EXM ENVIRONMENTAL SCIENCE

# SISHEN IRON ORE COMPANY (PTY) LTD

## APPLICATION FOR ENVIRONMENTAL AUTHORISATION

## WASTE TYRE MANAGEMENT FACILITY NEAR KATHU IN THE NORTHERN CAPE PROVINCE

**DENC REF:** NC/BA/06/JTG/GAM/KAT1/2022

Draft Environmental Management Programme (EMPr)

March 2022

Revision 00

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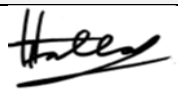
| Trevor Hallatt | EXM Environmental Advisory (Pty) Ltd<br>Senior Environmental Scientist |  | 2022/03/18 |
| Vivienne Vorster | EXM Environmental Advisory (Pty) Ltd<br>Senior Environmental Scientist |  | 2022/03/18 |

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# 1. DETAILS OF THE EAP

## 1.1 Details of EAP who prepared the report

| | |
|---|---|
| **Name:** | Trevor Hallatt |
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| **Position** | Senior Environmental Scientist |
| **Qualifications:** | Masters in Environmental Management (*cum laude*)<br>B.Sc. Honours in Environmental Management (*cum laude & top student* ) |
| **Experience:** | 11 Years |
| **Professional Registration:** | EAPASA registered<br>SACNASP registered |

| | |
|---|---|
| **Name:** | Vivienne Vorster |
| **Cell:** | 082 449 5356 |
| **Email:** | vivienne@exm.co.za |
| **Position** | Senior Environmental Scientist |
| **Qualifications:** | BA Hons Environmental Management |
| **Experience:** | 15 Years |
| **Professional Registration:** | SACNASP registered<br>EAPASA in process |

## 1.2 Declaration of Independence

The undersigned declare that this report represents an independent and objective assessment of the risks associated with the proposed development.

| Name | Affiliation | Designation | Signature | Date |
|---|---|---|---|---|
| Trevor Hallatt | EXM Environmental Advisory (Pty) Ltd | EAP<br>Pr.Sci.Nat. |  | 2022/03/18 |
| Vivienne Voster | | Pr.Sci.Nat. |  | 2022/03/18 |

## 2. DESCRIPTION OF THE ASPECTS OF THE ACTIVITY

### 2.1 Background of proposed faciality

Sishen Iron Ore Company (Pty) Ltd ("SIOC") ) proposes to develop a facility for the storage and mechanical downsizing (cutting, shredding and granulation) of waste tyres on the Remaining Extent of farm Sekgame 461 Kuruman RD. The site is located 1.7km south-west of the centre of Kathu in the Gamagara Local Municipality, adjacent (south) to an existing industrial area. The closest residential area is located 460m north-east of the site.

Waste tyres will be transported to the site and downsized to approximately 30-60mm, or smaller. The product will be transported to offsite facilities for further processing. No further processing (recycling or recovery) of the processed material will be undertaken and therefore no Waste Management Licence ("WML") is required in terms of the National Environmental Management: Waste Act (No. 59 of 2008).

The proposed facility including the associated infrastructure will require the clearance of indigenous vegetation of approximately 8.4 hectares and will entail the development of the following structures/infrastructure.

- A building which contains equipment for shredding/cutting of waste tyres;
- Security office;
- Staff building with cafeteria;
- Admin and finance building;
- Diesel storage area (approximately 10m$^3$);
- Refuelling station;
- Small water tank for firefighting purposes;
- Waste tyre storage area;
- Product storage area;
- Workshop and parking areas; and
- Perimeter fence.

Water (potable as well as operational) will be obtained from an existing municipal connection and the site will also connect to the municipal sewer system. Electricity will also be obtained from a municipal connection.

### 2.2 Process description

#### 2.2.1 Collection and transportation

The tyres will be collected from suppliers and transported to the proposed tyre management facility for processing.

### 2.2.2 Sorting and storage

The tyres received at the site will be sorted and placed in different categories at a dedicated storage area according to size and composition. From the storage stockpile, tyres will be transferred via a conveyor to the shredder.

### 2.2.3 Shredding

Tyres will then be inserted into the primary shredder, which will shred the tyre into small pieces of approximately 30-60mm. Depending on the client specifications, the size of the shredded pieces will then be further reduced by a granulator.

