere, sal daar dus hierop gefokus word. Kinders word gevolglik vanaf die beginstadium aan verskeie aktiwiteite blootgestel om hul sterkpunte te identifiseer.

Soos hulle deur die skool se fases vorder - in teenstelling met tradisionele grade - word hulle gelei na dit waarin hulle die meeste belangstelling en aanleg toon. Dagbreek het verskeie projekte om hul leerlinge te ondersteun en te verseker dat hul vaardighede het vir 'n suksesvolle toekoms.

VAARDIGHEDE

Dit sluit in 'n selfversorgende tuin waar produkte in die skool se kombuis gebruik en aan die publiek verkoop word, 'n karwassery, asook die versorging van perde.

"Ons evalueer waar elke kind gaan floreer en gee hulle die nodige vaardighede vir daardie bedryf, hetsy tuinmaak of die maak van bakstene," sê Iyambo.

Die skool beplan ook om sy projekte verder uit te brei om ook manikure en pedikure in te sluit.

"Ons leerlinge bly hier tot die ouderdom van 21 en word ook by sekere besighede geplaas om werkondervinding op te doen. Dit verseker dat die leerlinge en toekomstige werkgewers weet hulle is gereed en in staat om suksesvolle kandidate in die arbeidsmag te wees."


Nasionale gestremdheidsdag word op 10 Junie gevier.


Leerlinge kan by Dagbreek groot voordeel trek uit die perde en leer geweldig baie oor hoe om die diere te versorg.


By Dagbreek is 'n groep leerlinge gereed om bakstene te maak.
FOTO'S VERSKAF


'n Groep leerlinge is besig om te leer hoe om kliënte se hare te doen en die dogters geniet die klas terdeë.

KONTAKPERSONE

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'n Publikasie van NETWORK MEDIA HUB (Pty)Ltd, gedruk deur PRINT MEDIA HUB (Pty)Ltd.

WEER

BINNELAND: Sonnig en warm tot baie warm.

KUS: Gedeeltelik bewolk en matig met miskolle.

GETYE BY WALVISBAAI: L: 05:22 H: 11:41 L: 17:18

VOORUITSIGTE

WINDHOEK	7°	22°
RUNDU	7°	26°
OSHAKATI	14°	27°
GOBABIS	8°	27°
MARIENTAL	11°	26°
KEETMANSHOOP	8°	23°
WALVISBAAI	10°	19°
LUANDA	21°	28°
JOHANNESBURG	2°	18°
KAAPSTAD	8°	23°

Dundee

VAN BL. 1

"Die fasiliteit word volgens regulatoriese goedgekeurde ontwerp- vereistes bedryf en word noukeurig deur die maatskappy se personeel gemonitor, met gereelde verslagdoening aan die ministerie van die omgewing en toerisme en ander staatsowerhede.

"Die fasiliteit word onafhanklik deur gekwalifiseerde eksterne ouditeure geoudit vir gerusstelling en nakoming, en is ten volle gelisensieer deur die Namibiese regering," sê Dundee se woordvoerder, Alina Garises.

"Die moniteringsresultate het nie die oorskryding van die standaard aangedui nie. Alle SO2-vrystellings is gemeet en bly binne aanvaarde perke," volgens Garises.

"Die smelter voldoen aan internasionale perke van luggehalte, soos uitgesit deur die Wêreldgesondheidsorganisasie (WHO), en uitlaatgasse het aansienlik gedaal," voer sy verder aan.

Inwoners het egter verlede week gekla dat gasvrystellings asemhaling moeilik maak en dat die situasie glo die afgelope paar weke vererger het.

Met betrekking tot arseen, sê Dundee dat hy reeds die arseentrioksiedaanleg in Oktober 2016 gesluit het. Die verklaring beantwoord nie direk die vraag wat nou met hierdie afvalproduk van die smelt van kopererts wat arseen bevat, gebeur nie.

Dundee verwys na gemeenskapsgesondheidsverslae in 2016 en 2018 wat aandui dat die smelter nie die watertoevoer na Tsumeb bedreig nie en dat die gehalte van drinkwater aan die WHO se standaarde voldoen.

Nietemin sê die omgewingsaktivis en EarthLife Namibia se voorsitter, Bertchen Kohrs, dat werknemers by 'n plaaslike hotel haar op Saterdag 1 Junie gewaarsku het: "Drink onder geen omstandighede die kraanwater nie."

