Scoping (Including Impact Assessment) Report

Union Marine Properties' Handling, Transportation and Storage of Various Chemicals at the United Fishing Enterprise Warehouse.

Walvis Bay, Namibia

July 2022

Final Report

DOCUMENT CONTROL	
REPORT TITLE	SCOPING (INCLUDING IMPACT ASSESSMENT) REPORT FOR UNION MARINE PROPERTIES' HANDLING, TRANSPORTATION AND STORAGE OF VARIOUS CHEMICALS AT THE UNITED FISHING ENTERPRISE WAREHOUSE
PROJECT NO.	UCS01
CONSULTANT	I.N.K ENVIRO CONSULTANTS CC
CLIENT	UNION MARINE PROPERIES (PTY) LTD
CLIENT ADDRESS	ERF 1239, 2ND ST EAST WALVIS BAY NAMIBIA
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AUTHOR	MR. IMMANUEL KATALI

EXPERTISE AND DECLARATION OF INDEPENDENCE

ENVIRONMENTAL CONSULTANT'S EXPERTISE

I.N.K Enviro Consultants cc is the independent firm of consultants that has been appointed by Union Marine Properties (Pty) Ltd to undertake the Environmental Impact Assessment process.

Immanuel N. Katali, the EIA Lead Practitioner holds a B.Arts (Honors) in Geography, Environmental Studies and Sociology and has over six years of relevant experience in conducting/managing Environmental Impact Assessments (EIAs), Socio-Economic Impact Assessments (SIAs) and compiling Environmental Management Plans (EMPs) in Namibia. Immanuel is certified as an environmental practitioner under the Environmental Assessment Professionals Association of Namibia (EAPAN).

DECLARATION OF INDEPENDENCE AND DISCLAIMER

The consultant herewith declare that this report represents an independent, objective assessment of the environmental impacts associated with the activities of the proposed transportation, handling and storage of various chemicals.

I.N.K has prepared this report based on an agreed scope of work and acts in all professional matters as an independent environmental consultant to Union Marine Properties (Pty) Ltd and exercises all reasonable skill and care in the provision of its professional services in a manner consistent with the level of care and expertise exercised by members of the environmental profession.

I.N.K does not express an opinion as to the accuracy or completeness of the information provided, the assumptions made by the parties that provided the information or any conclusions reached. I.N.K has based this report on information received or obtained, on the basis that such information is accurate and, where it is represented to I.N.K as such, complete.

I.N.K is not responsible and will not be liable to any other person or organisation for or in relation to any matter dealt within this report, or for any loss or damage suffered by any other person or organisation arising from matters dealt with or conclusions expressed in this report (including without limitation matters arising from any negligent act or omission of I.N.K or for any loss or damage suffered by any other party relying upon the matters dealt with or conclusions expressed in this report).

This report must not be altered or added to without the prior written consent of I.N.K.

EXECUTIVE SUMMARY

Union Marine Properties (Pty) Ltd (herein after referred to as UMP) intends on applying for an Environmental Clearance Certificate (ECC) for the transportation, handling and storage of 23 different chemicals from the port, which will be off-loaded from the ships, to UMP's existing United Fishing Enterprise (UFE) Warehouse and vice-versa. The proposed project is located in the industrial area of Walvis Bay, approximately 1.08 km from Namport.

Prior to the commencement of the proposed project, an application will be submitted to the MEFT for a decision in terms of the Environmental Management Act, 7 of 2007 and associated EIA Regulations (2012). The content of the report has been based on the previous impact assessment undertaken in 2021 for chemical storage in the UFE.

I.N.K Enviro Consultants cc has been appointed by UMP as the Independent Environmental Assessment Practitioner based in Namibia to undertake the EIA process.

All issues that have been raised to date by authorities and I&APs have been recorded as part of the Scoping Report. Below is a summary of the key issues raised:

- Health and Safety Risks and Impacts

The following chemicals will require an assessment to identify the potential risks/impacts associated with the handling, transportation and storage:

- Urea Gran (biggest one) and Urea Prills (Comes from Middle east)
- MAP–Mono-Ammonium Phosphate (Europe/Russia)
- NPK – Nitrogen, Phosphorus and Potassium
- KCL (also MOP) – Potassium Chloride
- SOP - Potassium Sulphate
- Copper Concentrate
- Sulphur
- Pyrolusite
- Ferrous Sulphate
- Grinding Media (SAG Mill)
- Grinding Media (Ball Mill)
- Flocculant
- Coagulant

- Sodium Carbonate
- U IX Resin
- Extractant
- Modifier
- Sodium Hydroxide
- Diatomaceous Earth
- Lime
- Activated Carbon
- Lithium Products

All the chemicals require storage in a cool, dry, and well-ventilated area. Concerns regarding the ventilation of certain UFE stores, or prospective stores, were observed:

The majority of warehouses at United Fishing are dilapidated. Most of the roofs are constructed from asbestos and the roofs are in poor condition, which compromises the 'dry storage' requirement. Some areas lack roof ventilators.

Following the outcome of the Assessment, the current list of proposed chemicals to be stored at the UFE Warehouse. The assessment found that storage of the said chemicals a would be plausible, pending appropriate segregation and refurbishment be implemented.

Certain chemical storage combinations have been flagged, with incompatible materials outlined in a segregation chart. The UFE is found to be non-compliant to the safety and health requirements of various chemicals. These deviations are highlighted and followed by recommended corrective measures. Other concerns relate to emergency response, which are listed with appropriate recommendations. .

I.N.K concludes that should the management actions and mitigation measures provided in the EIA report be implemented, the project would have an acceptably low significant impact on the surrounding biophysical and social environment.

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1.1 Background and Introduction to the Proposed Project

Union Marine Properties (Pty) Ltd (herein after referred to as UMP) intends on applying for an Environmental Clearance Certificate (ECC) for the transportation, handling and storage of 23 different chemicals from the port, which will be off-loaded from the ships, to UMP's existing United Fishing Enterprise (UFE) Warehouse and vice-versa. The proposed project is located in the industrial area of Walvis Bay, approximately 1.08 km from Namport (Figure 1).