### 2.2.4 Steel removal

During the shredding process, steel contained in each tyre will be recovered for re-use/recycling off site. The steel wires will be removed by using powerful magnets. Recent development in technology entails the utilisation of "debeading" machines that can remove the steel before the shredding process. This preserves the shape and integrity of the steel as it does not pass through a shredder. The steel free tyre granules will then be stored in large hoppers in preparation for the next stage.

### 2.2.5 Granulation

Depending on the product size required by the respective clients, the granules can further be cut by tips and blades. Rubber products produced include the following

- Shreds (used in matting, sport surfaces, turf and playgrounds);
- Granules and chips (used in athletic tracks, playgrounds, horse arenas and asphalt);
- Crumbs and powders (used in new tyres, brake pads, road sealing, adhesives; and paints); and
- Large shredded tyre chips (used in civil engineering and fuel derivatives).

## 2.3 Services

The findings from the Civil Engineering Report undertaken by iX Engineers (2021) indicated that the tyre management facility can be accommodated within the existing bulk infrastructure for civil services. The electrical services are however at capacity and the existing mini substation will require an additional 60 Amp pole to supply the facility.

The access roads to the proposed site are existing municipal tarred roads with traffic signs in place. Access to the site will be obtained from Mangaan Street which can be extended to provide an entry point for the site.

There is an existing 160mm diameter municipal sewer line running along the north-western boundary. A new municipal connection to the existing line will be required for the site.

A 110mm diameter raw water supply pipeline and a 75mm domestic water pipeline of same type are located within the Mangaan Street reserve opposite the south-western boundary of the site. An extension of the existing water reticulation within Mangaan Street will need to be undertaken to provide both raw and domestic water to the site. An existing electricity supply line adjacent to the site will be used for electricity supply.

Services required are therefore available in close proximity to the site and they will not be impacted on by the proposed tyre management facility.

The requirement to describe the aspects of the activity that are covered by the draft environmental impact assessment report are already included in PART A, Section 4, as required.

## 3. COMPOSITE MAP

A map which superimposes the proposed activity, its associated structures, and infrastructure on the environmental sensitivities is provided as Figure 3-1 below.

## 4. IMPACT MANAGEMENT OBJECTIVES

### 4.1 Proposed management objectives and the impact management outcomes for inclusion in the EMPr

- Implementation of adequately management of potential fires must be implemented.
- The construction footprint must be clearly demarcated and activities must be restricted to the predetermined footprint.
- Adequate containment measures for hazardous substances must be implemented to prevent soil and surface water contamination.
- Implement a system for effective waste management.
- Implement a stormwater management plan which addresses potential erosion and spill management.
- Sufficient resources must be implemented for the management of fires on the property.

