

If you can't measure it  
You can't control it



CK 96/44367/23 (SA)  
CC/2005/3576 (NAM)

**UPDATED ENVIRONMENTAL MANAGEMENT PLAN**  
***(EMP REPORT)*** for  
**Bulk Mining Explosives (PTY) LTD (NAMIBIA),**  
***Erongo Region - Namibia***

**Project No: 2023/074/D**

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**STATEMENT PAGE**

**National Environmental Health Consultants CC (NEHC CC)** is an Approved Inspection Authority in terms of the Occupational Health and Safety Act (85 of 1993). (Certificate No.: CI 057 0H) SA and A.I.A 23/09 Namibia, **Labour Act, 1992 (Act 6 of 1992)** as amended under the **Labour Act 2007, (Act 11 of 2007)**. And registered at the Allied Health professions Council of Namibia (HPCNA) as an Environmental Health Practitioner Reg. No.: EPH00901 under the **Allied Health Professions Act, 2004 (Act. 7 of 2004)**.

J. Cornelissen, conducted this Environmental Inspection on behalf of **NEHC CC** and hereby declares that the results/findings given in the report are a true reflection of the conditions encountered during the survey/observations on site.

Where relevant published and validated methods exist, they are always used in preference to novel methods. If a novel method is applied, a summary of validation and reference to the internal Standard Operating Procedure(s) is provided.

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12<sup>th</sup> of May 2023  
**EMP REPORT DATE**

Date: 10 <sup>th</sup> of May 2023	Company: BME NAMIBIA (PTY) LTD	Occupational Hygienist Johan Cornelissen	Project No: 2023/074/D
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Ministry of Environment,  
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Tourism  
NAMIBIA



Ministry of Labour,  
Industrial Relations and  
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NAMIBIA

Date: 10 <sup>th</sup> of May 2023	Company: BME NAMIBIA (PTY) LTD	Occupational Hygienist Johan Cornelissen	Project No: 2023/074/D
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## EXECUTIVE SUMMARY

National Environmental Health Consultants CC was appointed by Bulk Mining Explosives (Namibia) (Pty) Ltd to complete an updated Environment Management Plan (EMP).

The Project site is located in Namibia, Southern Africa, approximately 4km north-east of Arandis, within the heavy industrial area to the east of Arandis. The town of Arandis is located in the Erongo Region, about 60 km east of Swakopmund, off the main B2 road to Windhoek, and the national railway to Walvis Bay. The Project is also located close to a number of uranium projects (approximately 25km east to the Rössing Uranium Mine and 75km north to the Langer Heinrich Uranium Mine).

Bulk Mining Explosives (Namibia) (Pty) Ltd is a private company wholly owned by the Omnia Group, South Africa, and was formed in 1986.

Omnia has been in business for 61 years and has its head office in Johannesburg, South Africa. The Group's operations extend across Africa, Australasia and Brazil. Omnia differentiates itself from commodity chemical providers by adding value at every stage of the supply and service chain through technological innovation and by deploying our intellectual capital.

BME is all about innovation – using technology to ensure that every blast brings value to our customers.

During its operations it supplied bulk emulsions to various mining, quarries, road construction and small open pit mining activities for more than 20 years. Currently Bulk Mining Explosives (Namibia) (Pty) Ltd supplies Uis, B2 Gold, Tscudi, Kombat, Navachab mines etc. as well as field services for quarries, roads, and small open pit workings in Namibia.

Emulsion explosives consist of distinct fuel/oil and oxidizer phases. Even when finally combined they have a relatively low sensitivity, and require a booster and confinement to ensure effective detonation. They are popular because of their ability to transport and handle two non-explosive phases until they are blended and pumped into the blast hole at the site. Two of the most notable physical chemical properties of emulsions are its water resistance and high bulk density. These properties also have advantages in that they minimize environmental risks associated with manufacture and transportation.


Formed in 1984 on the strength of a new cold emulsion technology that has since become an industry standard. BME now offers cutting-edge products and services at every stage in the explosives supply chain. We are today a leading manufacturer and supplier in Africa of explosives, related accessories and blasting services to the mining, quarrying and construction industries.

We work wherever our customers take us. Our footprint covers 17 African counties including South Africa, Namibia, Botswana, Zimbabwe, Zambia, Swaziland, Angola, Malawi, Mozambique, DRC, Sierra Leone, Mali, Burkina Faso, Mauritania and Senegal. BME also has legal entities in Indonesia and Australia and continues to expand.

Since 1984, we've consistently raised the bar on industry, safety and environmental standards. BME provides sustainable solutions and ongoing support that create value across the blasting cycle - for our partners, their workforce and the broader mining community.

BME has a balanced presence in sectors that are essential to the sustainable use of the world's finite resources, and will play a key role in sustaining Africa's future development. We will continue to develop and leverage our intellectual property to add focused value to the chemicals, mining and agriculture markets in Africa and abroad.

Our services into Africa range from tailor-made packages, providing high-level technical services for underground and surface mining operations in all commodity sectors, including quarrying. We pride

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## NATIONAL ENVIRONMENTAL HEALTH CONSULTANTS


ourselves on our infrastructure building expertise, delivering quick and customised solutions to customers' particular specifications, capacities and requirements. This includes containerised emulsion plants for bulk explosives in the majority of African countries we operate in.

Rigorous safety systems are integral to our operational policy, and are applied at every site. BME also ensures transfer of skills to local personnel through specialised technical training, and has a variety of corporate social responsibility initiatives in place.

Our Vision: Creating customer wealth by leveraging our knowledge.

### Our Values

BME is characterised by a strong and distinctive culture. Combining the values of a family business with the virtues and strengths of a professionally managed public company, we operate according to a robust spirit of enterprise underpinned by a reputation for the highest levels of integrity.

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## Glossary, Definitions and Abbreviations

<b>ACRONYM</b>	<b>DESCRIPTION</b>
<b>BME</b>	Bulk Mining Explosives (Namibia) (Pty) Ltd
<b>CEs</b>	Consulting Engineers
<b>CLO</b>	Community Liaison Officer
<b>ECO</b>	Environmental Control Officer
<b>Effluent</b>	Water that has been used for any purpose or mixed with material or waste.
<b>ELO</b>	The Environmental Liaison Officer
<b>EMP</b>	Environmental Management Plan
<b>EMPr</b>	Environmental Management Programme
<b>General waste</b>	Waste that may be disposed of without prior treatment. May be disposed of at a municipal dumpsite.
<b>Hazardous waste</b>	<p>An inorganic or organic element or compound that, because of its toxicological, physical, chemical or persistency properties may exercise detrimental, acute or chronic impacts on human health and the environment. This can be generated from a variety of activities and may take the form of liquid, sludge, gas or solid. Hazardous waste can also be defined to be any waste that directly or indirectly represents a threat to human health or to the environment by introducing one or more of the following risks:</p> <ul style="list-style-type: none"> <li>▪ Explosion or fire</li> <li>▪ Infections, pathogens, parasites or their vectors</li> <li>▪ Chemical instability, reactions or corrosion</li> <li>▪ Acute or chronic toxicity</li> <li>▪ Cancer, mutations or birth defects</li> <li>▪ Toxicity or damage to the ecosystem or natural resources</li> <li>▪ Accumulation in biological food-chains, persistence in the environment or multiple effects.</li> </ul>
<b>MET</b>	Ministry of Environment and Tourism.
<b>MSDS</b>	Material safety data sheet
<b>PM</b>	Project Manager
<b>RA</b>	Resident Architect
<b>RE</b>	Resident Engineer
<b>Recyclable Waste</b>	Hazardous or general waste that has the potential to be recycled.
<b>Waste</b>	Any matter gaseous, liquid and solid or any combination thereof designated as an undesirable or superfluous by-product, emission, residue or remainder of any process or activity.
<b>Waste Stream</b>	The cycle of a specific waste from the point of origin up to disposal (cradle to grave concept).
<b>Waste to be recycled.</b>	Hazardous or general waste that is actually being recycled.

