APP-005178

ENVIRONMENTAL MANAGEMENT PLAN FOR THE ABSTRACTION AND USE OF SEAWATER AS A COOLING MEDIUM IN THE PORT OF WALVIS BAY

UPDATED ENVIRONMENTAL MANAGEMENT PLAN

Prepared by:

Prepared for:

January 2025

Project:	**ABSTRACTION AND USE OF SEAWATER AS A COOLING MEDIUM IN THE PORT OF WALVIS BAY: Updated ENVIRONMENTAL MANAGEMENT PLAN**	
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Report Approval	 **André Faul** Conservation Ecologist	

I Danie Robberts acting as the Proponent's representative (Commercial Cold Storage (Namibia) (Pty) Ltd), hereby approve this report and confirm that the project description contained in herein 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 Walvis Bay on the 16 day of January 2025.

Commercial Cold Storage (Namibia) (Pty) Ltd

CY/1981/07373

Company Registration

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LIST OF ABBREVIATIONS

AIDS	Acquired Immune Deficiency Syndrome
BE	Biological/Ecological
DWA	Department of Water Affairs
DEA	Directorate of Environmental Affairs
EA	Environmental Assessment
EIA	Environmental Impact Assessment
EMA	Environmental Management Act No 7 of 2007
EMP	Environmental Management Plan
EMS	Environmental Management System
EO	Economic/Operational
ES	Environmental Classification
GPT	Geo Pollution Technologies
HDPE	High-Density Polyethylene
HIV	Human Immunodeficiency Virus
IAPs	Interested and Affected Parties
IUCN	International Union for Conservation of Nature
m/s	Meter per second
mbs	Meters below surface
MEFT	Ministry of Environment, Forestry and Tourism
mm/a	Millimetres per annum
MSDS	Material Safety Data Sheet
NaCl	Sodium chloride
PC	Physical/Chemical
PPE	Personal Protective Equipment
ppm	Parts per million
RO	Reverse Osmosis
SAH	South Atlantic High
SC	Sociological/Cultural
UNCCD	United Nations Convention to Combat Desertification
WHO	World Health Organization

GLOSSARY OF TERMS

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.

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, Forestry & 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.

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.

Sheet Pile Wall - retaining walls constructed to retain earth, water or any other filling materials. For quayside construction the sheet pile wall is a vertical wall separating the landside from the ocean.

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

Commercial Cold Storage (Namibia) (Pty) Ltd (the Proponent) operates as a tenant in the Port of Walvis Bay (Figure 1-1). In 2022, the Proponent obtained an updated environmental clearance certificate (ECC 01974) for the upgrade of their refrigeration condensing system to utilize desalinated seawater. The Proponent abstracts seawater, desalinates it for use as a coolant medium in the refrigeration condensing system, and discharges the desalinated water back into the ocean after use. The brine and associated chemicals generated during the desalination process are also discharged back into the ocean. The Proponent requested Geo Pollution Technologies (Pty) Ltd to apply for renewal of the ECC for the abstraction, desalinisation and discharge of brine and desalinated water into the ocean.

To renew the ECC, an updated environmental management plan (EMP) was prepared for the Proponent and is presented in this document. It is based on the original environmental impact assessment (EIA) conducted for the desalinisation plant (Faul and Coetzer, 2022). The updated EMP will be submitted to the Department of Environmental Affairs (DEA), Ministry of Environment, Forestry and Tourism (MEFT) in compliance with Namibia's Environmental Management Act (Act No 7 of 2007).