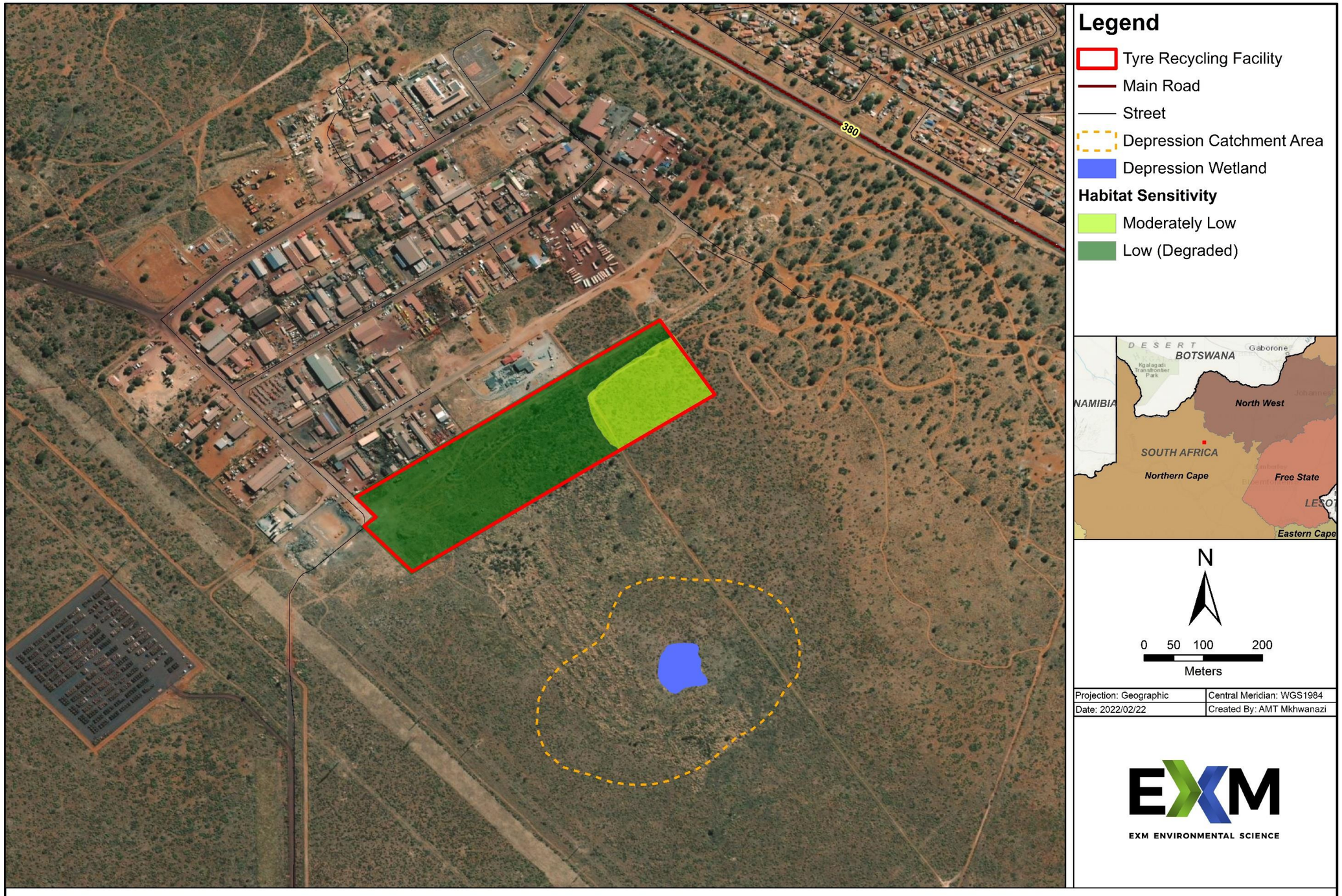


**FIGURE 4-1: ENVIRONMENTAL SENSITIVITY MAP**

## 5. ENVIRONMENTAL MANAGEMENT PROGRAMME

The Table below contain the measures that must be implemented to prevent/minimise potential environmental impacts at the proposed Kathu Waste Tyre Management Facility during the different life cycles of the facility.

### TABLE 5-1: ENVIRONMENTAL MANAGEMENT PROGRAMME

| Aspect (activities, product, services) | Impact | Objectives and management outcome | Lice cycle phase | Impact management actions | Compliance with Standards/Acts | Monitoring required |
|---|---|---|---|---|---|---|
| **Biodiversity** | | | | | | |
| Removal of topsoil and vegetation during infrastructure development. | Impacts on floral habitat and Species of Conservation Concern | Minimise disturbance to natural habitat | Planning<br>Construction | Obtain permits prior to the removal of protected trees.<br>SIOC to integrate the removal of protected trees in the current strategy to plant saplings on designated locations.<br>Vegetation clearance only allowed in demarcated and approved footprints. Footprint size must restricted to what is absolutely necessary.<br>Informal fires by any personnel will be prohibited.<br>Landscaping should preferably be done with indigenous species.<br>Restrict movement of vehicle and people to designated roads and footprints. | National Environmental Management Biodiversity Act<br>Conservation of Agricultural Resources Act<br>National Forests Act | None |

| Aspect (activities, product, services) | Impact | Objectives and management outcome | Lice cycle phase | Impact management actions | Compliance with Standards/Acts | Monitoring required |
|---|---|---|---|---|---|---|
| Disturbance/destruction of habitat | Impacts on faunal habitat | Minimise disturbance to natural habitat. | Planning, construction and operational | No vehicles are allowed to drive in the adjacent natural areas unless on an existing road. | National Environmental Management Biodiversity Act | None |
| | | | | If detected, small faunal species such as reptiles and scorpions that are found during site clearance must be safely moved to an area of similar habitat outside of the disturbance footprint. | | |
| | | | | Hunting or trapping of faunal species must be prohibited and must be communicated to all construction personnel. | | |
| | | | | Vegetation clearance only allowed in demarcated and approved footprints. | | |
| Disturbance caused by development | Encroachment of Alien Invasive Plants in natural areas – outcompete natural species. Transform habitats | Prioritise areas on and adjacent to the site.<br><br>Prevent regrowth in controlled areas. | Construction and operations | Invader plant species must be removed during construction. | National Environmental Management Biodiversity Act<br><br>Conservation of Agricultural Resources Act | Monitor sites that have been cleared to ensure regrowth does not occur |
| | | | | The fire management buffer areas and other areas not used for the establishment of infrastructure must be kept clear of Alien Invasive Plants (AIP) during operations. | | |
| | | | | AIP control should be implemented by a qualified professional. No chemical control of AIPs to occur without a certified professional. | | |