A separate Environmental Impact Assessment (EIA) was previously conducted for the transportation, handling and storage of the same chemicals in the UFE, but under a different company. UNP therefore intend to have the ECC and relevant documentation and EIA reports, under their own name, hence this EIA process.

UMP will not collectively store all the 23 chemicals at once within the UFE Warehouse. The objective for the assessment of the potential impacts associated with the 23 chemicals, is to place UMP in a position to transport, handle and store any of the chemicals, at any given time and depending on the requests of their clients.

Prior to the commencement of the proposed project, an application will be submitted to the MEFT for a decision in terms of the Environmental Management Act, 7 of 2007 and associated EIA Regulations (2012). The content of the report has been based on the previous impact assessment undertaken in 2021 for chemical storage in the UFE.

I.N.K Enviro Consultants cc has been appointed by UMP as the Independent Environmental Assessment Practitioner based in Namibia to undertake the EIA process.

Figure 1: Location of the UFE Warehouse

1.2 Motivation (Need and Desirability)

UMP intends on enhancing the economic activities of Walvis Bay by contributing to growing the town as a strategic SADC logistics hub and creating an alternative supply route to and from various wholesale food distributors, food manufacturers and mining companies in Namibia and Africa, which includes supplying locally and to landlocked countries such as Zambia and DRC, who utilize various food resources and chemicals.

1.3 Introduction to the Environmental Impact Assessment

Environmental Impact Assessments are regulated by the Ministry of Environment, Forestry and Tourism (MEFT) in terms of the Environmental Management Act, 7 of 2007. This Act was gazetted on 27 December 2007 (Government Gazette No. 3966) and enacted on 6 February 2012.

Prior to the commencement of the proposed exploration, an environmental clearance is required from the Ministry of Environment, Forestry and Tourism (MEFT): Department Environmental Affairs (DEA) on the basis of an approved EIA process.

This EIA process is conducted in terms of the Environmental Management Act, 7 of 2007 and the above mentioned EIA regulations. This process includes: a screening phase and a scoping phase, which will include an impact assessment and an Environmental Management Plan (EMP).

This report is the Scoping Report, with assessment included. The main purpose of this report is to provide information relating to the proposed activities and to indicate which environmental aspects and potential impacts have been identified during the Screening and Scoping phases. This report consists of information obtained from site observations, and the results of stakeholder consultation. The potential impacts of the proposed activities could therefore be assessed, and the assessment is also included in this report.

It is thought that this Scoping Report (including an assessment of impacts), together with the attached revised EMP, will provide sufficient information for the MEFT to make an informed decision regarding the proposed project.

1.3.1 EIA Process

The EIA Scoping process and corresponding activities are outlined in Table 1

Table 1: EIA Process

Objectives	Corresponding activities
Project initiation and Screening phase	
• Initiate the screening process • Initiate the environmental impact assessment process.	• Site Visit • Identify Key Stakeholders • Early identification of environmental aspects and potential impacts associated with the proposed project.
EIA Phase with combined Scoping and Assessment	
• Notify the decision-making authority of the proposed project • Identify interested and/or affected parties (I&APs) and involve them in the scoping process through information sharing. • Identify potential environmental issues associated with the proposed project. • Consider alternatives. • Identify any fatal flaws. • Determine the terms of reference for additional assessment work. • Provide a detailed description of the potentially affected environment. • Assessment of potential environmental impacts. • Design requirements and management and mitigation measures. • Receive feedback on application.	• Notify government authorities and I&APs of the project and EIA process (telephone calls, e-mails, faxes, newspaper advertisements and site notices). • Conduct Public Participation Process • Investigations by technical project team. • Compilation of draft scoping (combined assessment) and EMP reports. • Distribute draft scoping (combined assessment) and EMP reports to authorities and I&APs for review. • Forward the final scoping (combined assessment) and EMP reports and I&APs comments to MEFT for review. • MEFT review and Record of Decision.

1.3.2 EIA Team

I.N.K Enviro Consultants cc is the independent firm of consultants that has been appointed by Union Marine Properties (Pty) Ltd to undertake the environmental impact assessment and related processes.

Immanuel N. Katali, the EIA project manager and lead practitioner holds a B.Arts (Honours) Degree in Geography, Environmental Studies and Sociology and has over six years of relevant experience in conducting/managing EIAs, compiling EMPs and Socio-Economic Studies. Immanuel is certified as an environmental practitioner under the Environmental Assessment Professionals Association of Namibia (EAPAN).

Johann Venter, REH&S Risk Manager for TPS: BBA Degree (Unisa) LLB Degree Unisa; EH&S Associate Auditor (Nosa) and has twenty-five years of experience in Risk Assessment gained while employed by DOW Chemicals, Safripol (Sasolburg) Karbochem Sasolburg), Basil Read (Rössing), Areva (Trekkopje), NOSA (Okoruso Mine) ABB (Dundee Precious Metals

2 SCOPING METHODOLOGY

2.1 Information collection

I.N.K used various information sources to identify and assess the issues associated with the proposed project. These include:

- Site visits by I.N.K;
- Consultation with Project Technical Team (UMP) and relevant information shared by UMP;
- Consultation with MEFT via online application system;
- Consultation with I&APs,
- Google Earth; and
- Internet sources.

2.2 Scoping Report

The main purpose of this Scoping Report is to indicate which environmental aspects relating to the proposed project might have an impact on the environment, to assess them and to provide management and mitigation measures to avoid or minimize these impacts.

Table 2 outlines the Scoping Report requirements as set out in Section 8 of the Environmental Impact Assessment Regulations that were promulgated in February 2012 in terms of the Environmental Management Act, 7 of 2007.