Dundee sê 'n opname vir gemeenskapsgesondheid is in die vierde kwartaal van 2023 deur 'n onafhanklike konsultant uitgevoer, waarvan die resultate tans gefinaliseer word.

Die Tsumeb-smelter is een van die min aanlegte wat komplekse kopererts kan smelt. FOTO DUNDEE PRECIOUS METALS

'n Wenkombinasie: Boerewors en bier

PROMOSIE-ARTIKEL

Drie gelukkige pa's het tot dusver elk inkopiebewyse ter waarde van N$500 gewen as deel van Shoprite en Checkers se Vadersdagkompetisie. Die goeie nuus is dat jy nog tot die einde van dié maand 'n kans staan om te wen. Al wat jy hoef te doen, is om 'n sespak Tafel Lager-bier en Champion-boerewors by enige Shoprite- of Checkers-winkel te koop. Hou dan jou strokie en WhatsApp #Wors na 085 785 6231 en volg die instruksies.

Die fokus val op onderwys

Ter viering van die Internasionale Dag van die Afrika-kind, het president Nangolo Mbumba 'n verklaring uitgereik waarin hy daarop gewys het dat talle uitdagings steeds Namibië in die gesig staar.

Die dag is vanjaar onder die tema "Onderwys vir alle kinders in Afrika: Die tyd is nou" gevier.

"Talle Afrikalande, insluitend Namibië, staan steeds voor groot uitdagings in die onderwyssektor.

"Dit sluit in ekonomiese struikelblokke, die gebrek aan infrastruktuur, geslagsongelykhede en kulturele praktyke is veelvlakkig en vereis dus 'n multibelanghebbende benadering om blywende oplossings te vind," het hy gesê.

Hy meen dat Namibië belegging in hierdie sektor moet prioritiseer en beleide moet implementeer wat doelgerigte ondersteuning aan gemarginaliseerde groepe, soos kinders met gestremdhede, bied.

Hy het ook daarop gewys dat die implementering van gratis primêre en sekondêre onderwys 'n groot mylpaal vir die land was.

"Ons verbintenis tot onderwys word weerspieël in begrotingstoewysings, met die onderwyssektor wat die grootste gedeelte ontvang," het hy gesê.

Hierdie is 'n foto wat as deel van *Republikein* se lesersfotokompetisie ontvang is. FOTO MELISIA SWARTBOOI

Die Dag van die Afrika-kind word elke jaar op 16 Junie gevier en herdenk die studente-opstand in 1976 in Soweto in Suid-Afrika.

- republikein@republikein.com.na

Jeug neem deel aan BIG-optog

Vra vir inkomstetoelaag van N$500 per maand

Luidens die klagskrif eis die groep dat die regering sy verpligtinge ingevolge die Namibiese Grondwet nakom.

'n Groot skare mense, veral jongmense, het Saterdag aan 'n optog deelgeneem ter ondersteuning van 'n basiese inkomstetoelaag (BIG) van N$500 per persoon per maand.

Die betoging het omstreeks 08:00 vanaf die Katuturajeugkompleks begin en het ten doel gehad om die aandag te vestig op die dringende behoefte aan regeringsoptrede in die implementering van 'n basiese inkomstetoelaag.

FOTO FACEBOOK

'n Klagskrif is aan die minister in die presidensie verantwoordelik vir geslagsgelykheid, armoede-uitwissing en maatskaplike welsyn, Doreen Sioka, oorhandig.

Die veldtog is deur die Basic Income Grant (BIG) Coalition of Namibia van stapel gestuur en een van die koördineerders meen dat hulle al meer as 19 jaar lank probeer om die toelaag geïmplementeer te kry.

Luidens die klagskrif eis die groep dat die regering sy verpligtinge ingevolge artikel 95 van die Namibiese Grondwet nakom wat die bevordering van die welstand van inwoners beloof.

Die betogers het in hul klagskrif beklemtoon dat jongmense die grootste deel van die land se bevolking uitmaak en aangevoer dat hulle van 'n toekoms verseker moet word.

"Ons leiers moet hulle daartoe verbind om 'n onvoorwaardelike en universele BIG as 'n jeuggesentreerde maatskaplike beskermingskema te implementeer om werklose jongmense te ondersteun en jeugontwikkeling te bevorder," lui die klagskrif.