| Aspect (activities, product, services) | Impact | Objectives and management outcome | Lice cycle phase | Impact management actions | Compliance with Standards/Acts | Monitoring required |
|---|---|---|---|---|---|---|
| | | | | Conduct follow up inspections of areas during the growing season to control any new growth. | | |
| **Soil and stormwater contamination** | | | | | | |
| Management of hazardous substances<br>Runoff from dirty water areas.<br>Refuelling of vehicles and machinery. | Contamination of stormwater and soil. | Precent spillages of hazardous substances.<br><br>Manage dirty water infrastructure to prevent spillages. | Construction and operations | Ensure that spill kits are available at the site during construction and operations. Spills must be cleaned timeously. | National Water Act | None |
| | | | | Large spills must be dealt with as incidents. | | |
| | | | | Remove any contaminated soil and dispose of at an appropriately licenced landfill site or to the Sishen bioremediation facility for treatment | | |
| | | | | Provide bunding for the storage of bulk hazardous substances containers/tanks. | | |
| | | | | Maintenance to be conducted in a roofed building or in an area with appropriate containment measures in place. | | |
| | | | | Appropriate containment measures must be implemented at the refuelling area. | | |
| **Wetland pans** | | | | | | |
| Runoff from the site | | | | Adequate stormwater management measures must | General Authorisation | None |

| Aspect (activities, product, services) | Impact | Objectives and management outcome | Lice cycle phase | Impact management actions | Compliance with Standards/Acts | Monitoring required |
|---|---|---|---|---|---|---|
| | Downstream impact on wetland pan | Prevent impact on wetland pan | Construction and operations | be implemented to ensure no contaminated water is released/directed into the downgradient areas where it could potentially impact the wetland. | | |
| | | | | Separation of clean and dirty water within tyre management facility. | | |
| **Soil erosion and compaction** | | | | | | |
| Stripping of topsoil<br><br>Incorrect storage of topsoil | Incorrect stripping – loss of topsoil<br><br>Deterioration of soil stockpiles.<br><br>Pollution of soil resources<br><br>Compaction | Minimise topsoil stripping<br><br>Optimal storage of topsoil for rehabilitation purposes.<br><br>Prevent soil contamination | Construction.<br><br>Operations.<br><br>Closure. | Rehabilitate all areas not used for the establishment of infrastructure after construction has been completed, if required. | Anglo procedures and standards | Monitoring of topsoil stockpiles |
| | | | | Implement a Stormwater Management Plan (SWMP). System to maintained, i.e. cleaning of culverts. | | |
| | | | | Stripping of topsoil only allowed in demarcated and approved footprints. | | |
| | | | | All available topsoil will be stripped from the footprint area and stockpiled for use during rehabilitation after construction has been completed | | |
| | | | | Soil stockpiles should not exceed 2m. Protect soil stockpiles from erosion, if needed. | | |
| | | | | Install dissipating structures (such as gabions) at stormwater discharge points, | | |

| Aspect (activities, product, services) | Impact | Objectives and management outcome | Lice cycle phase | Impact management actions | Compliance with Standards/Acts | Monitoring required |
|---|---|---|---|---|---|---|
| | | | | where necessary or where erosion is evident. | | |
| **Air Quality and Noise Management** | | | | | | |
| Area clearance – soil disturbance.<br><br>Earth works.<br><br>Vehicles travelling on unpaved roads.<br><br>Operating equipment | Nuisance conditions.<br><br>Health risks | Minimise atmospheric emissions | Construction, operations and closure. | Implement strict speed limits on all roads.<br>Implement dust suppression on roads and other unsurfaced areas<br>Implement a complaints management procedure.<br>Dust suppression on exposed areas during construction activities.<br>Maintenance of processing equipment according to manufacturer's specifications.<br>Dust fall monitoring during construction according to the National Dust Control Regulations. | National Dust Control Regulations.<br><br>National Environmental Management Air Quality Act | Dust fall monitoring |
| **Water Use** | | | | | | |
| Water Use | Depletion of water resources | Optimise and reduce water use | Construction and operations | Awareness training.<br>Water leaks must be reported and repaired timeously. | Water Use Licence/General Authorisation | Monitor consumption and update water balance |
| **Electricity Usage** | | | | | | |
| Electricity Usage | Contribution to green house gas emissions.<br><br>Dependency on non-renewable resources | Optimise and reduce water use | Operational phase | Investigate the use of energy efficient technology/ techniques, i.e. use of natural lighting, energy efficient bulbs, solar lights/cameras.<br>Awareness training regarding electricity consumption. | N/A | Monitor electricity consumption |