Table 2: Scoping report Requirements stipulated in the EIA regulations

Requirements for a Scoping Report in terms of the February 2012 regulations	Reference in report
(a) the curriculum vitae of the EAPs who prepared the report;	Section 1.3.2
(b) a description of the proposed activity;	Section 4
(c) a description of the site on which the activity is to be undertaken and the location of the activity on the site;	Section 4
(d) a description of the environment that may be affected by the proposed activity and the manner in which the geographical, physical, biological, social, economic and cultural aspects of the environment may be affected by the proposed listed activity;	Section 6
(e) an identification of laws and guidelines that have been considered in the preparation of the Scoping Report;	Section 3
(f) details of the public consultation process conducted in terms of regulation 7(1) in connection with the application, including - (i) the steps that were taken to notify potentially interested and	Section 2.3

affected parties of the proposed application; (ii) proof that notice boards, advertisements and notices notifying potentially interested and affected parties of the proposed application have been displayed, placed or given; (iii) a list of all persons, organisations and organs of state that were registered in terms of regulation 22 as interested and affected parties in relation to the application; and (iv) a summary of the issues raised by interested and affected parties, the date of receipt of and the response of the EAP to those issues;	
(g) a description of the need and desirability of the proposed listed activity and any identified alternatives to the proposed activity that are feasible and reasonable, including the advantages and disadvantages that the proposed activity or alternatives have on the environment and on the community that may be affected by the activity;	Sections 1.2
(h) a description and assessment of the significance of any significant effects, including cumulative effects, that may occur as a result of the undertaking of the activity or identified alternatives or as a result of any construction, erection or decommissioning associated with the undertaking of the proposed listed activity;	Section 7
(i) terms of reference for the detailed assessment; and	Section 1.1
(j) a management plan, which includes - (i) information on any proposed management, mitigation, protection or remedial measures to be undertaken to address the effects on the environment that have been identified including objectives in respect of the rehabilitation of the environment and closure; (ii) as far as is reasonably practicable, measures to rehabilitate the environment affected by the undertaking of the activity or specified activity to its natural or predetermined state or to a land use which conforms to the generally accepted principle of sustainable development; and (iii) a description of the manner in which the applicant intends to modify, remedy, control or stop any action, activity or process which causes pollution or environmental degradation remedy the cause of pollution or degradation and migration of pollutants.	Section 7

2.3 Public Participation Process

The public participation process for the proposed project is conducted to ensure that all persons and/or organisations that may be affected by, or interested in the proposed project, were informed of the project and could register their views and concerns. By consulting with relevant authorities and I&APs, the range of environmental issues to be considered in this Scoping Report (including the assessment of impacts) has been given specific context and focus.

Included below is a summary of the I&APs consulted, the process that was followed and the issues that were identified.

2.4 Chemical Transportation, Storage and Handling I&APs

The following table (Table 3) provides a list of persons, group of persons or organisations that were informed about the project and were requested to register as I&APs should they be interested and/or affected.

Table 3: Stakeholders

IAP Grouping	Organisation
Government Ministries	▪ Ministry of Environment, Forestry and Tourism (MET); • Department of Environmental Affairs (DEA);
Local Governance	Namport and Walvis Bay Municipality
Residents	Walvis Bay
Media	Newspaper adverts: Die Republikein, The Namibian Sun and Algemeinne
Other interested and affected parties	Any other people with an interest in the proposed project or who may be affected by the proposed project.

2.5 Steps in the Consultation Process

Table 4 sets out the steps that were followed as part of the consultation process:

Table 4: Consultation Process with I&APs and Authorities

TASK	DESCRIPTION
Notification - regulatory authorities and IAPs	
Notification to MEFT	I.N.K submitted the Application Form (online system) to MEFT.

TASK	DESCRIPTION
IAP identification	A stakeholder database was developed for the proposed project and EIA process.
Distribution of background information document (BID)	BIDs were made available to all I&APs on the project's stakeholder database. Copies of the BID were available on request to I.N.K. The purpose of the BID was to inform I&APs and authorities about the proposed project, the EIA process, possible environmental impacts and means of providing input into the EIA process. Attached to the BID was a registration and response form, which provided I&APs with an opportunity to submit their names, contact details and comments on the project.
Newspaper Advertisements	Block advertisements were placed as follows: ▪ Die Republikein (10 and 15 June 2022) ▪ The Namibian Sun (10 and 15 June 2022) ▪ Algemeinne (10 and 15 June 2022)
Meetings and submission of comments	
Scoping Meetings	Several consultations were made with I&APs, most specifically Namport and relevant neighbours.
Review of draft Scoping Report	
IAPs and authorities (excluding MEFT:DEA) review of Scoping Report and EMP	The Scoping Report (Main Report excluding Appendices) were sent via email to all parties who registered or showed an interest in this EIA process. Electronic copies of the full report (including appendices) were made available on request to I.N.K.
MEFT review of Scoping Report and EMP	A copy of the final Scoping Report, including authority and I&AP review comments, was submitted to MEFT on completion of the public review process via the online application system.

2.6 Summary of issues raised

All issues that have been raised to date by authorities and I&APs have been recorded as part of the Scoping Report. Below is a summary of the key issues raised:

- Health and Safety Risks and Impacts

The potential impacts are assessed further in section 7 of this report.

3 ENVIRONMENTAL LAWS AND POLICY

The Republic of Namibia has five tiers of law and several policies relevant to environmental assessment and protection, which includes:

- The Constitution
- Statutory law
- Common law
- Customary law
- International law

Key policies currently in force include:

- The EIA Policy (1995).
- Namibia's Environmental Assessment Policy for Sustainable Development and Environmental Conservation (1994).

As the main source of legislation, the Constitution of the Republic of Namibia (1990) makes provision for the creation and enforcement of applicable legislation. In this context and in accordance with its constitution, Namibia has passed numerous laws intended to protect the natural environment and mitigate against adverse environmental impacts.

