



## **ENVIRONMENTAL MANAGEMENT PLAN**

### **RENEWAL APPLICATION OF THE EXISTING EEC: PROPOSED OPERATION OF A TEMPORARY BITUMEN STORAGE AND BITUMEN EMULSION PRODUCTION FACILITY IN ARANDIS, NAMIBIA.**

**April 2024**

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For: Tosas Namibia (Pty) Ltd**



# ENVIRONMENTAL MANAGEMENT PLAN

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## **1. Introduction**

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This EMP addresses the operational environmental criteria for the renewal of the existing ECC issued for the establishment of a temporary bitumen storage and bitumen emulsion production plant on Erf 1122, Arandis Industrial Township, Arandis Namibia.

The existing EEC was issued on 18 May 2021 for a period of 3 years and therefore expires on 18 May 2024.

Due to a postponement of the proposed road construction projects for the Erongo region, the bitumen storage and bitumen emulsion production facility was not established on the identified site. It is foreseen that the road projects might become a reality in the near future and the timely renewal of the existing ECC will ensure that road surfacing material will be available when construction commences.

Bitumen and bitumen emulsions will be stored on the site as to provide the ongoing road construction projects in the Erongo region with the preferred road surfacing material. Bitumen emulsions will also be produced on site by combining bitumen with water based emulsifiers.

Bitumen is not listed as a dangerous good in South Africa, Europe and the Americas. Bitumen and bitumen emulsions are currently transported by road from Tsumeb to the various road projects in the Erongo region. Transporting these products via road is a costly and timeous affair and add additional burden on the already heavily congested road infrastructure. By establishing a bitumen storage depot in Arandis will ensure that road surfacing products are readily available and in close proximity to the road construction projects.

There are no environmental sensitive areas in close proximity to the proposed site and the establishment of temporary bitumen storage and bitumen emulsion production facility in the industrial township of Arandis will have an insignificant impact on the environment as the proposed site has been fully developed with existing infrastructure and connected municipal services in place. Industrial activities border the site on three sides.

## **2. Objective of the Environmental Management Plan**

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The objective of this Environmental Management Plan is to address environmental issues on site during normal operational activities of the temporary bitumen storage and bitumen emulsion production facility on the proposed industrial site.

The EMP will therefore contain management responsibilities and actions including mitigation measures should the proposed facility does impact on the environment in the case of a spill.

### 3. Overview of the Proposed Activity and the Local Context

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#### 3.1 Description of Activity

The bitumen storage and bitumen emulsion production facility is a small operation and designed as a closed unit. The storage and production facility has an actual footprint of approximately 500m<sup>2</sup>. The site surface covers 1100m<sup>2</sup>.

The storage capacity of bitumen and bitumen emulsions are facilitated as follow:

- 1 X 38 Kl bitumen tank (38 tons) – Non-dangerous
- 2 X 23Kl Anionic Emulsion tanks (23 tons) – Non-dangerous
- 2 X 23Kl cationic emulsion tanks (23 tons) – Non-dangerous
- 2 X 23Kl Quick Drying Primer (23 tons) – Non-dangerous and regarded as environmental friendly.
- 1 X 23Kl Bitumen cut-back (23 tons) – Dangerous

**Please take note that the actual volumes of material stored are always less than the storage capacity indicates as the bitumen emulsions are only produced on demand and the finished product is transported from the site to the various construction sites.**

#### **Other liquids stored on site :**

- 20 X 200L Paraffin drums (4 tons) – Dangerous
- 5 X 200L Diesel drums (1 ton) – Dangerous
- 500L Bio-fuel - Dangerous

The total storage of dangerous goods on site will have combined storage capacity of 28Kl (28 tons) although the actual product capacity of product will be less.

#### **Storage facility:**

The storage and production unit is temporary of nature and no new structures will be erected. A make-shift bund, made up of stacked sand bags and lined with high density plastic sheeting has been proven to be effective.

Although bitumen is not listed as a dangerous good, the bitumen storage tank and the emulsion storage tanks will be stored in a single bunded facility. The cut-backs will

be stored separately and the storage tank is facilitated within a steel, non-permeable banded unit. Cut-backs are regarded as dangerous goods and consist of a bitumen/paraffin blend. . The purpose of the non-permeable bund is to contain any spill or leak. The 200L diesel and paraffin drums will also be stored on a non-permeable surface.