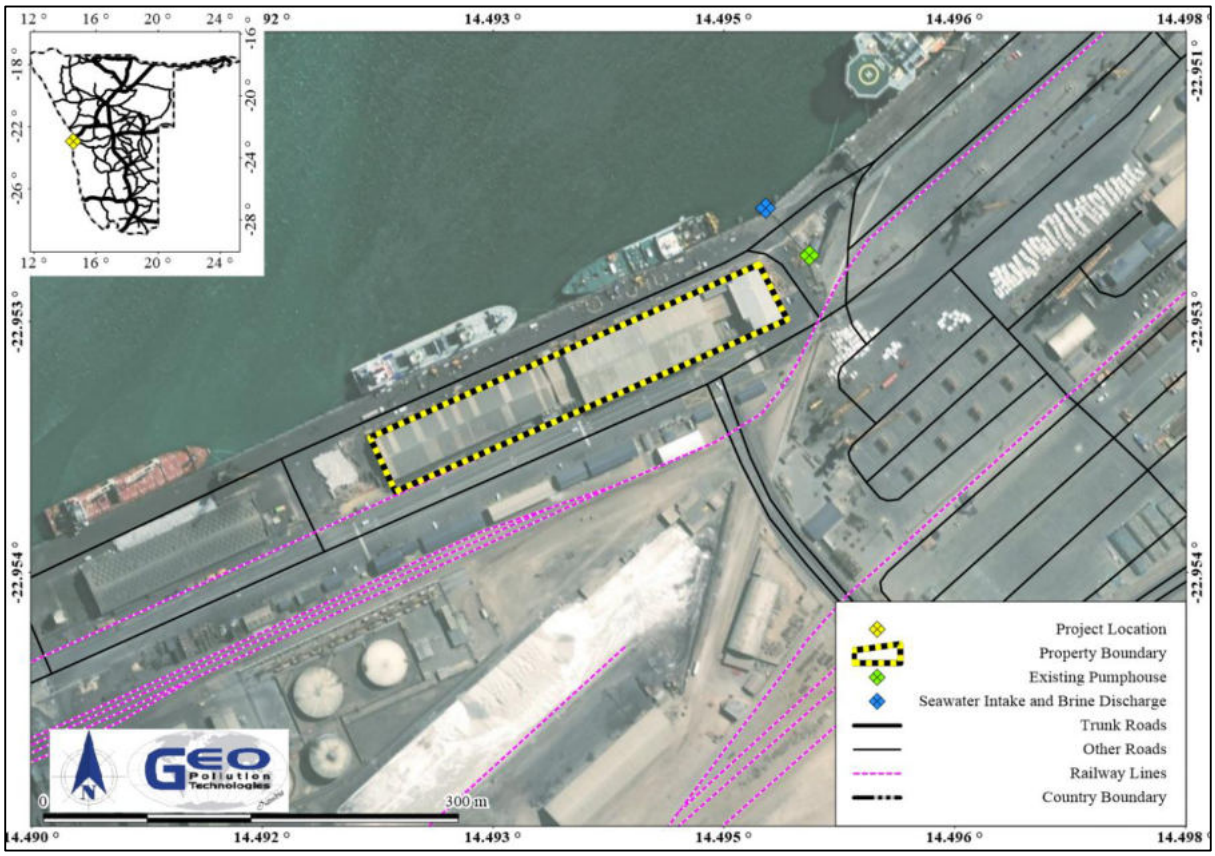

Figure 1-1 Project location

2 OPERATIONS AND RELATED ACTIVITIES

The installation of the desalination plant was completed after the amended ECC was issued by the MEFT and the various additional permits and was issued by the various regulatory bodies.

2.1 UPGRADED INFRASTRUCTURE

Commercial Cold Storage currently operates a refrigeration condensing system with four cooling towers (evaporation condensers) that use potable water as a cooling medium. The system was modified to utilise desalinated seawater as the cooling medium instead of potable water, thereby reducing pressure on the potable water supply provided by Namport, who in turn sources it from NamWater.

The infrastructure for desalinated water production includes a seawater abstraction point, reticulation, a reverse osmosis (RO) plant with storage tanks, and a brine return point. The RO plant has been installed within Namport's existing fire pump house.

A 900 mm diameter steel pipe beneath the quay wall, located directly opposite the pump house, acts as a sleeve for the seawater intake and brine discharge pipelines. These pipelines consist of 40 mm diameter high-density polyethylene (HDPE) Class 16 pipes. The HDPE pipes exit the steel sleeve, extend through the sheet pile wall, and are secured to the quay wall's concrete piles using stainless steel clamps. Reinforcing steel plates have been fixed on both sides of the sheet pile wall, where a small hole was created to allow the HDPE pipes to pass through. The hole has been filled with epoxy to ensure a secure fit.

The seawater abstraction line intake is positioned at -2 mCD, while the brine return line outlet is placed at -6 mCD, located 20 m downstream from the intake. On the sea-facing side of the sheet pile wall, the pipelines are securely fixed to the wall using stainless steel bolts.

The desalination plant operates as a typical reverse osmosis (RO) system, processing seawater through a series of filtration and membrane-based steps. The plant receives seawater at a rate of 3 m^3/hour and produces product water at a rate of 1.5 m^3/hour. Abstracted seawater is first disinfected and then passed through a multi-media filter containing granular media such as sand, anthracite, or gravel to remove particulate matter.