3.1 Applicable Laws and Policies

In the context of the proposed project, there are several laws and policies currently applicable.

3.1.1 Namibia's Environmental Impact Assessment (EIA) Policy of 1995

This policy promotes accountability and informed decision making through the requirement of EIAs for listed programmes and projects

3.1.2 Environmental Management Act, No 7 of 2007

To enforce the policy on EIAs, the Environmental Management Act (EMA) (7 of 2007) has been compiled and is regulated by the Ministry of Environment and Tourism (MET). This Act was gazetted on 27 December 2007 (Government Gazette No. 3966) and the Environmental Impact Assessment Regulations: Environmental Management Act, 2007 (Government Gazette No. 4878) were promulgated on 6 February 2012. In terms of this legal framework certain identified activities may not commence without an Environmental Clearance - a certificate that is issued by MET. This environmental clearance can only be granted after consideration of an EIA.

3.1.3 Namibian Water Corporation Act, No. 12 of 1997

This Act contains several explicit references to the environment and its protection. It provides for environmental impact assessments and for minimizing or preventing pollution.

3.1.4 Water Resources Management Act, 2013 (Act No. 11 of 2013)

The Water Resources Management Act (24 of 2004) has been drafted and published but never came into force. A further Water Resources Management Act, 2013 was published in Government Gazette 5367 of 19th December 2013, and is stated to repeal the Water Resources Management Act, 2004. This new Water Resources Management Act also still has to be enforced through regulations. Part 13 of the Water Resources Management Act, 2013 relates to Water Pollution Control and states the following:
No water resources may be polluted. If pollution occurs, the effects must be remedied. From any area with domestic or industrial activities pollution must be prevented. Part 15 of the Act relates to water released emergency or pollution threats and requires that pollution incidents are to be reported immediately and all reasonable measures must be taken to minimise effects, to clean up and remedy effects.

3.1.5 Atmospheric Pollution Prevention Ordinance, No. 11 of 1976

Namibia has adopted the South African air pollution legislation for air quality control in the form of the Atmospheric Pollution Prevention Act (Act No 45 of 1965) (APPA). The Namibian Atmospheric Pollution Prevention Ordinance (No. 11 of 1976) does not include any ambient air standards with which to comply. Typically when no local ambient air quality criteria exist, or are in the process of being developed, reference is made to international criteria. This serves to provide an indication of the severity of the potential impacts from proposed activities. The most widely referenced international air quality criteria are those published by the World Bank Group (WB), the World Health Organisation (WHO) and the European Community (EC). The newly promulgated South African ambient air quality standards can also be referenced since these have been developed recently after a thorough review of international criteria.

3.1.6 Hazardous Substance Ordinance, No. 14 of 1974

Environmental aspects are not specifically stated, however, aspects such as importing, storage and handling are addressed.

3.1.7 Strategic Environmental Assessment (SEA) for the coastal areas of the Erongo and Kunene Regions, 2008

Two Namibian coastal Strategic Environmental Assessments (SEAs) were undertaken between 2006 and 2008, i.e. one for the northern regions of Kunene and Erongo and another for the southern regions of Karas and Hardap. These draw on international experience and were undertaken at a time of mounting production sector pressures within Namibia. Being an initiative of the Namibian Government through its

Ministry of Environment and Tourism (MET), the two SEAs seek to inform political and technical decision makers at local, regional and national levels. The 2008 "Strategic Environmental Assessment (SEA) for the coastal areas of the Erongo and Kunene Regions" compiled by the Namibian Coast Conservation & Management Project (NACOMA) is aimed at ensuring informed decisions on issues related to biodiversity conservation, land use planning and socioeconomic development planning in the Kunene and Erongo coastal regions. Although the SEA does not address spatial planning within the Walvis Bay townlands, it does identify areas of conservation importance along the coastline. Potential developments in the coastal region must take these environmental priority areas into account. The SEA classifies, amongst other, the Walvis Bay Wetland (lagoon) to the south of the town as an area as of very high conservation priority (Ramsar site).

4 PROJECT DESCRIPTION

4.1 Proposed Chemicals

The following chemicals will require an assessment to identify the potential risks/impacts associated with the handling, transportation and storage:

- Urea Gran (biggest one) and Urea Prills (Comes from Middle east)
- MAP–Mono-Ammonium Phosphate (Europe/Russia)
- NPK – Nitrogen, Phosphorus and Potassium
- KCL (also MOP) – Potassium Chloride
- SOP - Potassium Sulphate
- Copper Concentrate
- Sulphur
- Pyrolusite
- Ferrous Sulphate
- Grinding Media (SAG Mill)
- Grinding Media (Ball Mill)
- Flocculant
- Coagulant
- Sodium Carbonate
- U IX Resin
- Extractant
- Modifier
- Sodium Hydroxide
- Diatomaceous Earth
- Lime
- Activated Carbon
- Lithium Products

4.2 Potential Reactions and Hazards

The hazard classification for the various chemicals to be transported, handled and stored is summarized in the table below.

Table 9 summarizes the associated risks when storing the listed additional chemicals, it also refers to potential reactions and health concerns.