**Bitumen emulsion production process:**

Bitumen emulsions will be manufactured as follow:

The production process will occur in the enclosed barn. Bitumen will be heated by a small bio-fuel driven burner fitted to the bitumen storage tank and pumped from the bitumen container stored outside the barn to the emulsion plant inside the barn. The emulsification process, mixing bitumen with the water based emulsifier, takes place and the bitumen emulsion is pumped into the emulsion storage tanks to be dispatched to the road construction projects. It is important to note that bio-fuel will be obtained from Walvis Bay and used as burner fuel. Bio-diesel is a clean burning fuel and the impact on air quality is insignificant.

No bitumen cut backs will be produced on site.

**The project has three phases:**

The establishment phase whereby the storage containers are placed on site, the mobile emulsion plant is placed within the enclosed barn and the facility is connected to the available municipal services

The operational phase whereby bitumen is transported to the site and pumped into the storage tank, the production of the bitumen emulsions and the storage and dispatch of the stored product.

The decommissioning phase where the storage facility will be decommissioned and the site rehabilitated.

### **3.2 Description of Receiving Environment**

The proposed location of the temporary bitumen storage and bitumen emulsion production facility is within the Arandis industrial area.

The proposed facility will blend in with other industrial activities in the area.

The proposed site is ecologically totally disturbed due to previous activity and is fully developed with existing infrastructure in the form of a barn, concrete slabs and a septic tank.

Arandis falls within an arid region with low rainfall and extreme winter and summer temperatures. Natural vegetation is scarce. A single thorn tree grows on the perimeter

of the site as any other natural vegetation was destroyed during the development of the site. No faunal activity was experienced on site. No natural water source, sites with archaeological value were found on the proposed site.

The site falls within the industrial area and noise and air quality levels in the area can be associated with the various activities.

### 3.3 Summary of Predicted Positive and Negative Environmental Impacts

Table 1 provides a summary of the predicted environmental impacts and the proposed mitigation.

**Table 1: Predicted environmental impacts**

<b>Potential impacts:</b>	<b>Significance rating of impacts(Low, Medium, Medium-High, High, Very High):</b>	<b>Significance rating of impacts after mitigation(Low, Medium, Medium-High, High, Very High):</b>
Soil	Low	Low
Waste	Low	Low
Air pollution	Low	Low
Water	Low	Low
Hazardous substance (fuel storage)	Medium	Low
Noise	Low	Low
Fauna and flora	Low	Low
Archaeological	Low	Low
Safety	Medium	Low
Visual	Low	Low
Employment creation	Low positive	Medium Positive
Continuous supply of bitumen for road construction.	High positive	High Positive

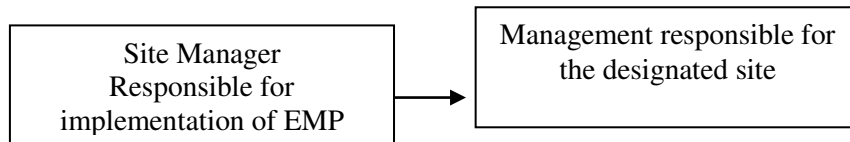
## 4. Environmental Policy

Employees are committed to environmental management principles and to conduct all operations in such a way as to minimize the impact upon the natural environment, to ensure the compliance with all applicable laws and to aim for continuous improvements. This will be achieved through regular training as well as commitment from all employees to understand and apply the conditions of this Environmental Management Plan and their role in it, coupled with effective monitoring and control systems.



## 5. Roles and Responsibilities

The Tosas appointed site manager shall monitor the implementation of this EMP. The effectiveness of all environmental management measures shall be monitored and audited on a monthly basis and reported at the monthly site meeting with the Tosas management.



The Site Manager shall:

- Be responsible for the overall implementation of the EMP in accordance with the legislative requirements.
- Ensure that all third parties who carry out all or part of the Contractor's obligations under the Contract comply with the requirements of this EMP.

Proper monitoring ensures the correct and successful implementation of environmental management measures, to reduce negative impact on environmental conditions.

Monitoring on site should be on a regular basis and be included as a responsibility of the Site Manager.

Monitoring should be focused on on-site conditions during the day-to-day activities and specifically when sub-contractors enter an area for scheduled work or emergency repairs as per the monitoring schedule in Table 2.