| Aspect (activities, product, services) | Impact | Objectives and management outcome | Lice cycle phase | Impact management actions | Compliance with Standards/Acts | Monitoring required |
|---|---|---|---|---|---|---|
| **Fire management** | | | | | | |
| Intentional fire starting<br><br>Storage of waste tyres<br><br>Storage of flammable substances | Impact on neighbouring areas | Efficient fire fighting | Construction and operations | Prohibit fires on site during construction and operations. | Waste Tyre Regulations (2017). | Monitor fire breaks |
| | | | | A waste tyre stockpile abatement plan must be compiled in accordance with the Waste Tyre Regulations (2017). | | |
| | | | | Fire fighting equipment must be available at strategic locations (including the refuelling area and tyre stockpiles) and must be maintained according to a strict schedule. | | |
| | | | | Adequate fire fighting measures must be implemented at waste tyre storage area. | | |
| | | | | Emergency contact details must be displayed at strategic location and communicated to staff members. | | |
| | | | | The buffer areas/fire breaks must be maintained and kept clear of debris and not be overgrown by vegetation. | | |
| | | | | An allocated staff member (such as a security guard) which is always on site must be trained in fire management. | | |
| | | | | All control measures and equipment detailed in the fire abatement plan must be | | |

| Aspect (activities, product, services) | Impact | Objectives and management outcome | Lice cycle phase | Impact management actions | Compliance with Standards/Acts | Monitoring required |
|---|---|---|---|---|---|---|
| | | | | implemented, adhered to and regularly inspected. | | |
| **Sewage management** | | | | | | |
| Sewage spillages | Nuisance conditions | Prevent nuisance conditions | Construction | Temporary toilets during construction must be emptied on a regular basis as required.<br>Good housekeeping practices must be implemented at the temporary toilets to prevent nuisance conditions. | None | None |
| **Waste management** | | | | | | |
| Generation and management of hazardous waste<br><br>Spillages | Water and soil pollution | Implement efficient waste management practices<br><br>Optimise recycling potential<br><br>Follow waste hierarchy approach | Construction, operations and closure. | Awareness training should be undertaken regarding waste management.<br>Integrate waste management with Sishen mine, if practicable.<br>No mixing of general and hazardous waste allowed.<br>Provide designated labelled bins and skips at strategic positions for the placement of general and hazardous waste separately. These containers must not be overfilled<br>All hydrocarbon contaminated material (rags, PPE, containers etc.) must be placed in a labelled skip and disposed at a licenced facility.<br>Waste batteries to be provided to the suppliers for recycling | National Environmental Management Waste Act and regulations/norms and standards | Implement a waste manifest system |

| Aspect (activities, product, services) | Impact | Objectives and management outcome | Lice cycle phase | Impact management actions | Compliance with Standards/Acts | Monitoring required |
|---|---|---|---|---|---|---|
| | | | | Fluorescent tubes must be provided to a licenced facility for treatment. Fluorescent tubes must be stored in appropriate containers. | | |
| | | | | Implement good housekeeping practices at waste storage area | | |
| | | | | Implement a waste manifest system for the management of hazardous waste | | |
| | | | | Implement the requirements of the Norms and Standards for the Storage and Mechanical Processing of Waste – related to the storage and processing of waste tyres | | |
| | | | | Storage of gasses on site must be undertaken in accordance with Health and Safety Legislation. | | |
| | | | | Areas for the storage of gas must have a secure storage area with access control, must be stored on an impervious surface, must be within a closed roof system and the storage area must be well ventilated. | | |
| Generation and management of general waste<br><br>Wind blown litter | Water and soil pollution | Implement efficient waste management practices | Construction, operations and closure. | Implement a system for the separation and recycling of waste if practicable | | Implement a waste manifest system |