Table 5: Summarized potential reactions and health concerns

CHEMICAL	CHEMICAL CLASS	REACTIONS & HEALTH CONCERNS
Urea	Flammable solids (at high temperatures), otherwise stable	Decomposes upon heating, can form ammonia, oxides, nitrogen, carbon dioxide or cyanic acid.
Mono-Ammonium Phosphate	Stable at ambient temperatures	Emits irritating fumes when heated. Decomposition released ammonia.
Nitrogen	Compressed gas	Explosion
Phosphorus	Flammable solids	Dust explosion. Combustion.
Potassium	Reactive with water	Release of flammable gases. Explosion.
Potassium Chloride	Stable	Formation of hydrogen chloride or potassium oxide.
Potassium Sulphate	Stable	Formation of sulphur oxides
Copper Concentrate	Stable	Releases toxic sulphur dioxide (SO2) when heated
Flocculant	Stable	The flocculant (MF 333 as per submitted data) does not require a hazard warning If wet, slip potential
Coagulant	Stable	Non-Hazardous
Extractant	Flammable solids	Toxic Dangerous to the environment

CHEMICAL	CHEMICAL CLASS	REACTIONS & HEALTH CONCERNS
Grinding media	Stable	Slip potential
Modifier	Highly Flammable	Irritant to ingestions and inhalation system
Sodium Carbonate	Non-Flammable	Irritant to eyes and skin as well as ingestions and inhalation system
Sodium Hydroxide	Non-Flammable	Causes severe burns Short exposure could cause serious temporary and/or permanent injury
Iron Exchange (U IX) Resin	Non-Hazardous	Slip hazard
Diatomaceous Earth	Hazardous	Irritant Very Hazardous with inhalation (long term)
Ferrous Sulphate	Hazardous, Non-Flammable	Irritating to eyes and skin Harmful to ingestions and inhalation system
Sulphur	Flammable	Irritating to eyes and skin Harmful if swallowed Dust Explosion Risk
Lime	React strongly with strong acids, and water	Potential burns to eyes and skin
Lithium	React with water Flammable	Harmful to ingestions and inhalation system

From the above table, it can be concluded that the following chemicals are classified as hazardous and therefore require an environmental clearance prior to the handling and storage related activities in the port:

- Pyrolusite (Manganese dioxide)
- Extractant

- Modifier
- Sodium Hydroxide
- Diatomaceous Earth
- Ferrous Sulphate
- Sulphur
- Lime
- Urea Gran (biggest one) and Urea Prills (Comes from Middle east)
- MAP–Mono-Ammonium Phosphate (Europe/Russia)
- Phosphorus
- Potassium
- KCL (also MOP) – Potassium Chloride
- SOP - Potassium Sulphate
- Copper Concentrate
- Lithium Products

4.3 Ship Off-Loading and Transfer of Chemicals Between the Port And UFE Warehouse

The chemicals will be off-loaded from the ship and transferred to the UFE as follows:

- In break-bulk from ship

The chemicals will either be stored in containers or in one ton bags that will be off-loaded from the ships with cranes onto the quay side containers will be transported and placed into stacks by Namport. All bagged and containerised chemicals will be transported with flatbed trucks to the UFE warehouse where they will be off-loaded from the trucks with forklifts or Reach Stackers for temporary storage prior to be transported to the relevant client.

- In bulk from ship

Initially, chemicals, in the form of small pellets approximately 4 - 5mm in diameter, will arrive on ship in one ton bags and offloaded from ship via on-board crane on the quay side and then loaded onto flatbed trucks for transportation to the UFE.

- In containers from ship

The chemicals that will be stored in containers will be off-loaded from the ships with cranes onto Namport haul trucks after which containers will be placed into a container stack. Containers will be loaded to trucks and transported to the UFE where the chemicals will be unpacked with forklifts for storage. Most of the chemicals will be bagged while some will arrive in 1 m^3 intermediate bulk container (IBCs) (flow bins) and pallet boxes.

4.4 United Fisheries Enterprises (UFE)

The UFE is located ±1.08 km from the port. The UFE comprises of three warehouses (Grain Storage, Black Store and Labelling Store).

The UFE warehouses in their "current" state was found unsuitable for chemical storage, especially the Black Store and Labelling warehouse. These warehouses are currently not fit with the minimum safety requirements. However, should the safety guidelines outlined in section 7 below, be followed and implemented, the UFE could be considered for chemical storage, taking into account all safety requirements.

4.4.1 Grain storage

The grain storage area is well controlled with constant security presence. However, it has no roof ventilation. UMP should consider installing a roof in the near future. The grain storage warehouse stores food, i.e., rice and sugar. However, sharing of warehouses between food and chemicals is not recommended for any chemical storage. Therefore, modifications on the roof to allow more ventilation should be installed and the material segregation should be followed an adhered to prior to chemical storage in this facility.

Figure 2: Grain storage

4.4.2 Black store

The "Black store" is currently utilized for storing spares and mechanical equipment; however, indication was given that its contents will be removed in the near future. Objections to the Black Store include the condition of the roof, as well as the lack of installed safety measures (water, safety showers, etc.) . The Black Store neighbours the Grain Store, which increases the risk in case of a fire. However, the Black Store can be considered for chemical storage, given that the safety concerns have been addressed and they are stored out of the presence of incompatible materials. One of the benefits of the Black Store is that it has its own entrance from the highway, thus possibly avoiding confined access. Therefore, should the safety guidelines outlined in section 7 below, be followed and implemented, the Black Store could be considered for chemical storage.

Figure 3: Black Store

4.4.3 Labelling Store

The labelling store requires extensive maintenance and investigation of asbestos roof structures. The Labelling store, in its "current" state was found unsuitable for chemical storage. It is as well, not fit with the minimum safety requirements and the infrastructure is questionable (asbestos roof, eroded pillars, etc.). Therefore, should the safety guidelines outlined in section 7 below, be followed and implemented, the Labelling Store could be considered for chemical storage.

Figure 4: Labelling Store

4.5 Storage Area of UFE

The Storage area is presented in the table below:

Table 6: Effective storage area

No.	Warehouse Area	Type	Area [m^2]	Total [m^2]
1	UFE	Inside	Grain & Other foodstuffs	12,770
			Other (Tools)	800
		Outside	-	9,660

4.6 Transport of chemicals

4.6.1 Access roads to UFE Warehouse

Consideration had been given to the possibility that offloading and transportation of chemicals may be taking place after-hours.

Lighting condition throughout the immediate is very good and does not impede the movement of vehicles from within the Port's area and the immediate surrounding area. However, extremely thick mist, which is typical of Walvis Bay, makes road visibility towards the outskirts leading to UFE very difficult. This should be born in mind in the event of chemicals being conveyed after-hours to the UFE.