The filtered seawater undergoes pH neutralisation and adjustment before being treated in an activated carbon filter, which absorbs various chemicals and improves water aesthetics. Anti-scalant is added prior to the seawater being pressurised and passed through a partially permeable membrane during the reverse osmosis process. This step separates clean water from salts and impurities. The resultant mineral-devoid water is conditioned by adding chemicals such as hydrated lime (calcium hydroxide) and sodium bisulfite to produce the final product water.

The by-product of this process, known as brine, contains higher concentrations of dissolved solids, treatment additives, organics, microbial contaminants, and particulate matter. The brine, with approximately double the salinity of normal seawater, is returned to the ocean as an industrial effluent.

Desalinated water is conveyed to the existing refrigeration condensing system through a 40 mm high-density polyethylene (HDPE) water supply line.

2.2 OPERATIONAL ACTIVITIES

Current operations include the abstraction of seawater, desalination, and the return of brine to the ocean. Regular maintenance and cleaning of the pipelines and the reverse osmosis (RO) plant are performed, including the cleaning or replacement of filters and membranes, as well as regular backwashing of the system. Cleaning protocols are implemented based on the specifications of the installed RO plant.

The clean-in-place (CIP) protocol involves both high pH and low pH cleaning every three to four months. The high pH cleaning process uses a 0.1% sodium hydroxide solution, prepared by dissolving 500 g of sodium hydroxide in 500 litres of desalinated water, with a pH of approximately 11 to 12. This solution is cycled through the RO membranes, and the membranes are soaked for four to eight hours before the solution is discarded through the brine return stream. The low pH cleaning uses a solution prepared by dissolving 2.5 kg of citric acid in 500 litres of desalinated water, with a pH of approximately 4, following the same process as the high pH cleaning.

Additional operations include daily administrative activities, as well as general care and maintenance of the site.

3 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 in Table 3-1 to Table 3-3 govern the environmental assessment process in Namibia and/or are relevant to the project.

Table 3-1 Namibian law applicable to the project

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
Water Resources Management Act Act No. 11 of 2013	♦ Provide for management, protection, development, use and conservation of water resources ♦ Prevention of water pollution and assignment of liability
Marine Resources Act Act No. 27 of 2000	♦ Prevents the discharge of anything that may be injurious to marine resources or may disturb ecological balance in any area of the sea or which may detrimentally affect the marketability of marine resources, or which may hinder their harvesting
The Namibian Ports Authority Act Act No. 2 of 1994	♦ Provide for the establishment of the Namibian Ports Authority and its functions ♦ Responsible to protect the environment within its areas of jurisdiction
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
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)

Law	Key Aspects
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
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 3-2 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
Namibian Ports Authority Specifications and Regulations	♦ Enforced Standards and Codes which governs construction and operations relating to the port
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.

Table 3-3 Relevant multilateral environmental agreements for Namibia and the development

Agreement	Key Aspects
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
1985 Vienna Convention for the Protection of the Ozone Layer	♦ Aims to protect human health and the environment against adverse effects from modification of the Ozone Layer are considered ♦ Adopted to regulate levels of greenhouse gas concentration in the atmosphere
United Nations Framework Convention on Climate Change (UNFCCC)	♦ The Convention recognises that developing countries should be accorded appropriate assistance to enable them to fulfil the terms of the Convention
Convention on Biological Diversity, Rio de Janeiro, 1992	♦ Under article 14 of The Convention, EIAs must be conducted for projects that may negatively affect biological diversity
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."
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 to services/ facilities or interference with other legitimate uses of the area

The project is listed as an activity requiring an environmental clearance certificate as per the following points from Section 8 and 10 of Government Notice No. 29 of 2012:

- 8.1 “The abstraction of ground or surface water for industrial or commercial purposes.”
- 8.12 “The release of brine back into the ocean by desalination plants.”

4 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 construction and operational personnel in applying such controls; and
- to ensure that appropriate environmental training is provided to responsible construction and operational personnel.

4.1 IMPLEMENTATION OF THE EMP

Various potential and definite impacts will emanate from the 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).

4.1.1 Planning

During the phases of planning for 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. This includes seawater abstraction licence and effluent discharge licence from the Ministry of Agriculture, Water and Land Reform.
- 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 and as per conditions attached to the ECC.

4.1.2 Employment

An increase of skilled and professional labour resulted from, and is maintained by, the operations of the project. Employees are sourced locally as far as practically possible.