The following Environmental Monitoring Programme should be implemented:

**Table 2: Monitoring programme**

ISSUE	FREQUENCIES OF MONITORING	RESPONSIBLE BODY/PERSON
WATER		
Storm water Management.	Weekly in rainy season	Site Manager

Proper functioning of sanitation systems.	Weekly	Site Manager
SOIL		
Surface or gully erosion on site.	Weekly in rainy season	Site Manager
Soil contamination with oils.	Weekly	Site Manager
If small, clean up. If large, appoint a suitable contractor for clean up.	Monthly	Site Manager
Condition of paving in walk or drive areas.	Monthly	Site Manager
AIR		
Emissions Control	Daily inspection	Site Manager
Control of domestic fires.	Daily inspection	Site Manager
Heavy vehicle emission control.	Monthly	Site Manager
Dust control– wetting when required.	Daily inspection	Site Manager
WASTE		
Efficiency of domestic waste collection i.e. number of collection bins and placement and removal by the municipality or contractor.	Two weekly	Site Manager
Prevention of burning of solid/liquid wastes on site.	Weekly	Site Manager
Proper collection, containment and removal of liquid wastes (petroleum, oils, paints, resins & cooking oils) and hazardous wastes	Monthly	Site Manager
The recycling and/or disposal thereof.	Two weekly	Site Manager
The collection and disposal of construction waste (concrete, wood, steel, industrial waste).		
Fauna and Flora		
Weed control.	Monthly	Site Manager
Control of illegal hunting or snaring of game and birds or other wild animals.	Monthly	Site Manager
Monitoring of vegetation establishment.	Monthly	Site Manager
SOCIAL		
Inspect overall appearances of site. (Paint work, cleanliness & housekeeping)	Weekly	Site Manager
SAFETY		
Inspect equipment, safety and warning signage	Weekly	Site Manager

## 6. Legal Requirements

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The Contractor shall agree to comply with the EMP, and ensure compliance with the EMP by any third party appointed by the Contractor to fulfil its obligations within the terms and conditions set out in the Contract.

The implementation of the EMP is subject to the conditions as set by the **Republic of Namibia Ministry of Environment, Forestry and Tourism**.

## 7. Management Actions

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The following actions need to be implemented in order to reduce or mitigate the anticipated impact on environmental conditions resulting from activities undertaken by Tosas Namibia (Pty) Ltd

The following actions relate to the establishment phase of the bitumen storage and bitumen emulsion production facility:

- Flora management
- Archaeological management.

These management actions relate to the operational phase of the bitumen storage and bitumen emulsion production facility:

- Soil Management.
- Waste Management and Control.
- Noise Management.
- Air Quality Management.
- Water Management.
- Management of the storage of a dangerous good
- Fauna.
- Visual.
- Safety.

### 7.1 Establishment phase

The establishment of the bitumen storage and bitumen emulsion production facility will have no impact on the environment as the site has been fully developed and is situated in an industrial township.

## **7.2 Operational Phase**

### **7.2.1 Soil Management**

#### **Objective**

To ensure that no soil erosion and contamination takes place at the site.

#### **Target**

Appropriate mitigation measures must be implemented to ensure that minimal erosion and/or contamination takes place.

#### **Management Actions**

Although the site is located in an arid area with low rainfall, areas of possible erosion should be identified. Should erosion occur, it should immediately be addressed. Erosion could lead to soil stability problems and excessive siltation.

Storage facilities containing dangerous goods will be bunded with a non-permeable surface.

In the case of chemical or liquid spills, the spillages should be assessed and cleaned by using the correct means and as soon as possible.

#### **Responsibility**

See under 5.

#### **Monitoring**

See monitoring schedule under 5.

#### **Implementation**

Throughout the operation of the bitumen storage and emulsion production facility.

### **7.2.2 Waste Management**

#### **Objective**

To properly manage domestic, hazardous and construction waste material on site.

#### **Target**

To initiate processes to minimise and prevent environmental impacts due to solid waste pollution.

#### **Management Actions**

The management and proper handling of solid and liquid waste is essential. This aspect needs proper control and monitoring during the full duration of the existence of the site. Waste is not allowed to be burned on site.

Bitumen storage and emulsion production facilities are associated with bitumen and burner fuel. Excess bitumen based products are usually re-introduced into the production process. Paraffin and/or diesel are used to clean bitumen from surfaces. Cleaning materials containing paraffin or diesel should be contained on site and disposed of at a certified waste disposal site. It is important to control any waste products that might be generated during normal operating activities.

