



6.10 Annexure K - Environmental Management Plan



CSIR BUSINESS MANAGEMENT SYSTEM


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Document approval

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Acronyms and Definitions

Acronyms

Abbreviation	Explanation
EMP	Environmental Management Plan
CSIR	Council For Scientific and Industrial Research
HIP	Hot Isostatic Press
SHEQ	Safety Health Environment Quality

Definitions

Key term	Definition
Health	Means free from illness or injury attributable to occupational causes.
Risk	Means the probability that injury or damage will occur.
Safe	Means free from any hazard.


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1. Introduction

As per the Hot Isostatic Press (HIP) report (document number 12964-R01), the CSIR has procured an HIP to operate at its facility in Pretoria. The HIP requires facility readiness and supporting equipment and infrastructure to enable it to function as intended. The CSIR has procured the services of a professional team to ensure building and services readiness for the installation of the HIP.

THE CSIR is committed to managing the environmental impacts associated with the HIP Project and ensuring there is minimal negative impact to the environment throughout the duration of the project. The HIP Project activities will be guided by the environmental management plan.

The purpose of this Environmental Management Plan (EMP) is to:

- Ensure compliance with all relevant and applicable legislation & statutory controls;
- Ensure Conformance with the CSIR Safety, Health and Environmental (SHE) Policy;
- Ensure alignment with the CSIR environmental objectives and targets;
- Follow best practicable environmental performance – this means preventing pollution, minimising adverse environmental impacts and securing the potential benefits associated with higher standards of environmental performance.

This EMP has been prepared in accordance with the CSIR SHE Policy. It identifies specific environmental issues associated with the designated CSIR site and stipulates core procedures that will be used to manage them. Relevant environmental information will be communicated as required.

All amendments to this EMP must be made by project management in consultation with the Safety, Health and Environmental Manager or a representative of the CSIR SHEQ team.

2. General project environmental requirements

8.1 Waste Management

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The principal contractor will manage waste through the development and implementation of HIP inception Project Plan. The project team will use this plan to identify waste streams, forecast waste volumes and identify suitable methods to eliminate, or where this is not practicable, reduce waste generated by the project.

When considering management options for identified waste streams, the CSIR and contracted service providers will adhere to the principles outlined in the waste hierarchy below.



The CSIR and contracted service providers will ensure waste is stored away from drains, boreholes, wells and controlled waters. Storage containers/skips shall be in good condition and, where required, covered to prevent dust and litter being blown out. If there is any likelihood of stored waste contaminating the surrounding environment, all necessary steps will be taken to ensure no contamination occurs. This may include the use of containment bunds with rain shelters and the use of sealed containers, i.e. clip-top drums and covered skips/bins.

Before waste is treated and / or removed from the CSIR site, all subcontractors / waste contractors must provide the project team with legible copies of the following documentation:

- Environmental permits and exemption certificates authorizing on-site crushing and screening activities;
- Waste Carriers Registration Certificates;
- Environmental Permits, (Waste Management Licences /Permits);
- Waste Manifestos (signed in triplicate)

The construction service provider and, where applicable, subcontractors will ensure that the removal of all inert / non-hazardous waste is recorded and handed over to the SHEQ office for record keeping. These documents will be stored on site and made available on request.

The construction service provider and, where applicable, subcontractors will ensure the removal of all hazardous waste is recorded and must be handed over to the SHEQ office for record keeping. These documents will be stored on site and made available on request.

2.1 Storage of fuel, oils and building chemicals

Containers must be stored within a spill tray (or similar), bund or any other suitable secondary containment system. All containers must be located in a safe place to minimise the risk of damage and locked-off when not in use.

For oil tanks, intermediate bulk containers and mobile bowsers the SCS must be able to hold:

- Where one container is being stored - a minimum of 110% of the total volume;
- Where more than one container is being stored - a minimum of 110% of the largest container's storage volume, or at least 25% of their total volume (whichever is greater);
- For drum storage, the interceptor tray must be able to hold at least 25% of the total storage capacity of the drums.

Bunded areas must be made impermeable to water and oil. The base and walls must not be penetrated by any valve, pipe or opening that is used for draining the system.

Areas used to store fuel / oil and other potential contaminants are identified in the Fire Safety & Other Emergencies Plan.

2.2 Particulate Matter (Dust) & Noise

2.2.1 Demolition and Construction Process

The construction service provider must take utmost effort in preventing or, where this is not

practicable, reducing emissions from the demolition and installation process. The following items must be considered when attempting to reduce the environmental impact of this process:

- Location;
- Operation times;
- Maintenance;
- On-site transfer of dusty materials;
- Stockpiling materials and removal of construction debris.

2.2.2 General Site Activities

With regard to nuisance noise, the methodology in which work activities are undertaken must apply Best Practicable Means (BPM) in order to minimise negative impact on the immediate environment including staff based in the building and other nearby buildings. However, if measures to reduce excessive dust and noise are unsuccessful, work must stop and an alternative method devised before work can resume.

The following measures must be considered when attempting to reduce noise and dust:

- Use sheeted lorries and sealed / covered skips;
- Use dust extraction equipment when drilling and cutting;
- Damp down dusty areas and stockpiled materials in dry or windy weather;
- Sweep out demolition work areas regularly;
- Grass over topsoil which is being stockpiled for landscaping or off-site re-use;
- Locate plant and equipment away from buildings where practical;
- Use screens as acoustic barriers for excessive noise;
- Isolate plant and equipment when not in use;

2.3 Previously Unidentified Issues

If one or more of the following is discovered, work in that location must stop immediately and the SHEQ office must be informed:

- Contaminated soils;
- Suspicious objects;
- Underground storage tanks;
- Invasive species,
- Protected species;
- Heavy vibration due to drilling/demolition activities.