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.

Responsible Body:

- Proponent

Data Sources and Monitoring:

- Bi-annual summary report based on employee records.

4.1.3 Skills, Technology and Development

Some skill training will be provided during operations to run the development effectively and according to required standards. Development of people and technology are key to economic development.

Desired Outcome: To see an increase in skills of local Namibians, as well as development and technology advancements in the bulk refrigeration industry.

Actions

Enhancement:

- If the skills exist locally, contractors must first be sourced from the town, then the region and then nationally. Deviations from this practice 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.
- Training must be provided to Namibians to employ a predominantly Namibian workforce.

Responsible Body:

- Proponent

Data Sources and Monitoring:

- Summary report based on employee records.
- Bi-annual summary reports on all training conducted.

4.1.4 Revenue Generation

The RO plant are used to operate large cold storage facilities and thus contributes to the Proponents core business. Local contractors are used to maintain or repair the RO plant and provide the resources to operate the RO plant. Employment in the cold storage facility is mainly sourced locally, thus increasing the spending power of the local workforce. Contributions are made to the national treasury through the payment of taxes, levies, etc.

Desired outcome: Contribution to national treasury and provision of employment to local Namibians.

Actions

Mitigation:

- The Proponent must employ local Namibians where possible.
- Payment of salaries, taxes, etc. in line with the legislation of Namibia.
- Local businesses and industries should be supported.

Responsible Body:

- Proponent

Data Sources and Monitoring:

- Bi-annual summary report based on employee records.

4.1.5 Demographic Profile and Community Health

The project relies on labour for operations. The scale of the project is limited and forms part of an existing facility, it is therefore not foreseen that it will create a change in the demographic profile of the local community. Community health may still to some extent be exposed to factors such as communicable disease like HIV/AIDS and alcoholism/drug abuse during the construction phase as a result of an increase in foreign people in the area.

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 only local people from the area, deviations from this practice should be justified appropriately.
- Adhere to all municipal by-laws relating to environmental health.

Mitigation:

- Educational programmes for employees on HIV/AIDs and general upliftment of employees' social status.
- Appointment of reputable contractors.

Responsible Body:

- Proponent

Data Sources and Monitoring:

- Bi-annual summary report based on educational programmes and training conducted.
- Bi-annual report and review of employee demographics.

4.1.6 Use of Desalinated Seawater as a Cooling Medium

The development allows the facility to use desalinated seawater as a cooling medium as opposed to potable water sourced from NamWater. This reduces strain on the local potable water supply system, as well as reduce operational costs and risk of water interruptions.

Desired Outcome: Ensure effective operations and maintenance of the plant.

Actions

Mitigation:

- Ensure compliance to the Namibia regulations related to seawater abstraction and return.
- Proper management and maintenance to ensure constant supply.
- Record water supply and reticulation problems and take corrective actions.

Responsible Body:

- Proponent

Data Sources and Monitoring:

- Record problems and corrective actions taken and compile a bi-annual summary report.

4.1.7 Traffic

The RO plant is already operational. Traffic impacts are not likely to occur and is possibly limited to vehicles of persons working on the plant being parked in areas where they can obstruct normal traffic flow in the port.

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

Actions

Prevention:

- Park in designated areas only.

Mitigation:

- If any traffic impacts are expected, traffic management should be performed to prevent these.

Responsible Body:

- Contractor
- Proponent

Data Sources and Monitoring:

- Any complaints received regarding traffic issues should be recorded together with action taken to prevent impacts from repeating itself.
- A report should be compiled of all incidents reported, complaints received, and action taken.

4.1.8 Health and Safety

Activities associated with the operational phase is reliant on human labour and therefore exposes them to health and safety risks. Health and safety risk present on site during the operational phase are mostly related to various other operators active in the area and include exposure to chemicals, moving vehicles and forklifts, exposure to hot or cold temperatures, slipping on wet surfaces, falling objects, falling from heights.

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

Actions

Prevention:

- Clearly label dangerous and restricted areas as well as dangerous equipment and products.
- Equipment that will be locked away on site must be placed in a way that does not encourage criminal activities (e.g. theft).
- Provide all employees with required and adequate personal protective equipment (PPE), including reflector vests / high visibility clothing.
- Ensure that all personnel receive adequate training on operation of equipment/handling of hazardous substances.
- All health and safety standards specified in the Labour Act should be complied with.