The following steps should be implemented:

### **Solids**

- Accessible waste disposal bins must be distributed over the site and it is suggested that a large waste bin be put out on a central position within the site.
- A skip or similar container should be placed centrally at the storage facility. All waste disposal bins should be emptied in this skip and the skip should be emptied on a weekly basis.
- A maintenance contract must be signed with an approved contractor and all office (paper) and domestic refuse (foodstuffs, plastic, glass etc.) generated at the bitumen storage facility should be removed and disposed of at an approved waste disposal site.
- General hygiene conditions should be kept at the waste bins and skips throughout the period of occupation. It is recommended that the areas be disinfected on a regular basis by using JIK or granular chlorine.

### **Liquid**

Liquid waste, other than sewage waste, must be collected in closed containers. Waste to be collected includes:

- ❖ Mechanical oil,
- ❖ Hydraulic fluid,
- ❖ Grease
- ❖ Used cooking oil,
- ❖ Paint and resins.
- ❖ Emulsions

Used oil must be recycled through a recognized recycler. Hazardous liquid waste must be disposed of at a licensed hazardous waste site.

**Construction waste**

Construction waste (wood, steel and concrete) should be collected and placed in specially designated areas on the site for removal by the contractor to the disposal site. If possible, construction waste should be made available to local communities for usage.

**Responsibility**

See under 5.

**Monitoring**

See monitoring schedule under 5.

**Implementation**

Throughout the operation of the bitumen storage facility.

**7.2.3 Noise Management**

**Objective**

To minimise noise impact from operational activities.

**Targets**

To comply with appropriate noise control legislation.

**Management Actions**

The bitumen storage and emulsion production facility will be operated in an industrial zoned area. The facility will only operate when required and therefore noise mitigation will not be necessary in this regard as the process required in itself generates minimal noise. However, personnel shall equip noisy machinery with standard silencers and take care not to increase ambient noise levels unreasonably bearing in mind the machinery required. Speed restrictions for bitumen transport vehicles will be implemented on site.

Personnel working in conditions with high noise levels shall be equipped with the required safety equipment to reduce the exposure of the individual to the noise. Regular monitoring of workers conditions should be undertaken.

**Responsibility**

See under 5.

### **Monitoring**

See monitoring schedule under 5.

### **Implementation**

Throughout the operation of the bitumen storage and emulsion production facility.

## **7.2.4 Air Quality Management**

### **Objective**

To ensure that dust and production emission generation is kept to a minimum and does not cause a nuisance to the neighbouring properties.

### **Target**

That no dust and production emission nuisance complaints are received from the public.

### **Management Actions**

The following sources of air pollution should be managed:

- Specific care should be taken to prevent the formation of noxious gasses. Bio-fuels for heat generation should be used at all times and the temperature of the burners should be adjusted to ensure optimum combustibility.
- Burner settings must be regularly monitored as to prevent the formation of unwanted odours and gasses.
- Dust formation from moving vehicles should be managed and dust curbing chemicals be sprayed on the dust roads in close proximity to the site. Facemasks should be provided during periods of high wind generation.
- No open fires for domestic purposes should be allowed on site. The provision of electricity, gas or smokeless fuels must also be considered for cooking/heating purposes.
- The correct maintenance of especially heavy vehicles to reduce emissions from exhausts systems.

Odours and offensive emissions should also be limited as not to result in nuisance.

### **Responsibility**

See under 5.

**Monitoring**

See monitoring schedule under 5.

**Implementation**

Throughout the operation of the bitumen storage and emulsion production facility.

**7.2.5 Water Management**

**Objective**

Water should be used with care as to prevent any water pollution as a result of the operation of the bitumen storage and emulsion production facility.

**Target**

Ensure the proper management of surface and ground water.

**Management Actions**

**a. Surface Water**

The bitumen emulsion and cut back storage tanks must be facilitated within the temporary non-permeable bunded storage facility. Proper surface drainage on the site should prevent the formation of stagnant water pools after rain events.

**b. Ground Water**

An existing septic tank system will be used handling all sewage and waste water. The system must be maintained and serviced by a certified service provider. The possibility of ground water pollution through this system is minimal as very little water will be used.

**Responsibility**

See under 5.

**Monitoring**

See monitoring schedule under 5.

**Implementation**

Throughout the operation of the bitumen storage and emulsion production facility.

**7.2.6 Fauna and flora**

**Objective**

To prevent disturbance to the natural flora and fauna in the area.



### **Target**

All undue interference by Contractor staff in the project area with the natural flora and fauna is to be prohibited.

### **Management Actions**

- There is a risk of alien invaders establishing on site during operation of the bitumen storage facility. The alien invaders should be removed as soon as it appears before seeding occurs.
- No hunting of animals should be allowed, under any circumstances.

### **Responsibility**

See under 5.