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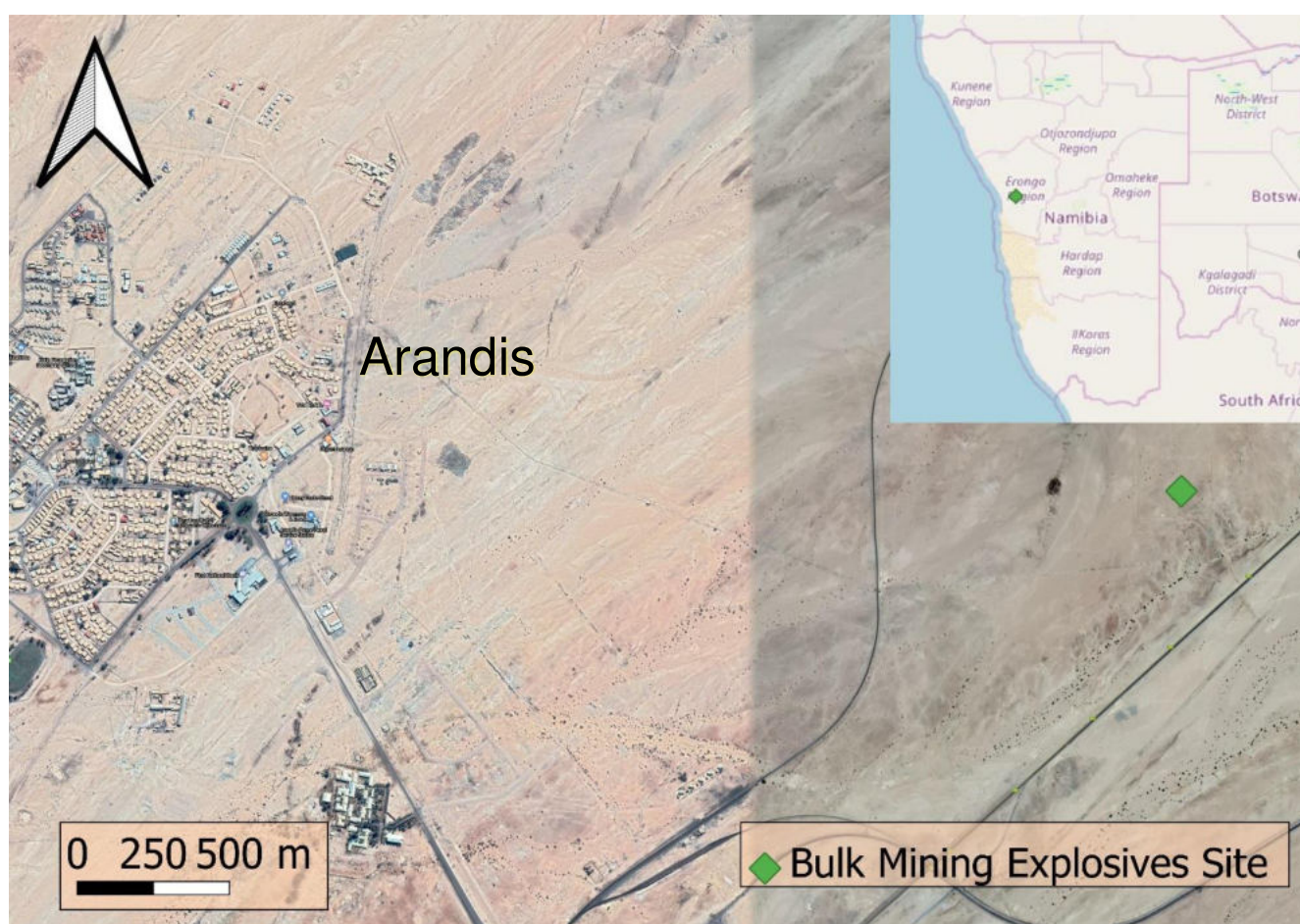
## 1 INTRODUCTION

Bulk Mining Explosives (Namibia) (Pty) Ltd has appointed National Environmental Health Consultants as the independent consultant for the completing and updating of their Environmental Management Plan (EMP).

The purpose of an EMP is to guide the current operational phase of the existing Bulk Emulsion Plant and associated Magazine. This is done to eliminate or mitigate the various possible risks to the environment, and its surrounding inhabitants during the current operational phase. And it will subsequently ensure that minimal damage will occur to these areas during the operational phase of the existing Bulk Emulsion Plant, based on the mitigation measures identified for inclusion in this updated EMP as a result of the Environmental Scoping Process, which was completed in 2012.

The ultimate goal of the EMP is to meet social, economic, and biophysical objectives to such an extent, that the overall product of the activity will not result in a net negative impact. The economic benefit of the existing Bulk Emulsion Plant in the Erongo region, should outweigh the negative environmental impacts addressed during this assessment.

### 1.1 Locality



**Figure 1: Location of the existing Bulk Emulsion Plant with associated storing facilities, Bulk Mining Explosives (Namibia) (Pty) Ltd. This also shows where in Namibia the Bulk Emulsion Plant is situated.**

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## 1.2 Project Background Information

Bulk Mining Explosives (Namibia) (Pty) Ltd is a private company, wholly owned by the Omnia Group, South Africa and was formed in 1986 during which time it supplied bulk Emulsions to various mining, quarries, road construction and small open pit mining activities for more than 20 years. Currently Bulk Mining Explosives (Namibia) (Pty) Ltd supplies Uis, B2 Gold, Tscudi, Kombat, Navachab mines etc. as well as field services for quarries, roads, and small open pit workings in Namibia.

Omnia has been in business for 61 years and has its head office in Johannesburg, South Africa. The Group's operations extend across Africa, Australasia and Brazil. Omnia differentiates itself from commodity chemical providers by adding value at every stage of the supply and service chain through technological innovation and by deploying our intellectual capital.

The Project site is located in Namibia, Southern Africa, approximately 4km north-east of Arandis, within the heavy industrial area to the east of Arandis. The town of Arandis is located in the Erongo Region, about 60 km east of Swakopmund, off the main B2 road to Windhoek, and the national railway to Walvis Bay. The Project is also located near to a number of uranium projects (approximately 25km east to the Rössing Uranium Mine and 75km north to the Langer Heinrich Uranium Mine).

This Environmental Management Plan (EMP) addresses the management of environmental impacts related to the existing Bulk Emulsion Plant and associated Magazine, namely Bulk Mining Explosives (Namibia) (Pty) Ltd (BME). The documents should be used for managing, mitigating, and monitoring the environmental impacts associated with the operational and decommissioning phases of the site as identified during the Environmental Scoping Report, which was conducted on the site, and completed in 2012. The Environmental Scoping Report will be valuable as a reference source for understanding this updated EMP and for placing it into perspective.

## 1.3 Objectives of the EMP

The primary objectives of the EMP are as follows:

- To describe action plans for achieving the mitigation measures described in the Environmental Scoping Report; and
- To indicate responsibilities regarding the implementation of these action plans.

NEHC CC completed the Environmental Scoping Report in 2012, Bulk Mining Explosives (Namibia) (Pty) Ltd received their Environmental Clearance Certificate (ECC) in 2012 and 2019. This updated EMP report is for the renewal of their existing ECC.