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: colour coding of pipes, operational, safe work and medical procedures, permits to work, emergency response plans, housekeeping rules, MSDS's and signage requirements (PPE, flammable etc.).
- Strict security that prevents unauthorised entry during construction phases.

Responsible Body:

- Proponent
- Contractors

Data Sources and Monitoring:

- Any incidents must be recorded with action taken to prevent future occurrences.
- 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.

4.1.9 Noise

During operations, pumps for seawater abstraction and operations of the desalination plant will generate a low frequency droning noise. Noise pollution impacts will however be limited as the pump will be situated in a pump house and operations is situated within the Port of Walvis Bay, surrounded by industrial activities.

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

Actions

Prevention:

- All noise producing machinery such as pumps must be regularly serviced to ensure minimal noise production.

Mitigation:

- Hearing protectors as standard PPE for workers in situations with elevated noise levels.

Responsible Body:

- Proponent
- Contractors

Data Sources and Monitoring:

- Noise limits for workers as stipulated in the Labour Act's Health and Safety Regulations and World Health Organization (WHO) guidelines on maximum noise levels (Guidelines for Community Noise, 1999) to prevent a nuisance.
- Maintain a complaints register.
- Bi-annual report on complaints and actions taken to address complaints and prevent future occurrences.

4.1.10 Waste production

Limited waste will be produced during operations of the RO plant. Waste include empty chemical containers and general domestic waste.

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

Actions

Prevention:

- All waste that can be re-used/recycled must be kept separate.
- Ensure adequate temporary waste storage facilities are available and ensure waste cannot be blown away by wind.
- All regulations and by-laws relating to environmental health should be adhered to.

Mitigation:

- Waste should be disposed of regularly and at appropriately classified disposal facilities, this includes hazardous material, if any (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, if any.
- Liaise with the municipality regarding waste and handling of hazardous waste as required.

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.

4.1.11 Ecosystem and Biodiversity Impact

The nature of the operational activities is such that the probability of creating a habitat for terrestrial flora and fauna to establish is low. Biofouling may however occur on any submerged structures (i.e. growth of organisms like molluscs, algae, etc. on the submerged structures). No significant impact on the terrestrial biodiversity of the area is predicted as the site is currently void of natural fauna and flora. Marine species may get trapped at the seawater intake points, which may lead to injury or death of the animal. Higher salinity around the brine release point may result in the displacement of organisms intolerant of hypersaline conditions. Additional impacts are mostly related to pollution of the environment as well as potential impacts of bright lights on birds flying at night.

Desired Outcome: To avoid pollution of and impacts on the ecological environment.

Actions.

Mitigation:

- Report any extraordinary animal 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.
- Direct all lights down to working surfaces and use minimal lighting at night.
- The establishment of habitats and nesting sites at the facility should be prevented where possible.
- Seawater intake point should have a screen to prevent the intake and entrainment of larger marine organisms.
- Brine discharge should be diffused to reduce salinity impacts on the marine environment.

Responsible Body:

- Proponent

Data Sources and Monitoring:

- Regular inspection and reporting on conditions at seawater abstraction and brine discharge points and corrective action (e.g. entrainment of animals, proliferation or die-off of species.
- All information and reporting to be included in a bi-annual report.

4.1.12 Surface Water, Groundwater and Soil Contamination

Increased salinity as a result of brine discharge may cause localised surface water impacts. Groundwater and soil contamination is not likely as the entire port area is covered by impermeable concrete. Spillages of chemicals may however reach the ocean if not contained or cleaned.

Desired Outcome: To prevent the contamination of the environment.

Actions

Prevention:

- Regular inspection and maintenance of seawater intake and brine return points.
- Brine must be returned via a diffuser system to allow for rapid dilution.
- All chemicals must be stored according to MSDS instructions and in a suitably bunded or enclosed area to prevent spilled or leaked products from entering the environment.
- Contaminated water, if any, must be prevented from contaminating the brine return stream, and treated as hazardous waste.
- Routine maintenance should be conducted on all equipment.
- The procedures followed to prevent environmental damage during service and maintenance, and compliance with these procedures, must be audited and corrections made where necessary.
- Adhere to water abstraction and disposal permit conditions as supplied by the Ministry of Agriculture, Water and Land Reform.

Mitigation:

- Spill clean-up means must be readily available on site as per the relevant MSDS.
- Any chemical spill must be cleaned up immediately.
- Use of reputable and well trained contractors are essential.