### **Monitoring**

See monitoring schedule under 5.

### **Implementation**

Throughout the operation of the bitumen storage and emulsion production facility.

## **7.2.7 Use and Storage of Hazardous Materials (Dangerous goods)**

### **Objective**

To ensure that the use of each dangerous good is known to all employees and to ensure that the storage of dangerous goods on site is executed and managed in such a way as that will minimize any danger to humans and prevent adverse impacts on the environment.

### **Targets**

To initiate processes ensuring the safe use and storage of dangerous good on site minimising and preventing adverse impacts on the environment.

### **Management Actions**

#### **A) The dangerous goods to be used and stored on site are:**

##### **1. Bitumen cut-back (23 tons)**

##### *Use of cut-back bitumen:*

Cut-back bitumen are used as pre-coats on road surfaces. By mixing bitumen with kerosene the viscosity of the bitumen is reduced and the product can be sprayed onto the prepared road surface.

##### *Storage facility:*

Cut-back bitumen will be stored in a steel storage tank within a steel bund constructed as a unit. The bund will be able to contain any major spill.

- *Handling of cut-back bitumen at the storage facility:*

Cut back bitumen is not manufactured on site and is therefore transported to the storage area by tankers via the road infrastructure. The cut-back is transferred (pumped) from the transporter to the storage tank on site from where it will be distributed to the construction sites.

2. Paraffin (20 X 200liter drums = 4 tons)

- *Use of paraffin*

Illuminating paraffin is used to decrease the viscosity of the standard cut-backs especially during colder ambient temperatures. (Winter time) By adding small amounts of paraffin to the compounds makes the product more workable and enables the product to be sprayed onto the prepared road surface as a binder prior to the paving of the road surface.

- *Storage facility*

Paraffin will be stored in 200 liter sealed drums on a non-permeable concrete surface in an area that is well ventilated.

- *Handling of paraffin at the storage facility:*

The paraffin will be ordered and stored in the sealed drums on demand and will be transported via the road infrastructure to the site. The paraffin will be decanted from the drums via a mechanical pump. The paraffin will be used as a blend as per product specification.

3. Diesel (5X200 liter drums = 1 ton)

- *Use of diesel:*

Diesel will be used exclusively as fuel for the mobile electricity generators should and when electricity is not available from the municipal electricity source.

- *Storage of diesel:*

Diesel will be stored in sealed 200 liter drums on a non-permeable concrete surface in an area that is well ventilated.

- *Handling of diesel at the storage facility:*

The diesel drums will be stored on a non-permeable concrete surface and extracted from the drums by use of a mechanical pump on demand.

4. Bio-fuels (1X500liter container)

- *Use of bio-fuel:*

Bio-fuel will be sourced from a producer in Swakopmund. The bio-fuel will

be used as fuel for the small heater attached to the exit valve of the bitumen storage tank. Bio-fuel, although expensive, is preferred due to its clean burning, non-odorous character.

- *Storage of bio-fuel:*

The bio-fuel will be stored in a container specified for the product or in sealed steel drums on a non-permeable surface in a well ventilated area.

- *Handling of bio-fuel at the storage facility:*

The bio-fuel will be used exclusively as fuel for the small burner attached to the bitumen tank's exit valve. Small quantities of biofuel will be extracted from the storage container on demand via a mechanical pump.

Penetration grade bitumen stored on site and used in the emulsion production process is not listed as a dangerous good. The bitumen will be stored in steel tanks within a bunded, non-permeable facility to ensure containment of any possible spillage.

## **B) Safety and Health**

Management actions pertaining to safety and health issues for the storage of cut-back bitumen, paraffin, diesel and bio-fuels on site are very much alike as with other petroleum based products.

### **Objective**

To ensure the safety and health of all employees working on site.

### **Targets**

By minimizing injuries and/or emergencies in the workplace through proper training of each individual in respect of responsibilities, safety and health and best practise.

### **Personal protective equipment**

Personal protective equipment must be worn as required for each job in all operations where there is an exposure to hazardous conditions. This exposure is determined by a personal protective equipment hazard assessment of the workplace by the supervisor. Equipment selection and wearing requirements are determined from this assessment.

Safety glasses, goggles, or face shields will be worn in those areas where there is a reasonable probability of injury to the eye from flying particles, molten metal, chemicals/acids/caustics, or light radiation, or other eye hazards.

Head protection (hard hats) will be worn form protection from falling objects or work near energized electrical contact.

Foot protection will be worn where there is danger to the foot from failing/rolling objects, objects piercing the sole or electrical hazards.