4.6.2 Security

Security measures with regards to the UFE Warehouse are exemplary and deserves an accolade.

5 PROJECT ALTERNATIVES

5.1 Alternative Routes to the UFE Warehouse

The travel routes to the UFE were studied and found not pose any problems as primary and secondary routes are available to all areas. It is proposed that table-top exercises be included with the site's emergency contingency plans that include the possibility of alternative access routes.

Past experience involving major fuel depots and airport companies at Kimberley, South Africa, has shown that sudden deviation normal routine despite 12 to 20 years' experience surprisingly left drivers of trucks totally disorientated and as a consequence greatly jeopardized their own and the public's safety in the manner that they drove their vehicles outside the normal routine.

5.2 The "no project" option

With reference to section 1.3, UMP intends on enhancing the economic activities of Walvis Bay by contributing to growing the town as a strategic SADC logistics hub and creating an alternative supply route to and from various wholesale food distributors, food manufacturers and mining companies in Namibia and Africa, which includes supplying locally and to landlocked countries such as Zambia and DRC, who utilize various food resources and chemicals.

Not implementing the above-mentioned expansion would limit the opportunity to broaden their chemical and storage activities for various/multiple companies, therefore not contributing to the realization of a strategic SADC logistics hub for Walvis Bay.

6 DESCRIPTION OF THE RECEIVING ENVIRONMENT

6.1 Site Description

Walvis Bay is low lying with much of the town at an elevation of less than 7m amsl. The industrial area is very flat, with the general slope along 3rd Street East being in a south westerly direction, with the junction of 3rd Street East with 18th Road being the highest point at around 7 to 8 m amsl. The general slope along 18th Road seems to be away from the coast, so the overall slope for the study area would probably be in the south westerly direction, but with the very small changes in elevation this could be locally altered by any small increase in local topography.

6.2 Climate

The weather at the coast is significantly different from that to the inland. There is little rain at the coast, the average temperatures are much lower, radiation and sunshine is less and frost is absent. Yet, the winds are stronger and humidity is higher due to frequent fog. The climate of the area is mainly influenced by the Benguela Current and the South Atlantic Anticyclone. The mean annual precipitation (MAP) at the coast is very low, with much of the precipitation being associated with fog (the Atlas of Namibia quotes the average number of fog days at Walvis Bay as 146) and only occasional rainfall events.

The Meteorological Office had a rainfall station at Pelican Point for a number of years (available record from February 1958 to December 2003) and the record from this shows the MAP is 9.5 mm, while the median is 3.8 mm. The monthly evaporation for all months is significantly higher than the rainfall, indicating that the area is a water negative area. The average annual temperature is less than 16˚C. The site, as well as the rest of Walvis Bay is situated within the Coastal Fog Zone. This zone forms a band along the coast of approximately 20 km in width. As a result of this, the climate is predominantly cool and humid with frequent fog occurring. The Walvis Bay area experiences over 125 days of fog per year. February, which is the most humid month in Walvis Bay, can reach over 90% humidity whereas June is 60-70% humid.

6.3 Geology and Hydrogeology

The Walvis Bay area is underlain by Late Quaternary to Holocene unconsolidated sediments, which are a product of the modern Benguela Ecosystem and its interaction with the adjacent hinterland and the Kuiseb River and is therefore a product of fluvial, estuarine, coastal and aeolian processes. The in-situ groundcover is not visible in the project area due to the introduction of different materials during the various construction phases of the port and the associated industrial area. Bedrock of the Swakop Group, part of the Damara Sequence, is expected to be located approx. 60 m below ground level and hence any aquifer contained within the rocks is going to be as deep.

6.4 Surface Water

The study area is located in the lower part of the Kuiseb River catchment, but the area where the UFE warehouse is located is a municipal zone which does not have any natural drainage pattern. The current route of the Kuiseb River is much further south close to the Salt Works at the lagoon to the south of the town. An historical channel of the Kuiseb River used to flow as a northern arm into the town, but since a diversion structure was constructed many years ago this channel no longer has any surface flow. The Kuiseb River delta is located approximately 15 km from the harbour but is highly altered as a result of urbanisation (water extraction, building in the delta, introduction of alien invasive species, etc.).

6.5 Biodiversity

There is no vegetation or natural fauna present on site. However it must be noted that the Walvis Bay Wetland is located south and west of the town and comprises the natural areas of Walvis Bay lagoon. Parts of the wetland have been declared a RAMSAR site as it supports the greatest number of coastal birds in southern Africa. Hence, the site is of great conservation importance. The lagoon lies at the southern end of the open water and therefore south of Walvis Bay Port. A multiple use framework and jurisdiction clarification of the wetland between Walvis Bay Municipality, NamPort and the saltworks has been implemented.

The main source of energy for Walvis Bay lagoon ecosystem is from the Benguela upwelling system. Since the year 2000 no bony fish have been recorded in the lagoon, although there are reports of mullet, kabeljou, steenbras and barbel in previous years (OLRAC, 2009). Only fish species recorded recently are sand shark, bull rays, sting rays and hound shark.

Relevant to Walvis Bay are three baleen whales and two dolphins. The humpback whale, the southern right whale and the pygmy right whale visit the bay. The bay appears to be a 'hot spot' for pygmy right whales. Yet, not much is known about this species. Dolphins that visit Walvis Bay are the Heavisides Dolphin, which is an endemic to the benguela system, and a local population of bottlenose dolphin.

6.6 Socio-Economic Structure

6.6.1 Built Environment

There are no schools, hospitals, sports fields, places of worship and other areas where people gather within 500m of the UFE warehouse.

6.6.2 Site Neighbours and Residential Areas

There are a number of residences within 500m of the warehouse proposed for the storage of chemicals. Much of the residential area bounded by 15th Road to the southwest and 18th Road to the northeast and 6th Street to the northwest and Sam Nujoma Avenue to the southeast lies within 500m of the warehouse.