## 1.4 Key Characteristics of the report

**Table 1: Shows an overview of the project.**

Element	Description
<b>Proponent</b>	Bulk Mining Explosives (Namibia) (Pty) Ltd. Mr. Jako Maree
<b>Name of the site</b>	Bulk Mining Explosives (Namibia) (Pty) Ltd
<b>Property Description</b>	4876, Extention10, New Industrial Area Quiver Tree Investment Complex, Unit 4 Erongo Region
<b>Site Coordinates</b>	-22.419006,15.006261
<b>Extent of the site</b>	250 000 m <sup>2</sup>
<b>Current capacity of the site</b>	Existing Bulk Emulsion Plant and associated Magazine
<b>Storage</b>	Two bulk silos (100 Ton) capacity
<b>Security</b>	Site is fenced off with 24-hour security
<b>Infrastructure</b>	Access roads to and from the site; Associated infrastructure; Water; Electricity; Sewage; Ablution; Administration; Fencing.
<b>Baseline environment</b>	<ul style="list-style-type: none"> <li>➤ Limited vegetation on the site;</li> </ul>

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Element	Description
	<ul style="list-style-type: none"> <li>➤ There are no surface water bodies located within a 500m radius of the site;</li> <li>➤ Area is characterized as not having a shallow water table.</li> </ul>
<b>Current environment</b>	<ul style="list-style-type: none"> <li>➤ Limited vegetation on the site;</li> <li>➤ Area is characterized as not having a shallow water table.</li> <li>➤ Refer to Infrastructure</li> </ul>

## 1.5 Compliance to regulations

Bulk Mining Explosives (Namibia) (Pty) Ltd will need to comply with the following legislation:

- The Constitution of the Republic of Namibia (1990),
- Namibia's Green Plan,
- Vision 2030: Third National Development Plan of Namibia, 2006/7 – 2011/12,
- Environmental Assessment Policy, 1995,
- Draft Wetland Policy of 2003,
- The National Environmental Health Policy,
- GOVERNMENT GAZETTE OF THE REPUBLIC OF NAMIBIA, Government NOTICES, dated 06 February 2012 number 4878,
- Environmental Management Act, 7 of 2007,
- The Water Resources Management Act, 24 of 2004,
- Labour Act of 1992: Regulations for the Health and Safety of Employees at Work,
- Labour Act, 11 of 2007
- The Regional Councils Act, 22 of 1992,
- Nature Conservation Ordinance, 4 of 1975 (as amended 1996),
- Atmospheric Pollution Prevention Ordinance, 11 of 1976,
- Petroleum Products and Energy Amendment Act of 2000,
- Soil Conservation Act, 76 of 1969,
- Legislation related to effluent and waste-water disposal Model Drainage Regulations, 1996,
- Water Resources Management Act, 24 of 2004,
- Hazardous Substances Ordinance, 14 of 1974, and its subsequent amendments,
- Nature Conservation Ordinance Amendment Act, 5 of 1996
- National Policy on Tourism for Namibia, 2008, and
- National Heritage Act, 27 of 2004.

## 1.6 Responsible Parties

### 1.6.1 Phases of the Project

The point of departure for any EMP is to take a pro-active route by addressing and minimizing any potentially significant problems before it occurs. In particular this EMP deals with the current operational phase.

### 1.6.2 Roles and Responsibilities

Various role players have a range of responsibilities to perform, during the current operational phase and when any upgrades or construction take place on the existing Bulk Emulsion Plant:

#### 1.6.2.1 Project Manager (PM) (Developer Representative)

If any upgrades or construction take place on the existing Bulk Emulsion Plant and associated Magazine, the PM will be responsible for the following:

- The PM will be responsible for ensuring that the development is implemented according to the requirements as set out in the EMP.
- The PM should ensure that sufficient resources are available to the other role players to efficiently perform their tasks in terms of the EMP.

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- The PM must appoint an independent Environmental Control Officer (ECO) to ensure strict adherence to the EMP.

#### 1.6.2.2 Resident Architect (RA)

If any upgrades or construction take place on the existing Bulk Emulsion Plant and associated Magazine, the RA will be responsible for the following:

- Only architects approved by the PM will be allowed to work on the project and will oversee the individual contracts between the owners of the entire site or portions thereof, and the contractors.

#### 1.6.2.3 Environmental Control Officer (ECO)

If any upgrades or construction take place on the existing Bulk Emulsion Plant and associated Magazine, the ECO will be appointed at the start of construction and is mandated to do the following:

- Ensure that all contractors/subcontractors/employees are fully aware of their environmental responsibilities. This will take the form of an initial environmental awareness-training program in which the requirements of this document will be explained.
- Any damage to the environment must be repaired as soon as possible after consultation between the ECO, the Consulting Engineer and relevant contractors.
- The ECO shall monitor their actions to ensure that the developer and/or contractor are adhering to all stipulations of the EMP.
- The ECO shall be responsible for monitoring the construction activities throughout the project by means of site visits and meetings. This should be documented as part of the site meeting minutes.
- The ECO must sign off and the PM must certify that all clean-up and rehabilitation, or any remedial action required, are completed prior to transfer of properties.
- A post-construction environmental audit is to be conducted to ensure that all conditions in the EMP have been adhered to.


#### 1.6.2.4 Auditing / Inspections

If any upgrades or construction take place on the existing Bulk Emulsion Plant and associated Magazine,

- The appointed ECO should inspect the site on a regular basis, where necessary.
- The PM or the contractor's representative will accompany the ECO with and to on-site inspections.
- The contractor will use the formats presented in this EMP to report to the PM in terms of compliance to this document.
- When, in the opinion of the ECO, a construction activity will result in environmental damage, the ECO will issue instructions to the contractor or PM, who will in turn order the contractor, to halt the activity. Spot fines or penalties may be levied for non-compliance.

#### 1.6.2.5 Method Statements

If any upgrades or construction take place at the existing Bulk Emulsion Plant and associated Magazine, construction method statements from the contractor will be required for specific activities in sensitive environments on request of the Authorities or the ECO. All method statements will form part of the EMP documentation and are subject to all terms and conditions contained within the EMP document. For each instance wherein it is requested that the contractor submit a method statement to the satisfaction of ECO, the format should clearly indicate the following:

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- What - a brief description of the work to be undertaken;
- How - a detailed description of the process of work, methods, and materials;
- Where - a description / sketch map of the locality of work; and
- When - the sequencing (phases) of actions with commencement date and completion date estimates.

The contractor must submit the method statement before any particular construction activity is due to start. Work may not commence until the method statement has been approved by the ECO.

#### 1.6.2.6 Record Keeping

All records related to the implementation of this management plan, must be kept together in an office where it is safe. Records should be kept for two years and must be available at any time for scrutiny by any relevant Authority.

#### 1.6.2.7 Resident Engineer (RE)

If any upgrades or construction take place at the existing Bulk Emulsion Plant and associated Magazine, a RE acts as a direct, on-site resource for all technical aspects related to the development. He/she is available on the construction site at all times, overseeing all phases of the construction activities. He/she will liaise with the ECO where required to ensure EMP implementation.

#### 1.6.2.8 Consulting Engineers (CEs)

If any upgrades or construction take place at the existing Bulk Emulsion Plant and associated Magazine, the engineers involved during the planning, design, and construction period. They are not available on site at all times, but are part of the specialist team during the final design and construction stages to advise on appropriate environmental management and mitigation.

#### 1.6.3 Standards

If any upgrades or construction take place at the existing Bulk Emulsion Plant and associated Magazine,

- The ECO will keep written and photographic records of the site and its surroundings before, after, and during construction on the site.
- The contractor will keep records of construction activities, instructions received from the ECO and PM concerning environmental matters.
- The ECO will keep records of cases of non-compliance and remedial actions taken.
- Where no quantitative standards are applicable, visual standards will apply.
- The contractor will rehabilitate the site to a condition acceptable to the ECO, and respond timeously to any complaints and instructions regarding construction activities.

#### 1.6.4 EMP Objectives

This EMP must be used during the current operational phase at the existing Bulk Emulsion Plant and associated Magazine.

The objectives of this plan are to:

- Ensure all environmental safeguards are carried out correctly.
- Manage site activities effectively and coordinate with other players in the project.
- Minimize adverse impacts on the environment.
- Ensure that environmental mitigation measures are in place from the start of the project.
- Minimize disruption to fauna and flora and neighbouring landowners / communities.
- Monitor the project.