Hand protection is required when hands are exposed to severe cuts/abrasions, chemical/thermal burns, or chemical absorption.

Appropriate gloves, aprons, goggles, and boots will be used when necessary for protection against acids and other chemicals which could injure employees.

Respiratory equipment in many cases is needed for protection against toxic and hazardous fumes/dusts. Supervisors must verify which equipment meets the need for breathing safety. Only SABS 0338 approved equipment will be used.

The use of safety harnesses, and lanyards are required when working more than ten feet above a floor or ground level and there are no guard rails or other form of fall protection, and on certain suspended scaffolds. Each employee will be on a separate safety line, and this line will be adjusted so that the employee cannot fall more than six feet.

### **C) Storage facilities (Bunds and non-permeable surfaces)**

Petrochemicals, oils and identified hazardous substances shall only be stored under controlled conditions. All hazardous materials will be stored in a secured, appointed area that is fenced and has restricted entry.

In addition, hazard signs indicating the nature of the stored materials shall be clearly displayed on the storage facility or containment structure. The Site Manager will compile details of the preventative measures that are proposed to be installed in order to mitigate against pollution of the surrounding environment from leaks or spillages. The preferred facility shall be a bunded area equipped with a non-permeable surface. The proposals shall also indicate the emergency procedures to be implemented in the event of misuse or spillage of substances that will negatively impact on an individual or the environment. Decanting of hazardous liquids during delivery must be closely monitored.

The following shall be adhered to:

#### **a. General**

A bund provides containment for any loss of chemical / oil from the storage tank and associated pipe work. It should consist of a base and surrounding walls. In the case of a temporary bund the walling will be formed by tightly stacking sand filled bags. The bund will be lined with high density plastic sheeting. Ideally, pipe work should not pass through the bund wall. However, if this is unavoidable, the material used for sealing around the pipe must be resistant to attack by the substance stored and the overall integrity of the bund should not be compromised.

b. Rainwater

Although rain water should not be a problem due to the low rainfall, the water should be cleared from the bund. Should contamination of the water be suspected, the water should be treated before being disposed of.

c. Capacity

There are two acceptable methods for calculating bund capacity. Normally, the capacity of the bund has been calculated to give containment for 110% of the total volume for single tanks and hydraulically linked tanks. Where two or more tanks are installed within the same bund, 110% of the largest tank or 25% of the total capacity of all tanks, whichever is the greater, is used.

d. Maintenance of storage tanks

Bunds, tanks and pipe work should be inspected regularly for signs of damage and should be checked at least weekly. Any accumulated rainwater, oil or debris should be removed and any defects to the bund wall or lining should be repaired promptly using the appropriate technique to ensure the bund retains its integrity. Damage to the tank or pipe work should be dealt with immediately.

e. Decanting of hazardous liquids

Drip trays should be available at all decanting points.

**Responsibility**

See under 5.

**Monitoring**

See monitoring schedule under 5.

**Implementation**

Throughout the operation of the bitumen storage and emulsion production facility.

### 7.2.8. Visual

#### **Objective**

To ensure that the bitumen storage and emulsion production facility does not negatively impact on the visual amenity of the surrounding area.

#### **Target**

The effectively mitigate the visual impact by the bitumen storage and emulsion production facility.

#### **Method statements**

The bitumen storage tanks will be visible to neighbouring activity and road users. The bitumen production plant will be enclosed and not visible. The bitumen and emulsion storage tanks are well maintained and will not cause any visual nuisance.

#### **Responsibility**

See under 5.

#### **Monitoring**

See monitoring schedule under 5.

#### **Implementation**

Throughout the operation of the bitumen storage and emulsion production facility.

### 7.2.9 Mitigation measures

Mitigation measures must be in place in case of emergencies, fires and spills

#### **Emergencies**

##### ***Basic first aid measures***

##### **-Inhalation.**

Move to fresh air in case of accidental inhalation of vapours.

Keep respiratory tract clear. Keep patient warm and at rest.

##### **-Skin contact**

Hot product can cause thermal burns.

Take off contaminated clothing and shoes immediately.

Wash off with soap and water.

Cool melted product on skin with plenty of water.

Do not remove solidified product.

Burns must be treated by a physician.

**-Eye contact**

If hot product is splashed into eyes flush with water and get immediate attention.

**-Ingestion.**

Not a likely route of exposure.

If swallowed, DO NOT induce vomiting. If accidentally swallowed obtain immediate medical attention .