Of particular interest for potential offsite risks to the storage facilities or for risk to offsite facilities are the following sites.

- Distell
- Engen
- Total Namibia
- Puma
- Afrox

Distell stores alcoholic beverages including spirits, which are considered as hazardous substances due to their flammable properties. Engen, Total and Puma store petroleum products, which are considered as hazardous substances due to their flammable properties. Afrox stores Liquefied Petroleum Gas (LPG), considered as a hazardous substance due to its flammable properties.

6.6.3 HEALTH

Walvis Bay has a main district government hospital and a private hospital, the Kuisebmond health centre and three clinics – Narraville, Coastal and Walvis Bay clinics. The main health challenges as listed by the Ministry of Health and Social Services (2012) are HIV/AIDS, TB, substance abuse, respiratory system diseases and children in need of care.

7 IDENTIFICATION OF ENVIRONMENTAL ASPECTS AND ASSESSMENT OF POTENTIAL IMPACTS

The identification of the aspects and related/associated potential impacts of the chemicals, allowed the opportunity for further assessment of the following identified significant potential issues/risks as part of this EIA:

- Risks/Impact associated with a particular activity relating to a chemical;
- Chemical Handling, Storage and Segregation
- Emergency Response

The Risk Assessment indicates the effects of control measures in mitigating or controlling the specific additional chemicals. To quantify the level of risk as perceived a Risk Assessment Matrix utilized as per Table below. The key variables being in consideration are the likelihood of an event resulting from a particular hazard occurring and the consequence or severity of the event. By the incorporation of mitigating actions, the likelihood of that event occurring will decrease, but can usually not be disposed of in total, unless the activity is terminated.

7.1 Risks/Impact associated with a particular activity relating to a chemical;

Table 7 below provide a summary of the chemicals and the associated environmental aspects and potential impacts on the environment and also a qualitative assessment of these impacts.

Activity	Associated Hazards/Risks	Inherent Risk Analysis		Significance	Controls	Residual Risk Rating
		L	C			
Transportation and receipt of chemicals to UFE warehouse	Unknown chemical properties and safe handling/storage requirements. Handling and managing of hazardous chemicals. Chemicals that require special permits, licensing requirements, etc. Inadequate and/or unavailable storage facilities. Chemicals delivered to wrong area or an area not appropriately set up for receipt of chemicals. Temporary storage are inappropriate location/facilities Damaged packaging: • physical exposure • fume • spills and leaks	Unlikely	Moderate	Medium	• MSDS obtained prior to purchase/order of chemicals • Risk assessment of area where chemicals are delivered • Training provided for workers who receive chemical deliveries • Rationalizing chemical storage to ensure: o accepting adequate quantities o compatibility of chemicals o adequate storage facilities and space available o all required signage and PPE are available • Proper sign-off strategies for chemicals received, as well as condition in which received • Safe delivery areas and equipment for offloading chemicals • Chemical training for workers • Use personal protective equipment as described in the MSDS	Low

					• Local induction and emergency training • Emergency procedures in place • Spill kits available • First aid kits and trained first aiders/safety representatives	

Storage of chemicals	Incompatible chemicals stored together leading to fire, explosion or dangerous chemical reactions.
	Increased risk of unsafe atmosphere where gas cylinders are stored inside.
	Damaged, removed, or incorrect labels.
	Damaged containers.
	Chemicals stored in inappropriate areas *For example: Potassium, that reacts with water, stored in a facility with poor roofing that may leak.*
	Toxic fumes.
	Chemical spills and leaks.
	Time sensitive chemicals – properties of chemicals
		Likely	Severe	High	• Risk assessments to determine appropriate storage arrangements and packaging requirements
					• Use of chemical segregation:
					  ○ chemical bunds
					  ○ lockable cages
					  ○ drip trays
					• Ensure incompatible chemicals stored at different facilities
					• Cool, dry, well ventilated storage facilities
					• Wherever possible, chemicals stored in their original containers/packaging. Where this is not appropriate a risk assessment is undertaken to ensure correct packaging and labelling.
					• Hazchem signage where required
					• Time sensitive chemicals dated and monitored through scheduled workplace inspections
						Medium

	alter, can become unstable or may cause caking. Theft.				• Use personal protective equipment described in the MSDS • Training for workers responsible for storing and accessing chemicals • Access to chemical storage restricted to authorized workers only • Local induction and emergency training • Emergency procedures in place • Spill kits available • First aid kits and trained first aiders/safety representatives • Appropriate fire extinguishers available	
Handling chemicals	Incompatible chemicals mixed together: • fire • explosion • release of toxic fumes Creating unknown new chemicals. Damaged, removed, or incorrect labels. Chemicals used in inappropriate containers	Possible	Severe	**High**	• Risk assessments to determine chemical properties and appropriate handling arrangements • Compatible equipment used with chemicals • Adequate ventilation • Chemicals in small sized containers to reduce weight • Chemicals labeled • Use lifting aids and trolleys for larger items	Low

	Chemicals used in inappropriate areas. Toxic fumes and leakage from chemical spills. Fire and explosion. Physical contact with a chemical. Manual handling hazards associated with large heavy containers of chemical.				• Use personal protective equipment described in the MSDS • Training for workers using chemicals • Access to chemical storage restricted to authorized workers only • Adequate supervision with regards to level of training and experience • Local induction and emergency training • Emergency procedures in place • Spill kits available • Buddy system • First aid kits and trained first aiders/safety representatives	
Disposal of chemicals	Damaged, removed or incorrect labels. Chemicals stored in inappropriate containers. Uncontrolled access to chemical wastes. Manual handling injuries from large containers. Environmental harm.	Possible	Major	**High**	• Chemicals labeled and disposed of in appropriate containers • Removed by EPA licensed contractor • Risk assessment of area where chemicals are disposed • Restricted access where appropriate • Local induction and emergency training. • Emergency procedures in place	Low

					• Spill kits available • First aid kits and trained first aiders/safety representatives • Appropriate drainage system	

Table 7: Activity Related Risks

7.2 Risks/Impacts Associated with Chemical Handling, Storage and Segregation

All the chemicals require storage in a cool, dry, and well-ventilated area. Concerns regarding the ventilation of certain UFE stores, or prospective stores, were observed:

The majority of warehouses at United Fishing are dilapidated. Most of the roofs are constructed from asbestos and the roofs are in poor condition, which compromises the 'dry storage' requirement. Some areas lack roof ventilators.