| Aspect (activities, product, services) | Impact | Objectives and management outcome | Lice cycle phase | Impact management actions | Compliance with Standards/Acts | Monitoring required |
|---|---|---|---|---|---|---|
| | Nuisance conditions - littering | Optimise recycling potential, where practicable | | No littering must be allowed on site. | National Environmental Management Waste Act and regulations/norms and standards | |
| **Cultural Heritage** | | | | | | |
| Footprint of activities | Impact on heritage resources | Minimise impact on heritage resources | Construction and operations | Chance find procedure, which outlines actions to be taken if heritage resources or palaeontological artefacts are encountered during project construction, to be drawn up. | National Heritage Act | As per CHMP |
| **Social** | | | | | | |
| Local Procurement and Employment | Procurement of services from local businesses<br><br>Employment of local community members. | Maximise opportunities for local businesses | Construction and Operations. | Procurement procedures to identify opportunities for local services providers.<br><br>Local employment in terms of skills availability | None | None |

## 6. MECHANISMS FOR MONITORING COMPLIANCE

A monitoring programme assists in determining whether mitigation and management measures are being implemented and/or if they are effective. The development and operation of the facility require environmental monitoring that includes the following:

### 6.1 Air quality monitoring

Dust fall monitoring to be conducted according to the National Dust Control Regulations at predetermined locations if increased dust is detected. Locations must be chosen in terms of the wind directions.

### 6.2 Monitoring of fire breaks/buffer areas

The fire breaks must be inspected/monitored on a quarterly basis to detect debris and alien vegetation growth and kept clear.

### 6.3 Waste management

A waste management system must be implemented to keep track of waste that is generated on site. Volume of waste must be recorded and a waste manifest system must be implemented for hazardous waste.

### 6.4 Internal audits

Internal audits must be conducted every two monthss during construction and biannually during operations to monitor compliance with the EMPr.

### 6.5 Submission of compliance audits

Compliance Audits are compiled in accordance with legislative requirements (as applicable at the time) including:

(1) Regulation 34 of the EIA Regulations (GN. 982 of 4 December 2014, as amended);

Compliance audits will be submitted bi-annually during construction and annually during operations or in accordance with the Environmental Authorisation.

## 7. ENVIRONMENTAL AWARENESS PLAN

### 7.1 Environmental Induction Training

The purpose of the induction training is to promote a general awareness of the sensitivity of the environment, the legal commitments and the aspirations of SIOC in terms of environmental management and the environmental consequences of individual actions. Induction is applicable to all employees, contractors and service providers that will be working at the site.

**Environmental Induction for Employees and Service Providers**

The induction training for employees, contractors and service providers is to take the form of a presentation including:

- A description of environmental sensitivities in the environment;
- A description of environmental legal requirements and the commitment to comply with these requirements;
- A description of broad-based objectives of environmental management;
- A discussion of how individual actions can impact on the environment;
- A discussion of how individual actions can assist in the successful implementation of the environmental management programme (EMPr);
- The Code of Conduct.

All employees are to sign that they have understood and will comply with the Code of Conduct. employees are to be re-inducted on an annual basis (after returning from their annual leave).

**Requirements**

- Environmental induction material (posters, power point presentations etc.);
- Code of Conduct;
- Register of inducted Employees, service providers and contractors.

### 7.2 General Environmental Awareness Programme

The purpose of the general environmental awareness programme is to promote ongoing environmental awareness amongst the workforce. It will focus on addressing environmental issues which have been identified as problematic through environmental audits, complaints received, or environmental monitoring undertaken. This awareness campaign can form part of daily/ weekly toolbox talks and must cover all applicable topics related to environmental management.

## 8. SPECIFIC INFORMATION REQUIRED BY THE COMPETENT AUTHORITY

None applicable.

## 9. UNDERTAKING

I, **Trevor Hallatt**, acting as independent environmental assessment practitioner hereby confirm:

- The correctness of the information provided in the reports;
- The inclusion of comments and inputs from stakeholders and I&APs;
- The inclusion of inputs and recommendations from specialist reports, where relevant; and
- The acceptability of the project in relation to the finding of the assessment and the level of mitigation proposed.

| Report Sign-Off | | | |
|---|---|---|---|
| **Name** | **Designation** | **Signature** | **Date** |
| Trevor Hallatt | EAP<br>Senior Environmental Scientist<br>Pr.Sci.Nat |  | 2022/03/18 |