**Fire**

***Basic firefighting measures***

**-Suitable extinguishing media**

Foam, Carbon dioxide (CO<sub>2</sub>), Dry sodium carbonate

**-Specific hazards during firefighting**

Burning produces irritant fumes. Flammable liquid

**-Special protective equipment for firefighters**

In the event of fire, wear self-contained breathing apparatus.

Use personal protective equipment

Fire-fighters to wear self-contained breathing apparatus and suitable protective clothing if risk of exposure to vapour or products of combustion. Clothing for fire-fighters including helmets, protective boots and gloves.

**Fire Response**

Fire equipment should always be close at hand and all staff should be aware of where the equipment is and how to use it.

Suitable extinguishing media: Alcohol resistant foam, dry agent (dry chemical powder or carbon dioxide). Alcohol resistant foam is the preferred fire-fighting medium but, if it is not available, normal protein foam can be used.

Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.

***Accidental spill measures***

Small spills: Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Use spark-proof tools (non-spark tool) and explosion-proof equipment. Dispose of via a licensed waste disposal contractor.

Large spills: Stop leak if without risk. Move containers from spill area. Approach the release from upwind. Prevent entry into sewers, water courses or confined areas.

Wash spillages into an effluent treatment plant or proceed as follows: Contain and collect spillage with non-combustible, absorbent material e.g. absorbents from spill kit, and place in container for disposal according to local regulations. Use spark-proof tools and explosion-proof equipment. Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilt product.

**Accidental release measures**

No action shall be taken involving any personal risk or without suitable training.

Steps to be followed:

- | Evacuate surrounding areas.
- | Keep unnecessary and unprotected personnel from entering.
- | Do not touch or walk through spilt material.
- | Shut off all ignition sources.
- | Avoid breathing vapour or mist.
- | Provide adequate ventilation.
- | Wear appropriate respirator when ventilation is inadequate.
- | Wear appropriate personal protective equipment.

**-Environmental precautions**

- Prevent product from entering drains.
- Should not be released into the environment.
- Do not allow material to contaminate ground water system.
- Do not flush into surface water or sanitary sewer system.
- Additional advice. Never return spills in original containers for re-use.

**Responsibility**

See under 5.

**Monitoring**

See monitoring schedule under 5.

**Implementation**



Throughout the operation of the bitumen storage and emulsion production facility

## **8. Rehabilitation after Closure**

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After the decommissioning of the bitumen storage facility the site needs to be rehabilitated. Where rehabilitation is required, the following steps are essential:

- Weed control should form part of the exercise.
- The site must be thoroughly cleaned up from pollutants and debris.

**If the landowner requests that facilities are not removed and the area not rehabilitated, this must be done in writing.**

## **9. Reporting**

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### **9.1 Good Housekeeping**

Good “housekeeping” practices should be ongoing during the operation of the bitumen storage facility. This will help avoid disputes on responsibility and allow for the smooth running of the contract as a whole. Good housekeeping extends beyond the wise practice of safe production but care for and preservation of the environment within which the site is situated.

### **9.2 Record Keeping**

The Site Manager shall ensure that a filing system identifying all documentation related to the EMP is established.

A list of reports likely to be generated during the project is set out below:

- Environmental Management Plan.
- Environmental Clearance Certificate.
- All communications detailing changes of design/scope that may have environmental implications.
- Monthly site monitoring reports.
- Occupational Health and Safety reports.
- Complaints register.
- Training manual and attendance registers.
- Incident and accident reports.
- Emergency preparedness and response plans.
- Permits and legal documents,
- Disciplinary procedures.
- Monthly site meeting minutes during operation.

- Records of transport (Cars, trucks)
- Waste disposal records

### **9.3 Environmental Document Control**

The Site Manager shall be responsible for establishing a procedure for environmental document control.

The Contractor shall ensure that documents are periodically reviewed and revised, where necessary, and that current versions are available at all locations where operations essential to the functioning of the EMP are performed.

### **9.4 Environment and Health Training and Awareness**

The Site Manager shall ensure that its employees and any third party who carries out all or part of the Contractor's obligations under the Contract are adequately trained with regard to the implementation of the EMP, as well as regarding environmental legal requirements and obligations. All employees will have an induction presentation on environmental awareness. Where possible, the presentation needs to be conducted in the language of the employees. The environmental training should, as a minimum, include the following:

- Understanding, and importance of, and the reasons why, the environment must be protected.
- Ways to minimise the environmental impacts.
- Requirements of the EMP.
- Prevention and handling of fire.
- Emergency procedures.
- The significant environmental impacts, actual or potential, as a result of their work activities.
- The environmental benefits of improved personal performance.
- The importance of not littering.
- The need to use water sparingly.
- Details regarding archaeological and/or historical sites that may be unearthed during construction and the procedures to be followed should these be encountered.