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### 1.6.5 EMP Context

This EMP fits into the overall planning process of the project and should be implemented by the developer as soon as the Authorities have approved it. A copy of the EMP should always be available on site.

There are at least 2 role players participating in the environmental management of the site, namely:

- Bulk Mining Explosives (Namibia) (Pty) Ltd; and
- Service Providers.

This EMP must be attached as an Appendix to service provider tender documents and referred to in the tender documents as *special conditions of tender if and when needed*.

Ultimate responsibility for implementation of the EMP lies with Bulk Mining Explosives (Namibia) (Pty) Ltd. This responsibility, in some instances may be delegated to contractors in the employ of Bulk Mining Explosives (Namibia) (Pty) Ltd for practical purposes, but Bulk Mining Explosives (Namibia) (Pty) Ltd will retain legal accountability. In that capacity, Bulk Mining Explosives (Namibia) (Pty) Ltd should delegate suitably qualified person(s) with the responsibility to ensure the implementation of the EMP, and who will:

- Know the contents and implications of the Environmental Scoping Report and monitor the implementations of the Environmental Scoping Report findings, using the EMP;
- Guide, advise, and consult the contractors on environmental issues during decommissioning of the Bulk emulsion plant;
- Revise the EMP as required and inform relevant parties of the changes thereto;
- Protect the environment;
- Responsibility of the Service Providers and Contractors during the decommissioning of the Bulk emulsion plant is to:
  - Ensure that all requirements of the EMP are communicated to, understood, and followed by all persons working on the project, who may have an impact on the environment;
  - Ensure that a procedure exists for reporting incidents and resolving any problems rapidly;
  - Keep good records relating to the compliance/non-compliance with the conditions of the authorization; and
  - These records must be made available to the relevant authority within seven days of a written request to do so.

## 2 PHASES OF THE PROJECT

The aim of this Environmental Management Programme (EMPr) is to derive mitigation measures that should be made binding when additional contraction activities result in the appointment of contractors on site, as well as measures that should be implemented during the current operational phase.

The purpose of the EMPr is to provide solutions to problems before they occur. If adhered to, this EMPr should limit corrective measures required during the current operational phase of the existing Bulk Emulsion Plant and associated Magazine.

***The EMPr deals with the following phases as detailed below:***

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## 2.1 The Planning Phase

This is an existing Bulk Emulsion Plant and associated Magazine thus, there will be no planning phase.

## 2.2 Pre-construction Phase

This is an existing Bulk Emulsion Plant and associated Magazine thus, there will be no Pre-construction Phase.

## 2.3 The Construction Phase

This is an existing Bulk Emulsion Plant and associated Magazine thus, there will be no construction phase.

If any upgrades or construction take place at the existing Bulk Emulsion Plant and associated Magazine, the majority of the impacts during this phase will have a direct and immediate effect (e.g. pollution, noise and dust). Continual monitoring of the site during the construction phase will help in identifying impacts as they occur.

## 2.4 The Operational Phase

This is an existing Bulk Emulsion Plant and associated Magazine thus, this EMP report mainly refers to the current operational phase. Potential environmental impacts arising during the operational phase can be minimized, if the EMP is followed.

# 3 ANTICIPATED ENVIRONMENTAL IMPACTS

The anticipated adverse impacts requiring mitigation relating to the biophysical and socio-economic environment, for the operational phase of existing Bulk Emulsion Plant and associated Magazine are listed below:

## 3.1 Operational Phase - Adverse Impacts

- Visual Intrusion and Light Pollution,
- Traffic,
- Noise,
- Atmospheric Pollution and Odours,
- Safety and Security,
- Soil and Groundwater Contamination (Surface spillage of fuel),
- Subsurface leaks (lines, tanks),
- Risks of Fires and Explosions, and
- Waste Generation and Disposal.

# 4 RESPONSIBILITIES

The EMP specifies the responsibilities of the role players.

Bulk Mining Explosives (Namibia) (Pty) Ltd: remains ultimately responsible for ensuring that the facility is implemented according to the requirements of the EMP throughout all phases of the project.

This includes the current operational phase and if any upgrades or construction take place at the existing Bulk Emulsion Plant and associated Magazine.

- **The Environmental Control Officer (ECO):** the ECO is appointed by the developer as an independent monitor of the implementation of the EMP i.e., independent of the developer and contractor. The ECO is responsible for providing feedback on potential environmental problems associated with the development. The ECO has the right to enter the site, and do monitoring and auditing at any time, subject to compliance with health and safety requirements applicable to the site (e.g., wearing of protective head gear and safety boots). The ECO will be responsible

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
for a minimum of monthly site audits, followed by an environmental control report, that will detail the status of environmental compliance, and highlight mitigation. The ECO will be responsible for liaising with authorities, MEFT. The ECO must submit monthly environmental audit reports to the authorities. The ECO must indicate the necessary corrective action measures to eliminate the cause of the non-conformances. The ECO is also responsible for liaising with contractors, informing them of any decisions that are taken concerning environmental management during the construction phase. This would also include informing the contractors of the necessary corrective actions to be taken.

- **Site Agent:** is usually a site engineer or project manager who is the developer's most senior representative on site and coordinates activities on site. The site agent must follow the advice of the ECO with regards to environmental management, and must ensure that the contractor abides by all of the requirements as stipulated by the ECO.
- **Contractor:** the contractor as the developer's agent on site, is bound by the Clearance Certificate and EMPr conditions through his/her contract with the developer, and is responsible for ensuring that conditions of the EMPr are strictly adhered to at all times. The contractor must comply with all orders (whether verbal or written) given by the ECO, project manager or site agent in terms of the EMPr.
- **The Environmental Liaison Officer (ELO):** The Contractor shall submit to the Site Agent a nominated representative of the Contractor as an ELO to assist with day-to-day monitoring of the construction activities for the contract. Issues raised by the ECO will be routed to the ELO for the contractor's attention. The ELO shall be permanently on site during the construction phase to ensure daily environmental compliance with the EMPr. The ELO should preferably be a senior and respected member of the construction crew, as past experience has revealed that ELO's that can relate to the workforce are most effective for information transfer and ensuring compliance with the EMPr. The ELO will report directly to the ECO regarding environmental compliance. The site audits undertaken by the ECO will be undertaken alongside the ELO. The ECO will point out areas of concern, and the ELO will be responsible for ensuring day to day compliance with the EMPr. Should any emergencies arise, the ELO will alert the ECO who will take action. There shall be an approved ELO on site at all times. Before the Contractor commences with each Construction Activity, the ELO shall give to the site agent a written statement setting out the following:
  - The type of construction activity.
  - Locality where the activity will take place.
  - Identification of impacts that might result from the activity.
  - Identification of activities or aspects that may cause an impact.
  - Methodology for impact prevention for each activity or aspect.
  - Emergency/disaster incident and reaction procedures (need to be demonstrated).
  - Treatment and continued maintenance of impacted environment.
- **Community Liaison Officer (CLO):** the contractor must appoint a CLO to act as a point of contact between the contracting team, and the community that will be affected by the construction activities. Complaints from the community about construction activities must be channelled through the CLO. The CLO's responsibility is to liaise with the Interested and Affected Parties.

**5 ENVIRONMENTAL MANAGEMENT PROGRAMME (EMPR)**

The following tables form the core of this EMPr for the current operational phase of the development. This table should be used as a checklist on site. The aim of this EMPr is to derive measures that should be implemented during the operational phase.

The purpose of the EMPr is to further provide solutions to problems before they occur. If adhered to, this EMPr should limit corrective measures required during the current operational phase of the existing Bulk Emulsion Plant.