2.4 Contractor and subcontractor Environmental Reporting

All contractors and subcontractors will provide weekly updates to the Project team and SHEQ office on environmental activities.

Any activities resulting in major environmental impacts must be immediately reported to the Project Manager and SHEQ office. Work must be immediately stopped and pending the outcome of an investigation and findings, work may resume with the permission of the SHEQ

office incorporating any additional requirements to the risk register.

2.4.1 Emergency & Incident Preparedness

In order to minimise the risk of a pollution incident, all contractors and subcontractors must ensure all operatives understand the environmental risks associated with their work activity and what control measures are in place to eliminate or reduce negative environmental impact.

All contractors and subcontractors - Should an environmental incident occur, follow the SHE Accident / Incident Management & Investigation Process Flowchart (Appendix H Fire Safety & Other Emergencies Plan) and CSIR Incident Management Procedure.

3. Specific project environmental requirements

This section will focus on activities to be carried out during the Construction Phase and will be guided by the relevant project plans and guidelines:

3.1 External (client / enforcing authority) requirements

- Monitoring requirements, i.e. noise, dust, vibration, tree protection, protected species, waste, power use age, water consumption, commercial deliveries, etc.

3.2 Watercourses and wells

- Protection required, i.e. measures to prevent run-off
- Minimum distance required for protection
- Consents required / obtained as needed

3.3 Waste (significant waste streams that will be generated)

- Re-use of demolition materials, i.e. soil & stones, crushed concrete, etc
- Reclaim demolition materials, i.e. bricks, tiles and architectural features
- Waste segregation on / off site
- Use of prefabricated materials
- Identification and management of any hazardous waste – including identification of asbestos containing material

3.4 Contaminated ground, issues with groundwater & dewatering

- Drainage and disposal of contaminated water
- Areas used for the disposal of other wastes, i.e. asbestos
- Re-use or disposal of groundwater, i.e. required discharge consents

3.5 Standing heritage & archaeology

- Listed buildings, i.e. consents required / obtained if needed
- Protection of heritage sites

- Archaeological investigations & sensitive areas

3.6 Materials & design

- materials with recycled content & low embodied energy
- use of sustainable and green building practices
- consideration of eco materials & construction techniques
- Local supply chain (reducing nuisance noise, carbon emissions & simultaneously bringing socio-economic benefits to the immediate and surrounding area)

3.7 Sensitive neighbors (if info provided elsewhere, reference where)

- Nearby buildings
- Tenants
- Schools
- Healthcare facilities
- Places of worship
- Residential areas
- Local community meetings

3.8 Ecology & biodiversity

- Tree protection & tree protection orders
- Protected plant species, protection / translocation required
- Protected species, i.e. animals, birds, etc.

Measures will be taken to protect animals during construction; trenches will be covered overnight or left with a suitable means of escape (such as ramps or sloping ends) in order to allow any animals that may fall into the trenches to escape; and that any exposed pipe ends of 200mm diameter or above will be capped off overnight.

- Include protection required, specific demolition requirements, demarcation of work areas, nest boxes, etc.
- Removal of invasive species in the area: to be done with in conjunction with the CSIR landscaping service provider
- Protection of indigenous flora in the area: any removals of flora to be done in conjunction with the CSIR landscaping service provider
- Rehabilitation of ground, soil, flora in work areas

Impact on indigenous flora:

A request has been made to remove two large trees on the side of the building where two generator units will be installed. Upon investigation by the landscaper it was confirmed that these are indigenous trees and there are two options to consider:

- 1) Trim the current trees and build a shelter to house the two units **or**

- 2) Cut down and remove the two trees - we will need to replace these with similar saplings at another point on campus.

Option 1 is recommended by the SHE office as it maintains the flora in the area, however, the project team/owner can decide on the final option they would like to go for. Both options have financial implications which need to be carried by the project.

The project team recommended option 2.

4. Environmental aspects & impacts

The project Risk Register has identified elements of its work which will have an impact on the environment.

The Aspects & Impacts Registers will be provided to all contractors and subcontractors. These parties must manage all risks associated with their work activity in accordance with this document.

Where the contractor or subcontractor identifies additional environmental risk, it is their responsibility to inform the Project Coordinator and where necessary the register will be reviewed and amended.

The CSIR SHEQ office will **conduct site inspections** to ensure that the work being done is carried in alignment with the environmental aspects and impacts register requirements.

4.1 Planning conditions specifically relating to Environmental Management

(a) Measures for the control of noise, vibration and dust emissions (including mitigation in the event of a complaint).

- The control of noise, vibration and dust emissions will be considered in the planning of all activity at all times.
- If there is a complaint then work will stop immediately and the activity will be investigated and re-assessed. The SHEQ Office must be called for advice and to make them aware of the situation.

(b) Plan for recycling/disposal of surplus soils and waste resulting from Construction.

- The project plan must identify the measures put in place for recycling and disposal of waste.

(c) Construction site management practice to safeguard against risk to mammals (protected species) throughout the period of construction

- Measures will be taken to protect animals during construction; trenches should be covered overnight or left with a suitable means of escape (such as ramps or sloping ends) in order to allow any animals that may fall into the trenches to escape;

- Any exposed pipe ends of 200mm diameter or above will be capped off overnight.

5. Reference documents:

1. HIP Inception Project Plan
2. CSIR SHE Policy
3. HIP Inception Project Risk Register

Any queries on the content of this document can be directed to:

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