All works which may pose a hazard to humans and animals are to be adequately protected and appropriate warning signs erected.

Adequate and operational fire safety equipment should be available at all times. Personnel on-site shall be trained how to operate fire extinguishers etc.

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## 10. Emergency Management

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Accidents that result as a result of a major chemical or hazardous substance spill, must be reported to the local Environmental Authority within 24 hours after the incident.

In the case of a bitumen/fuel spillage or tank failure the following steps should be followed:

- The heating source of the bitumen should immediately be terminated,
- The spill should immediately be contained to prevent excessive spreading of the bitumen,
- Any recoverable material should immediately be removed and placed in separate containers,
- The spilled bitumen should be collected and contained for recycling,

Any chemical or hazardous substance spill should be treated with the highest urgency and importance. A qualified contractor should be contacted to assist if the Tosas emergency and maintenance teams cannot cope with cleanup of the area.

In all cases the following criteria should be followed:

- Containment of substance,
- Prevention of contamination by substance,
- Recovery of substance,
- Recycling of substance,
- Removal of substance,
- Rehabilitation of area.

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## 11. Incident Reporting and Remedy

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If a leakage or spillage of hazardous substances occurs on-site, the local emergency services must be immediately notified of the incident. The following information must be provided:

- The location.
- The nature of the load.
- The status at the site of the incident itself

Written records must be kept on the corrective and remedial measures decided upon and the progress achieved therewith over time. Such progress reporting is important

for monitoring and auditing purposes. The written reports may be used for training purposes in an effort to prevent similar future occurrences.

## **12. Checking and Corrective Action**

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The Site Manager will audit the effective implementation of the EMP monthly. Auditing will serve to assess the following:

- The implementation of the EMP in full;
- The assessment of the effectiveness of mitigation measures;
- The implementation of recommended corrective actions;
- The effectiveness of communication and record keeping.

The records of audits must be kept for submission to and for review by Tosas management.

### **12.1 Non-Compliance and Remedial Action**

The Site Manager will monitor the ongoing conformance or lack thereof by employees. In any non-conformance report (“NCR”) the Site Manager must also stipulate the recommended corrective action that must be taken to remedy such non-conformance. The employee have not complied with the conditions of the EMP if, *inter alia*:

- There is evidence of contravention of the EMP specifications within the boundaries of the site and haul/access roads.
- There is contravention of the EMP specifications that relate to activities outside the boundaries of the site.
- Environmental damage ensues due to negligence.
- The employee fails to comply with corrective or other instructions issued by the Site Manager within a specific time period.
- Littering by the employee on-site.
- Lighting of illegal fires by the employee on-site.
- Persistent or un-repaired oil leaks from the Contractor’s vehicles.
- Excess dust or excess noise emanating from site.
- Possession or use of intoxicating substances by the employee/Contractor on-site.
- Any Contractor vehicles being driven in excess of designated speed limits.
- Removal and/or damage by the Contractor/employee to fauna, flora or cultural or heritage objects on-site.
- Urination and defecation by Contractor staff /employees anywhere except in designated areas.

## **12.2 Remedial Action**

Remedial action shall be managed by the Site Manager in two categories:

### *a. Specified Corrective Action*

This constitutes remedial or mitigatory measures specified by the Site Manager in any NCR, coupled with a specified time limit within which the specified corrective action must have been completed, at the expense of the party identified in the NCR as being responsible for carrying out the said work.

The Site Manager may on request and in his/her sole discretion, grant an extension of time for the implementation of such corrective action. If the said corrective action has not been carried out within the period stipulated by the NCR, the non-conformance in question shall be dealt with as per b. hereunder.

### *b. Formal Remedial Work*

Where a non-conformance has resulted in environmental damage to the site which cannot be rectified as per the Site Manager's specified corrective action the Site Manager shall convene a meeting with Tosas Management and the property owner, at which appropriate remedial work/mitigatory measures shall be discussed and agreed, and failing agreement within 10 days, such dispute shall be resolved in accordance with the resolution provisions contained in the contract.

## **13. Record Keeping**

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The Site Manager shall issue a monthly compliance audit report and copies thereof shall similarly be furnished to Management simultaneously with such filing.

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