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**Table 2: OPERATIONAL PHASE - Socio-economic: Job Opportunities and Economic Upliftment**

<b>Socio-economic: Job Opportunities and Economic Upliftment</b>	
<b>PHASE:</b>	<b>Operational</b>
<b>IMPACT:</b>	<b>BENEFICIAL</b>
<b>TASK/ENVIRONMENTAL IMPACT:</b>	<b>Job Opportunities and Economic Upliftment</b>
<b>OBJECTIVE:</b>	Advantages for local previously disadvantaged communities in terms of employment, empowerment and socio-economic upliftment
<b>ACTION REQUIRED:</b>	<ul style="list-style-type: none"> <li>➤ The existing Bulk Emulsion Plant results in jobs being created. Indirectly, jobs are also created in industries that provide goods, materials, and services.</li> <li>➤ The existing Bulk Emulsion Plant contributes to the increase in skills development and also local employment in the area. Both short-term and long-term employment will be created in this case.</li> </ul>
<b>TARGETS TO MONITOR COMPLIANCE AND REPORTING THERE ON:</b>	Record of local workers employed
<b>RESPONSIBILITY:</b>	Developer
<b>TIME FRAME:</b>	Current operational phase

**Table 3: OPERATIONAL PHASE - Socio-economic: Contribute to upgrading of existing infrastructure**

<b>Socio-economic: Contribute to upgrading of existing infrastructure</b>	
<b>PHASE:</b>	<b>Operational</b>
<b>IMPACT:</b>	<b>BENEFICIAL</b>
<b>TASK/ENVIRONMENTAL IMPACT:</b>	<b>Contribute to upgrading of existing infrastructure</b>
<b>OBJECTIVE:</b>	Improved municipal services
<b>ACTION REQUIRED:</b>	<ul style="list-style-type: none"> <li>➤ All recommendations made by the civil, traffic and electrical engineer and approved by the Municipality must be installed as per standard specifications.</li> </ul>
<b>TARGETS TO MONITOR COMPLIANCE AND REPORTING THERE ON:</b>	Implementation of infrastructure as per approved engineering plans.
<b>RESPONSIBILITY:</b>	Developer, Traffic Engineer, Engineer and ECO
<b>TIME FRAME:</b>	Current operational phase and if any upgrades or construction take place on the existing Bulk Emulsion Plant and associated Magazine.

**Table 4: OPERATIONAL PHASE – Bio-Physical: Exotic plant species**

Bio-physical: Exotic plant species	
<b>PHASE:</b>	<b>Operational</b>
<b>IMPACT:</b>	<b>BENEFICIAL</b>
<b>TASK/ENVIRONMENTAL IMPACT:</b>	<b>Removal of exotic plant species and establishment of indigenous vegetation.</b>
<b>OBJECTIVE:</b>	The removal of exotic plant species and the planting of indigenous vegetation within landscaped areas will increase biodiversity.
<b>ACTION REQUIRED:</b>	<ul style="list-style-type: none"> <li>➤ All classified Invader Species in terms of the Nature Conservation Ordinance Amendment Act, 5 of 1996 to be identified, eradicated, and controlled.</li> <li>➤ The Landscape Development Plan must as far as possible, make use of indigenous trees and plants. The use of exotic species must be limited.</li> </ul>
<b>TARGETS TO MONITOR COMPLIANCE AND REPORTING THERE ON:</b>	Landscape Development Plan
<b>RESPONSIBILITY:</b>	Contractor, Landscape Architect, Environmental consultant, and ECO
<b>TIME FRAME:</b>	Current operational phase and if any upgrades or construction take place on the existing Bulk Emulsion Plant and associated Magazine: Design, planning, and construction phases.

**Table 5: OPERATIONAL PHASE – Socio-economic: Visual Intrusion and Light Pollution**

Socio-economic: Visual Intrusion and Light Pollution	
<b>PHASE:</b>	<b>Operational</b>
<b>IMPACT:</b>	<b>ADVERSE</b>
<b>TASK/ENVIRONMENTAL IMPACT:</b>	<b>Visual Intrusion and Light Pollution</b>
<b>OBJECTIVE:</b>	To mitigate the potential negative impact on "genius loci" and visual impact, should architecture not be in line with natural character of area, through the appropriate application of form, scale, materials, and finishes.
<b>ACTION REQUIRED:</b>	<ul style="list-style-type: none"> <li>➤ Light pollution should be minimized.</li> <li>➤ Lighting on site is to be sufficient for safety and security purposes, but shall not disturb neighbouring occupants, disturb wildlife, or interfere with road traffic.</li> <li>➤ Littering, rubbish, and illegal dumping on the site is <b>NOT</b> allowed.</li> <li>➤ Refuse must be contained and disposed of at the Municipal land fill site.</li> <li>➤ Refuse bins must be provided. These must be sufficient in number and must be easily accessible.</li> <li>➤ The buildings may not be visually intrusive.</li> <li>➤ The buildings must be regularly painted.</li> <li>➤ All lights used for non-security purposes should be energy efficient for example compact fluorescent lights (CFL). Fluorescent lamps</li> </ul>

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Socio- economic: Visual Intrusion and Light Pollution	
	<p>give five times the light, and lasts up to 10 times as long as ordinary bulbs.</p> <ul style="list-style-type: none"> <li>➤ Outside lights will have to be downward shining (eyelid type), low wattage, and should not be positioned higher than 1 m above the ground surface.</li> <li>➤ Signs must conform to the standards of Local Government for Outdoor Advertising Control.</li> <li>➤ Areas that have been landscaped must be maintained.</li> </ul>
<b>TARGETS TO MONITOR COMPLIANCE AND REPORTING THERE ON:</b>	No complaints from surrounding property owners.
<b>RESPONSIBILITY:</b>	Developer, Architect, Landscape Architect
<b>TIME FRAME:</b>	Planning and current operational phases.

**Table 6: OPERATIONAL PHASE – Socio- economic: Traffic**

Socio- economic: Traffic	
<b>PHASE:</b>	<b>Operational</b>
<b>IMPACT:</b>	<b>ADVERSE</b>
<b>TASK/ENVIRONMENTAL IMPACT:</b>	<b>Traffic</b>
<b>OBJECTIVE:</b>	Possible increased pedestrian hazard and increased road damage.
<b>ACTION REQUIRED:</b>	<ul style="list-style-type: none"> <li>➤ Access to the site is from the road over the railway line connecting the site directly to the B2 Road. The access arrangements must be based on the standards contained in applicable legislation.</li> <li>➤ Road surfaces in the immediate vicinity of the site should be monitored. If the road is damaged, the relevant authority must be notified.</li> <li>➤ Advertising boards must not block the visibility to the B2 road, and to and from the site.</li> <li>➤ Access to and from the site must not have a negative impact on the traffic on the B2.</li> <li>➤ All requirements by the Traffic engineer and Provincial and Local Traffic Department must be adhered to.</li> </ul>
<b>TARGETS TO MONITOR COMPLIANCE AND REPORTING THERE ON:</b>	No complaints from road users.
<b>RESPONSIBILITY:</b>	Developer and Traffic Engineer
<b>TIME FRAME:</b>	Planning, design, and current operational phases.

Table 7: OPERATIONAL PHASE – Socio- economic: Noise

Socio- economic: Noise	
<b>PHASE:</b>	<b>Operational</b>
<b>IMPACT:</b>	<b>ADVERSE</b>
<b>TASK/ENVIRONMENTAL IMPACT:</b>	<b>Noise</b>
<b>OBJECTIVE:</b>	To minimize impact of noise on surrounding properties and environment.
<b>ACTION REQUIRED:</b>	<ul style="list-style-type: none"> <li>➤ Noise levels shall be kept within acceptable limits, and forecourt staff must abide by National Noise Laws and local by-laws regarding noise.</li> <li>➤ Equipment such as mechanical equipment, extraction fans, refrigerators that are fitted with noise reduction facilities (e.g. side flaps, silencers etc.) must be used as per operating instructions and maintained properly.</li> <li>➤ Noise levels should comply with the SANS Code of Practice 100103-0994 (recommended noise levels).</li> </ul>
<b>TARGETS TO MONITOR COMPLIANCE AND REPORTING THERE ON:</b>	No complaints from surrounding property residents.
<b>RESPONSIBILITY:</b>	Developer, Contractor Management
<b>TIME FRAME:</b>	Current operational phase and if any upgrades or construction take place on the existing Bulk Emulsion Plant and associated Magazine.