Outjo-bejaardes wreed aangeval

VAN BL. 1

Roswitha Strzelecki (79) is tydens 'n huisbraak verwurg en haar man, Siegfried Strzelecki (81), is aangerand. Siegfried is etlike dae ná die aanval aan 'n aneurisme dood. Die twee mans het ook die egpaar se huis beroof en is skuldig bevind op aanklag van roof met verswarende omstandighede.

• 'n Bejaarde egpaar, Giel (79) en Sarie Botma (80), is in 2018 op hul plaas sowat 5 km buite Koës, vermoor. Drie mans staan tereg op hul moorde in die hoërhof in Windhoek en hulle verhoor sal na verwagting vanjaar afgehandel word.

• Die 68-jarige boer, Armin Siegfried Riedel en sy vrou, Brunhild (66), is in Januarie 2018 op hul plaas Grünfeld in die omgewing van Gobabis vermoor waarna hul huis afgebrand is met hul liggame steeds binne-in. Die twee beskuldigdes se verhoor is ook nog hangend in die hoërhof in Windhoek.

• 'n Drie-en-tagtigjarige vrou, Johanna Hendrihetta Simon, beter bekend as Rita, is in 2022 in haar huis op Mariental versmoor. Die verdagtes het glo by die agterdeur van Simon se huis in Aubstraat ingebreek en haar en haar huishulp met sykouse, stukke materiaal en kleefband vasgebind. Die huishulp het haar dood aangetref nadat die mans die huis verlaat het.

Die 71-jarige vrou is glo gewurg, geslaan en gebyt.

Die 75-jarige man is oor sy kop geslaan. FOTO'S VERSKAF

- kristien@nmh-hub.com.na

Site Notices

Appendix B: Consultant's Curriculum Vitae

ENVIRONMENTAL SCIENTIST **André Faul**

André entered the environmental assessment profession at the beginning of 2013 and since then has worked on more than 220 Environmental Impact Assessments including assessments of the petroleum industry, harbour expansions, irrigation schemes, township establishment and power generation and transmission. André's post graduate studies focussed on zoological and ecological sciences and he holds a M.Sc. in Conservation Ecology and a Ph.D. in Medical Bioscience. His expertise is in ecotoxicological related studies focussing specifically on endocrine disrupting chemicals. His Ph.D. thesis title was The Assessment of Namibian Water Resources for Endocrine Disruptors. Before joining the environmental assessment profession he worked for 12 years in the Environmental Section of the Department of Biological Sciences at the University of Namibia, first as laboratory technician and then as lecturer in biological and ecological sciences.

CURRICULUM VITAE ANDRÉ FAUL

Name of Firm	:	Geo Pollution Technologies (Pty) Ltd.
Name of Staff	:	ANDRÉ FAUL
Profession	:	Environmental Scientist
Years' Experience	:	23
Nationality	:	Namibian
Position	:	Environmental Scientist
Specialisation	:	Environmental Toxicology
Languages	:	Afrikaans – speaking, reading, writing – excellent English – speaking, reading, writing – excellent

EDUCATION AND PROFESSIONAL STATUS:

B.Sc. Zoology/Biochemistry	:	University of Stellenbosch, 1999
B.Sc. (Hons.) Zoology	:	University of Stellenbosch, 2000
M.Sc. (Conservation Ecology)	:	University of Stellenbosch, 2005
Ph.D. (Medical Bioscience)	:	University of the Western Cape, 2018

First Aid Class A	EMTSS, 2017, OSH-Med 2022
Basic Fire Fighting	EMTSS, 2017, OSH-Med 2022

PROFESSIONAL SOCIETY AFFILIATION:

Environmental Assessment Professionals of Namibia (Practitioner)

AREAS OF EXPERTISE:

Knowledge and expertise in:

- Environmental Impact Assessment and Management Plans
- Water Sampling, Extractions and Analysis
- Biomonitoring and Bioassays
- Biodiversity Assessment
- Toxicology
- Restoration Ecology

EMPLOYMENT:

2013-Date	:	Geo Pollution Technologies – Environmental Scientist
2005-2012	:	Lecturer, University of Namibia
2001-2004	:	Laboratory Technician, University of Namibia

PUBLICATIONS:

Publications:	5
Contract Reports	+220
Research Reports & Manuals:	5
Conference Presentations:	1