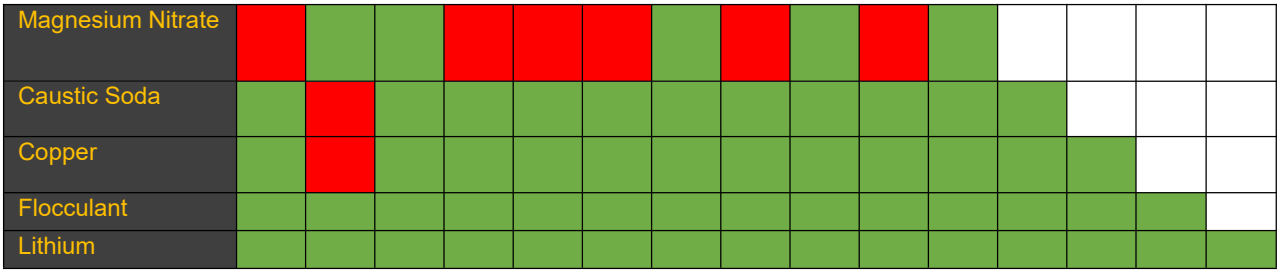
However, should issues relating to ventilation in the UFE be addressed, the facilities could be suitable to chemical storage, subject to further recommendations outlined in the sections below.

7.3 Chemical Segregation

The segregation chart shown in Table 9. aims at distinguishing which chemicals are compatible (green) and which chemicals require adequate segregation from each other, or alternative storage facilities (red).

Table 8: Chemical Compatibility Chart

CHEMICAL	Urea	MAP	Nitrogen	Phosphorus	Potassium	KCL/MOP	SOP	Lubricants	Copper Concentrate	Sulphur	Magnesium Nitrate	Caustic Soda	Copper	Flocculant	Lithium
Urea															
Mono-Ammonium Phosphate (MAP)															
Nitrogen															
Phosphorus															
Potassium															
Potassium Chloride (KCL/MOP)															
Potassium Sulphate (SOP)															
Lubricants															
Copper Concentrate															
Sulphur															



7.4 Emergency Response

7.4.1 Emergency response tools and equipment

The placement of organograms at offices indicating the key responsible persons and actions to be followed in the event of emergency is a requirement. Recommendations are provided below to ensure emergency response procedures involving the offloading, transporting and storage of chemicals are carried out effectively.

Recommendations

- Ensure portable fire extinguishers and fire hose reels are distributed and placed throughout UMP's site.
- Ensure all fire equipment are in good condition and regulalry serviced by external fire equipment maintenance company.
- Ensure emergency showers are available at most of the storage areas but provision of additional emergency showers pending the implementation of storage recommendations for the new list of chemicals, may be necessitated.
- Ensure symbolic safety signage and demarcation have an in-depth overview and should be effectively displayed at all locations.
- Ensure that, due to the lack of sufficient water supply for firefighting purposes, a small team of First Responder members should be provided with emergency response equipment. The First Responder Team and equipment should comprise the following most essential equipment and manpower:
    - Responder personnel: x 4 (Fire Fighting training and certification will be provided by Walvis Bay Fire Department)
    - Response trailer: 1
    - Portable fire pump: 1
    - Fire houses: 23m x 45mm: 4
    - Fire nozzles c/w shut-off valve: 2
    - Foam Branch (Nozzle): 2
    - Foam, 25 L drums: 4

  - First Responders to be fitted with Acid/Fireproof overalls.

- That the available systems be utilised and made fully operational.

7.5 Emergency Response Communication

The emergency response should be in place at all times with the Walvis Bay Fire Department.

Recommendations

- Ensure a flyer-type of list is provided by the Municipality of Walvis Bay to UMP which contains general contact numbers.
- Confirm and communicate role of Security Company in initiating Emergency Response and communicate formal policy to all employees. Provide company-own (with company Logo) emergency contact numbers at all offices for Emergency Services, Ambulance, Hospital etc.
- All key offices areas to conduct table-top exercises to ensure understanding of Emergency call-out procedures.
- That the respective EH&S Managers formally meet set-up a collective response strategy.

8 CONCLUSIONS

Following the outcome of the Assessment, the current list of proposed chemicals to be stored at the UFE Warehouse. The assessment found that storage of the said chemicals a would be plausible, pending appropriate segregation and refurbishment be implemented.

Certain chemical storage combinations have been flagged, with incompatible materials outlined in a segregation chart. The UFE is found to be non-compliant to the safety and health requirements of various chemicals. These deviations are highlighted and followed by recommended corrective measures. Other concerns relate to emergency response, which are listed with appropriate recommendations. .

I.N.K concludes that should the management actions and mitigation measures provided in the EIA report be implemented, the project would have an acceptably low significant impact on the surrounding biophysical and social environment.

9 WAY FORWARD

The way forward for the EIA is as follows:

- I.N.K submission of report to MEFT

10 REFERENCES

SLR, 2016. Scoping Report (including impact assessment) for the Storage and Handling of Swakop Uranium's Chemicals at the UMP Logistics Centre Warehouse and Rennies Container Terminal. Published in Swakopmund, Namibia.

Tulela, 2021. Risk Assessment – Manica Group (Pty) Ltd. Published in Tsumeb, Namibia.