Table 8: OPERATIONAL PHASE – Socio- economic: Atmospheric Pollution and Odours

Socio- economic: Atmospheric Pollution and Odours	
<b>PHASE:</b>	<b>Operational</b>
<b>IMPACT:</b>	<b>ADVERSE</b>
<b>TASK/ENVIRONMENTAL IMPACT:</b>	<b>Atmospheric Pollution and Odours</b>
<b>OBJECTIVE:</b>	Minimize atmospheric pollution and odours.
<b>ACTION REQUIRED:</b>	<ul style="list-style-type: none"> <li>➤ Standard vents fitted to the breather pipes minimize the loss of vapours.</li> <li>➤ Emissions from the existing Bulk Emulsion Plant and associated storage infrastructure will be low level and should thus, disperse into the atmosphere.</li> <li>➤ The emissions from the existing Bulk Emulsion Plant and associated storage infrastructure would be dispersed according to the prevailing wind direction, with increased distance the concentration of the emitted particles will decrease.</li> <li>➤ All general waste areas are to be maintained in a neat and orderly manner and bins must have secure lids.</li> </ul>
<b>TARGETS TO MONITOR COMPLIANCE AND REPORTING THERE ON:</b>	No reports of negative health incidents or complaints from surrounding property residents.
<b>RESPONSIBILITY:</b>	Developer, Contractor, Management
<b>TIME FRAME:</b>	Current operational phase and if any upgrades or construction take place on the existing Bulk Emulsion Plant and associated Magazine.

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**Table 9: OPERATIONAL PHASE – Socio- economic: Safety and Security.**

Socio- economic: Safety and Security	
<b>PHASE:</b>	<b>Operational</b>
<b>IMPACT:</b>	<b>ADVERSE</b>
<b>TASK/ENVIRONMENTAL IMPACT:</b>	<b>Safety and Security</b>
<b>OBJECTIVE:</b>	Ensure safety and security of staff and users of the facility.
<b>ACTION REQUIRED:</b>	<ul style="list-style-type: none"> <li>➤ Appropriate measures should be in place for the correct storage and handling of fuel, as well as the procedures for dealing with dangerous situations.</li> <li>➤ Staff should be adequately trained with respect to dealing with crime.</li> <li>➤ Equipment and materials must be handled by staff that have been supervised and adequately trained.</li> <li>➤ Staff must be regularly updated about the safety procedures. Emergency facilities must be available and adequately supplied for use by staff and customers.</li> <li>➤ Emergency contact details for the police, Security Company, and fire department must be readily available.</li> </ul>
<b>TARGETS TO MONITOR COMPLIANCE AND REPORTING THERE ON:</b>	Record of regular training for staff.
<b>RESPONSIBILITY:</b>	Developer, Contractor, Management
<b>TIME FRAME:</b>	Current operational phase and if any upgrades or construction take place on the existing Bulk Emulsion Plant and associated Magazine.

**Table 10: OPERATIONAL PHASE – Soil and Groundwater Contamination (Surface spillage of product)**

Bio-Physical: Soil and Groundwater Contamination (Surface spillage of product)	
<b>PHASE:</b>	<b>Operational</b>
<b>IMPACT:</b>	<b>ADVERSE</b>
<b>TASK/ENVIRONMENTAL IMPACT:</b>	<b>Soil and Groundwater Contamination (Surface spillage of product)</b>
<b>OBJECTIVE:</b>	Prevent soil and groundwater contamination.
<b>ACTION REQUIRED:</b>	<ul style="list-style-type: none"> <li>➤ All erected plant equipment must be located on a hardened surface to contain spillages.</li> <li>➤ All erected plant equipment and forecourt areas should all be located on a hardened surface which drains into a common drain. This drain must feed an onsite oil and water separator such as a Zorbit Grease Trap. The accumulated grease and oil must be removed by an accredited company.</li> <li>➤ Overfill and spillages during tanker refuelling and dispensing, should be prevented by the installation of automatic cut off devices.</li> <li>➤ Tanker delivery driver must be present during delivery of product or raw materials with the emergency cut off switch.</li> <li>➤ In the event of the pump dispenser or the hoses being knocked over or ripped off, the fuel supply must be cut off by shear off valves.</li> </ul>

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<b>Bio-Physical: Soil and Groundwater Contamination (Surface spillage of product)</b>	
	<ul style="list-style-type: none"> <li>➤ Strict procedures for the management of the site must be developed and adhered to.</li> <li>➤ Staff must be trained to prevent spillages during loading and off-loading of product.</li> </ul>
<b>TARGETS TO MONITOR COMPLIANCE AND REPORTING THERE ON:</b>	<ul style="list-style-type: none"> <li>➤ Tanks, lines, and fittings to be installed and certified as per relevant standards.</li> <li>➤ Approved Spill Contingency Plan.</li> <li>➤ Record of regular training of staff.</li> <li>➤ Record of regular monitoring.</li> </ul>
<b>RESPONSIBILITY:</b>	Developer, Engineer, ECO.
<b>TIME FRAME:</b>	Current operational phase.

**Table 11: OPERATIONAL PHASE – Bio-Physical: Subsurface leaks (lines, tanks)**

<b>Bio-Physical: Subsurface leaks (lines, tanks)</b>	
<b>PHASE:</b>	<b>Operational</b>
<b>IMPACT:</b>	<b>ADVERSE</b>
<b>TASK/ENVIRONMENTAL IMPACT:</b>	<b>Subsurface leaks (lines, tanks)</b>
<b>OBJECTIVE:</b>	Prevent soil and groundwater contamination.
<b>ACTION REQUIRED:</b>	<ul style="list-style-type: none"> <li>➤ Staff must be trained adequately, so as to identify, and minimize the impacts of leaks.</li> <li>➤ Fuel stock must be monitored on a daily basis.</li> <li>➤ Cathodic protection will prevent corrosion in pipelines.</li> <li>➤ Leak detectors with automatic cut off valves will be installed.</li> <li>➤ Subsoil cut off drain should be installed in the lower boundary of the site to catch any seepage of fuel. The drain should be deep enough to bed 100 mm into the bedrock and linked to a sump that can pump out in the event of a spill. This drain must NOT be connected to the storm water system.</li> <li>➤ A proper management and monitoring program must be implemented to ensure that the groundwater resources are protected. This should include: -             <ul style="list-style-type: none"> <li>➤ Drilling of at least one monitoring borehole downstream of the site can be utilised as a background monitoring point; and</li> <li>➤ Take water samples and analyse for microbiological, macro elements and TPH/BTEXN at least twice annually.</li> <li>➤ Dipstick readings of all the storage tanks must be taken daily. These records must be kept on site.</li> <li>➤ The occurrence of BTEXN (i.e. Benzene, Toluene, Ethyl-benzene, Xylene and Naphthalene), Sulphur and heavy metals such as Lead (Pb) in soil and groundwater should also be investigated and results thereof included in the records.</li> </ul> </li> <li>➤ If contamination or leakage is detected, a rehabilitation plan must be compiled and executed.</li> <li>➤ Product and raw material stocks must be reconciled on a monthly basis.</li> <li>➤ Inform authorities of any leaks or spillages.</li> </ul>

<b>Bio-Physical: Subsurface leaks (lines, tanks)</b>	
<b>TARGETS TO MONITOR COMPLIANCE AND REPORTING THERE ON:</b>	<ul style="list-style-type: none"> <li>➤ Tanks, lines, and fittings to be installed and certified as per relevant standards.</li> <li>➤ Approved Spill Contingency Plan.</li> <li>➤ Record of regular training of staff.</li> <li>➤ Record of regular monitoring.</li> </ul>
<b>RESPONSIBILITY:</b>	Developer, Engineer, ECO.
<b>TIME FRAME:</b>	Current operational phase.