Responsible Body:

- Proponent
- Contractors

Data Sources and Monitoring:

- Adhere to water abstraction and disposal permit conditions as supplied by the Ministry of Agriculture, Water and Land Reform.
- A report should be compiled bi-annually of any monitoring conducted as per the water abstraction and disposal permits (if any).

4.1.13 Visual Impact

This impact is not only associated with the aesthetics of the site, but also the structural integrity.

Desired Outcome: To minimise negative aesthetic impacts associated with the project and increase the aesthetics of 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.

Responsible Body:

- Proponent
- Contractors

Data Sources and Monitoring:

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

4.1.14 Impacts on Utilities and Infrastructure

Impacts on underground utilities or infrastructure are only possible if there are any near the existing abstraction and disposal pipelines, and the latter need to be excavated for repairs or replacement.

Desired Outcome: No impact on utilities and infrastructure.

Actions

Prevention:

- Appointing qualified and reputable contractors is essential.
- The contractor must determine exactly where amenities and pipelines are situated before any excavations commences (utility clearance e.g. ground penetrating radar surveys where applicable).
- Liaison with Namport is essential.

Mitigation:

- Emergency procedures for corrective action available on file.

Responsible Body:

- Proponent
- Contractors

Data Sources and Monitoring:

- A bi-annual report should be compiled of all incidents that occurred and corrective action taken.

4.1.15 Cumulative Impact

Possible cumulative impacts associated with the operational phase is mainly related to surface water quality impacts. Although the impact of the Proponent's facility is minimal, multiple other nearby industries utilises seawater and disposes effluent and brine into the ocean. This may result in a notable cumulative impact, especially in areas in the harbour where water circulation is restricted.

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

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 as an overall assessment of the impact of the operational phase.

4.2 DECOMMISSIONING AND REHABILITATION

Decommissioning is not foreseen during the validity of the environmental clearance certificate. Decommissioning was however assessed as construction activities include modification and decommissioning. Should decommissioning occur at any stage, rehabilitation of the area may be required. Decommissioning will entail the complete removal of all infrastructure, including underground infrastructure, that will not be used by future tenants or owners of the site. Where infrastructure remains, future tenants/owners will assume responsibility of the site infrastructure, as agreed upon by the different parties at such time. 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 and 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 project will have to be reviewed at the time of decommissioning to cater for changes made to the site and implement guidelines and mitigation measures.

5 CONCLUSION

The RO plant has a positive impact on the operations of Commercial Cold Storage by reducing reliance on the potable water supplied by Namport as sourced from NamWater. The use of desalinated seawater as a cooling medium further reduces strain on the public water supply. Negative impacts can successfully be mitigated. Permits must be renewed at the Ministry of Agriculture, Water and Land Reform for the seawater abstraction and brine return when required to do so. Conditions and regulations as prescribed by the permits obtained must be followed during all phases of operations of the project.

The EMP should be used as an on-site reference document for all the operational activities. The Proponent should aim to implement and maintain a Health, Safety, Security and Environment Management System in conjunction with the EMP. It is imperative that all construction and operational personnel are taught the contents of these documents to ensure better environmental practises all round.

6 REFERENCES

Faul A, Coetzer W; 2022 February; Abstraction and Use of Seawater as a Cooling Medium in The Port of Walvis Bay: Updated Environmental Assessment Scoping Report

Appendix A: Current ECC

ECC – 01974 Serial: yd5iAr1974

REPUBLIC OF NAMIBIA

MINISTRY OF ENVIRONMENT, FORESTRY AND TOURISM

OFFICE OF THE ENVIRONMENTAL COMMISSIONER

ENVIRONMENTAL CLEARANCE CERTIFICATE

ISSUED

In accordance with Section 37(2) of the Environmental Management Act (Act No. 7 of 2007)

TO

Commercial Cold Storage (Namibia) (Pty) Ltd
P. O. Box 1601, Walvis Bay

TO UNDERTAKE THE FOLLOWING LISTED ACTIVITY

Abstraction and Use of Seawater as a Cooling Medium in the Port of Walvis Bay, Erongo Region (As Amended).

MINISTRY OF ENVIRONMENT, FORESTRY AND TOURISM
Private Bag 13306
WINDHOEK NAMIBIA
29 APR 2022
ENVIRONMENTAL COMMISSIONER
REPUBLIC OF NAMIBIA

ENVIRONMENTAL COMMISSIONER

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