**Table 12: OPERATIONAL PHASE – Bio-Physical: Risks of Fires and Explosions**

<b>Bio-Physical: Risks of Fires and Explosions</b>	
<b>PHASE:</b>	<b>Operational</b>
<b>IMPACT:</b>	<b>ADVERSE</b>
<b>TASK/ENVIRONMENTAL IMPACT:</b>	<b>Risks of Fires and Explosions</b>
<b>OBJECTIVE:</b>	Prevent emergency incidents.
<b>ACTION REQUIRED:</b>	<ul style="list-style-type: none"> <li>➤ The design, and construction of the existing Bulk Emulsion Plant and associated storage infrastructure must conform to the following fire safety standards and legislation:                             <ul style="list-style-type: none"> <li>➤ The manufacturing, storage, handling or processing of a hazardous substance defined in the Hazardous Substances Ordinance, 1974.</li> <li>➤ The Labour Act, 6 of 1992, as amended by the Labour Act, 11 of 2007.</li> <li>➤ Fire Services Act, 99 of 1956.</li> <li>➤ National Building Regulations Act, 103 of 1977 - Fire extinguishers must be easily accessible.</li> <li>➤ Environmental Management Act, 2007 (Government Gazette No. 4878) were promulgated on 6 February 2012.</li> </ul> </li> <li>➤ The following signs must be installed "NO SMOKING", "NO NAKED FLAME", "NO CELLPHONES".</li> <li>➤ Staff must be trained adequately, so as to identify, and minimize the impacts of leaks, and to deal with fires.</li> <li>➤ Overfill and spillages during tanker filling and dispensing, should be prevented by the installation of automatic cut off devices.</li> <li>➤ In the event of the pump dispenser, or the hoses being knocked over, or ripped off, the fuel supply must be cut off by shear off valves.</li> <li>➤ Tanker delivery driver must be present during delivery of product with the emergency cut off switch and a fire extinguisher.</li> <li>➤ Firefighting facilities must conform to the oil industry standard and be regularly inspected.</li> <li>➤ The existing Bulk Emulsion Plant and associated storage infrastructure management must develop an EMERGENCY PLAN. All staff must be adequately trained in the implementation of this plan.</li> </ul>
<b>TARGETS TO MONITOR COMPLIANCE AND REPORTING THERE ON:</b>	<ul style="list-style-type: none"> <li>➤ Approved Emergency Response Plan.</li> <li>➤ Record of regular training of staff.</li> <li>➤ Record of regular monitoring.</li> </ul>
<b>RESPONSIBILITY:</b>	Developer, Engineer, ECO
<b>TIME FRAME:</b>	Current operational phase and if any upgrades or construction take place on the existing Bulk Emulsion Plant and associated Magazine.

**Table 13: OPERATIONAL PHASE – Bio-Physical: Waste Generation and Disposal**

Bio-Physical: Waste Generation and Disposal	
<b>PHASE:</b>	<b>Operational</b>
<b>IMPACT:</b>	<b>ADVERSE</b>
<b>TASK/ENVIRONMENTAL IMPACT:</b>	<b>Waste Generation and Disposal</b>
<b>OBJECTIVE:</b>	Prevent pollution of ground and surface water, and the environment as a whole.
<b>ACTION REQUIRED:</b>	<ul style="list-style-type: none"> <li>➤ Solid waste generated needs to be collected at a central point. This waste will be disposed of as normal domestic waste at the closest municipal waste disposal site. (Arandis)</li> <li>➤ The Waste Management and Pollution Control Act covers all aspects relating to waste management, and must be adhered to at all times. Any other relevant legislation must also be adhered to.</li> <li>➤ Waste management at the existing Bulk Emulsion Plant and associated storage infrastructure shall be strictly controlled and monitored. Only approved waste disposal methods shall be allowed.</li> <li>➤ Management of the existing Bulk Emulsion Plant and associated storage infrastructure shall ensure that all personnel are instructed in the proper disposal of all waste.</li> <li>➤ The management of the existing Bulk Emulsion Plant and associated storage infrastructure is encouraged to participate in a recycling scheme. In this instance separate receptacles for the disposal of these recyclable materials, could be positioned in the waste collection area. Sorting of the waste into organics, recyclable, hazardous, and domestic waste should be undertaken at this point, if possible. Staff training should be undertaken every six months to capacitate staff in terms of waste minimisation, waste disposal, recycling, and other waste issues.</li> <li>➤ NO burning, on-site burying, or dumping of waste shall occur.</li> <li>➤ Hazardous waste will only be produced during emergency situations such as a spill that has been cleaned up with an absorbent material. This will be disposed of at a registered hazardous landfill site.</li> <li>➤ These materials may be removed by an appropriate hazardous waste contractor. Proof of appropriate disposal must be obtained by the contractor.</li> <li>➤ Waste streams generated on the site shall be sent to a waste collection point for sorting and recycling.</li> <li>➤ Bins shall be clearly marked to ease management of waste and recycling.</li> </ul>
<b>TARGETS TO MONITOR COMPLIANCE AND REPORTING THERE ON:</b>	Removal of waste to certified land fill sites.
<b>RESPONSIBILITY:</b>	Developer, Waste removal contractor, Engineer, ECO
<b>TIME FRAME:</b>	Current operational phase.



**6 ADDENDUMS**

**ADDENDUM A: ENVIRONMENTAL INCIDENT LOG**

<b>Date</b>	<b>Incident</b>	<b>Comments</b> (Include any possible explanations for current condition and possible responsible parties. Include photographs, records etc. if available)	<b>Mitigation Measure</b> (Give details and attach documentation as far as possible)	<b>ECO Signature</b>

### ADDENDUM B: COMPLAINTS RECORD SHEET

RECORD OF COMPLAINTS	PAGE	OF	DATE: / /
Complainant:			
Capacity of complainant:			
Complaint recorded by:			
Complaint:			
Corrective measure:			
ECO:	Date:		
Notes by ECO:			

## ADDENDUM C: EMERGENCY RESPONSE

The operation of the existing Bulk Emulsion Plant and associated Magazine requires installation of equipment that will house and contain hazardous substances. At the same time, the transport of dangerous goods will form an integral part of the operation of such a development.

Accidents such as fire, explosion, spills, or release of hazardous materials endanger life, property and the environment.

### Emergency Planning:

- Emergency procedures must be produced and communicated to all the employees on site. This will ensure that accidents are responded to appropriately, and the impacts thereof are minimized. This will also ensure that potential liabilities and damage to life, and the environment are avoided.
- Adequate emergency facilities must be provided for the treatment of any emergency on site.
- The nearest emergency service provider must be identified during all phases of the project, as well as its capacity, and the magnitude of accidents it will be able to handle.
- Emergency contact numbers are to be displayed conspicuously at prominent locations around the construction site and the construction crew camps at all times.
- All employees must receive documented initial training and annual refresher training on the facility's Fire Emergency Plan and Evacuation Plan.

### Management of Fire Risks:

- "No Smoking" and "No Open Flame" signs to be prominently displayed.
- The Risk Controller is responsible for ensuring that fire risks are surveyed, documented, and assessed. Adequate numbers of the correct equipment have been installed.
- Equipment must comply with the Automatic Sprinkler inspection Bureau (ASIB), insurance, and local Fire Department requirements and recommendations. The Risk Controller must monitor and ensure that the standards are complied with.
- Departmental Managers are responsible for ensuring that the requirements of this standard are adhered to, within their respective area of responsibility. They must ensure that equipment is operational, kept clean, not damaged, and is refilled immediately after use.
- The maintenance, repair, or replacement of any item of fire equipment is the responsibility of the Emergency coordinator, in liaison with departmental managers. Risk Controller to assist.

### Incident Reporting:

- The contractor shall take corrective action to mitigate an incident appropriate to the nature, and scale of the incident, immediately after the occurrence thereof.
- Residual environmental damage that remains, after having taken corrective action shall be rehabilitated.
- Change operating procedures where necessary to prevent the recurrence of similar accident.
- Record all incidents on an Environmental Incident Report, within 24 hours of the incident occurring. Additional documents, including photos shall be appended to the incident report to provide a comprehensive record of the incident, and the corrective and preventative action taken. Failure to do so shall result in a penalty.
- All incidents will be investigated in collaboration with the ECO. The focus of these investigations shall not be to apportion blame to specific employees, but to ascertain the root cause of the incident, and to prevent a recurrence of similar incidents.

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## ADDENDUM D: SPILL CONTINGENCY

It is important that the responsible party shall adhere to National emergency response procedures. All officials of the responsible organ are required to adopt these standards that include spill and leak detection and management.

The Material Safety Data Sheets (MSDS) for the material and emergency response will be stored on site. The MSDS indicate the relevant actions to be taken should certain incidents (spills/exposure) occur with raw materials/products.

### 1. Customer Spill and Leak Procedure:

The avoidance of spills and leaks is especially important from a safety and legal point of view. Spills or leaks can be dangerous, as they can cause a fire, or explosion, and may involve high cleaning costs when natural resources are contaminated. Installations are designed and built to limit the possibility of product spills and leaks. Within your premises you are responsible for environmental control and must ensure that pollution near tank systems is avoided at all times. If the Stock Monitoring and Control Procedures are used properly, it will be possible to detect a leak at an early stage. Damage to the environment and cleaning costs will then be minimized.

### 2. Spill and Leak Prevention:

- All personnel who have anything to do with fuel or oil use and tank systems, should know their individual responsibilities for controlling and/or reducing pollution. Employees should be well informed and apply the appropriate techniques.
- All employees involved in spillages and leaks must be informed about the spill/leak emergency response plan and must know how to act in the event of a spillage or leak.
- Equipment installed or used to avoid pollution should be operated efficiently and should be well maintained.
- Spill clean-up equipment, like absorbing fibres (Drizit), squeegees, sandbags, etc. should be located in a clean, dry, and easily accessible storage facility.
- Spill fighting material should be kept near places where spills and leaks are most likely to occur, i.e., near pumps. Customers should have materials like absorbing fibres (Drizit) and sandbags in place.

#### The proposed procedure:

- Place two 2 000-liter waste bins at each area.
- One bin to be used for storage of unused fibres (e.g., unused Drizit), and one bin to be used for receiving the used fibres (e.g., used Drizit).
- Apply the fibres (Drizit) as per the instructions as soon as the spill occurs. Used fibres (Drizit) should be disposed of in an environmentally friendly way, by either burning or dispatching to a class 1 waste dump, using companies such as Waste-tech.
- Ensure that Emergency Spill/Leak Response Plans and the necessary associated equipment are appropriate for your operation, and are the subject of regular exercises, where possible in conjunction with the industry and/or local authorities.
- Provide regular training for key response employees in dealing with emergencies.

### 3. Spill Response:

It is not possible to give detailed recommendations on how to clean up specific kinds of spillages as the method and materials used will depend on the type of product handled, the amount involved,

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the wind, weather, equipment available, etc. However, all spills, minor or major, should be cleaned up as soon as they occur. Whatever the spill, there are five basic steps in dealing with spillages:

- Limit the spillage;
- Contain the spillage;
- Remove the spilled product;
- Final clean-up and soil rehabilitation; and
- Complete spillage report.

Containment of the oil near the point of spillage localizes the problem, minimizes pollution, and makes it easier to remove the pollution. Cleaning of the spill depends on whether there is a major spill, and whether there is a spill on paving or on soil. A major spill is any spill where more than 200 litres of product is involved.

#### 4. **Minor Spills:**

Minor spills (less than 200 litres) should be treated as follows:

Soak up the spill with unused fibres (e.g., unused Drizit) from the waste bin. If the spill has soaked into the ground, the soil should be ploughed to allow aeration. Water can then be used to bring the oil spill to the surface and mopped up immediately with absorbent fibres (Drizit). Collect the used fibres (used Drizit) in the bin for used fibres.

#### 5. **Major Spills:**

Spills less than 200 litres but threatening to streams, rivers, water supply, etc. and incidents of lesser magnitude that have or might attract public, press, or authoritative attention have to be considered as major spills. Major spills of oil or fuel on paving or non-permeable surfaces should be treated as follows:

- Wherever possible, try to limit the spillage by turning off all activities that caused the spill, i.e. closing a valve that has been accidentally opened, plugging the hole where the product is leaking or stop pumping through a ruptured pipeline, hose or overflowing tank.
- Contain spill immediately with absorbing fibres (e.g., Drizit), sandbags, sand or soil.
- Prevent any of the spilt oil substances from entering your drain, storm water systems, septic tanks or from contaminating any natural water systems by forming a barrier from soil, sand, sandbags, or absorbing materials. If any of the spill should enter the storm water system, the flow must be intercepted before it can contaminate other environments.
- If natural water systems are contaminated, use straw bales, absorbent booms and sandbag dams for containment and absorption.
- Mop up as much of the spillage as possible by using absorbing materials.
- Contact your field manager and ask for support.

#### 6. **Major spillage of oil or fuel on soil or permeable surface should be treated as follows:**

- Wherever possible, limit the spillage by turning off all activities that causes the spill. Close all applicable valves, plug the hole where the product is leaking or stop pumping through a ruptured pipeline, hose or overflowing tank.
- Contain the spill and prevent spread of the substance by using sandbags, sand or soil, absorbent booms or planking to divert flow.
- Prevent any of the oil substances from entering your drains, storm water systems or septic tanks, or from contaminating any natural water systems by forming a barrier from soil, sand, sandbags or absorbing materials.

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- Prevent any of the oil substances from contaminating groundwater. It may be necessary to remove contaminated soil for disposal or rehabilitation.
- Remove or mop up as much of the spill as possible, by using spill fighting materials. Water the soil to bring oil to the surface and "mop up" with absorbent material such as Drizit.
- Plough soil for aeration and apply fertilizer/suitable neutralizing chemicals if viable (not detergents).
- Contact your field manager and ask for support.
- All contaminated spill prevention material (such as fibres, Drizit, soils, sandbags etc) have to be disposed of in an environmentally acceptable way, e.g., by using Waste-tech.

### 7. Spill Reporting:

The MEFT, external auditor, fuel suppliers, and local protection services should be notified whenever:

- A spill in excess of 200 litres occurs. For oil spill incidents of lesser magnitude with impact on water sources, rivers, streams, etc., or that are likely to attract public or press attention, the supplier should be notified.
- For every major spill (over 200 litres of product) that occurs, the Incident Report Form must be completed. Investigate spill cause and implement recommendations for preventing re-occurrence.
- If watercourses and ground water are contaminated, then the MEFT and MAWF must be notified.

### 8. Customer Inspection:

Site operating staff should check regularly if the tank system, pipework and equipment are in good condition. For example, a dirty pump or weathered hose or tube might need maintenance. A spillage resulting from malfunctioning equipment might be prevented. Inform fuel supplier when tank systems, pipework, or equipment need maintenance.

### 9. Leak Reporting Procedure:

- Notify the supplier immediately of any suspected leaks in a tank system, or the malfunctioning of equipment.
- Any loss or suspected loss must be confirmed in writing.
- For every suspected leak in above ground or underground tanks the Incident Report Form has to be completed.
- Investigate leak cause (in co-operation with supplier) and implement recommendations for preventing reoccurrence.

## 7 REFERENCES

Cornelissen J. 2012. Scoping and environmental management plan report: BULK MINING EXPLOSIVES (PTY) LTD (NAMIBIA) Erongo region – Namibia. **Project No. 2012/055/G.**

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