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CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN

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1. INTRODUCTION

1.1. Overview

This Employers Framework Construction Environmental Management Plan (CEMP) proposes a framework for environmental control and best practice measures that have to be adopted within a project-specific Contractor's Construction Environmental Management Plan (CEMP), which shall be developed and maintained by the contractor. This framework includes all actions which may be required during the construction phase of the Project to avoid, minimize, or offset likely environmental and social impacts that are attributable to the Project. It provides a framework and structure for the CEMP which incorporates the following:

- Mitigation measures identified during the EIA process;
- General best practice mitigation measures; and
- Monitoring measures are to be undertaken during the construction phase.

Before the commencement of construction, the requirements of this CEMP shall be detailed in full within a comprehensive CEMP document, which shall be developed by the Contractor and approved by the consultant.

1.2. Scope

This document is mandatory and applies to all employees, Contractors, their subcontractors and suppliers who undertake works on the [YOUR COMPANY/CLIENT's NAME] Projects.

Compliance with this document does not absolve the Contractor or its staff of their responsibility to comply with statutory requirements including all health, safety and environmental laws, regulations or standards imposed on them either by legislation or the contract.

1.3. Purpose

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The purpose of the CEMP is to ensure that the environmental and social issues are properly considered during the construction phase of the Project and that negative impacts are minimised or prevented and positive impacts enhanced.

The CEMP will therefore provide a logical extension of the EIA process and will ensure that recommendations contained within the EIA are implemented, assuring that the project does not deviate from the environmental and social profile that formed the basis of this document.

In a similar vein, the CEMP will serve to ensure that regulatory requirements are also met and serve as a clear and auditable indication as to how those requirements are implemented during the construction phase. A CEMP shall be a dynamic document, which has to be reviewed, revised or updated as required during the construction phase of the Projects.

The primary objective of the CEMP has to be to provide a clear direction on the requirements of the construction contractor and all subcontractors in their activities: each requirement is measurable and enforceable; hence any non-compliance can be identified and addressed swiftly.

The objectives of the CEMP are defined as follows:

- Prescribe an overall management structure with clearly defined accountabilities and responsibilities;
- Ensure an environmental management structure responsible for implementing the relevant measures within the CEMP;
- Ensure adequate and relevant environmental induction training for all contractors and subcontractors (including construction workers);
- Incorporate Emergency Planning into the management system;
- Stipulate a programme of deliverables, meetings, audits, communication protocols and reporting requirements to monitor and manage the construction works;
- Define objectives and targets for environmental and social management on the construction activities (these objectives and targets which have to be captured in the detailed Environmental Control Plans of the full CEMP);
- Implement Mitigation Measures and Monitoring Programmes;
- Prescribe a mechanism for recording and reporting environmental and social concerns, improvement, complaints or incidents;
- Define the communications protocols for liaison with local communities and regulatory authorities on environmental and social matters;
- Ensure compliance with all regulatory requirements and guidelines, where relevant; and
- Stipulate a mechanism for periodical review for the CEMP.

1.4. Legal Framework

All work is to be undertaken in compliance with the requirements of GAME&P and any Statutory Instruments, Decrees, Resolutions or Regulations.

Where no local standard exists, or the applicable standard is not specified, the appropriate and compatible internationally recognised standard or code of practice shall be adopted.

The hierarchy of standards is as follows:

- GAME&P Technical Guide

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- [YOUR COMPANY/CLIENT's NAME] CEMP Guideline
- Euro Norm (EN)
- British Standards (BS)
- International Standards and Codes of Practice

Alternative standards may be proposed if they can satisfactorily be demonstrated that they are equivalent, in all respects, to the above-mentioned standards. Where there is a discrepancy or a conflict, the higher or stricter standards shall take precedence.

Contractors are to ensure that all prescribed registers, certificates and records are maintained and available for inspection at the relevant work locations by any authorized person.

1.5. International Standards for Organization

One of the most widely used environmental management systems, developed by the International Standards Organization (ISO), is the ISO 14001 standard for environmental management of activities. The standard provides a logical framework within which to prepare and develop a CEMP.

The structure of a typical Environmental Management System (EMS) certified to ISO 14001 is shown in Figure below.

Contractors shall implement an EMS that complies with the requirements of BS EN 14001; 2004 (Environmental Management Systems), applicable Laws and Best International Industrial practices.

The Contractor shall submit a copy of their EMS manual for consultant review within 28 days of the Commencement Date.

Contractors EMS manual shall contain the procedures required for carrying out the work activities on the work under the Contract. The EMS manual shall be regularly reviewed and updated to reflect changes to work practice and changes to legislation. Copies of proposed changes are to be submitted to the consultant for review before inclusion and implementation.



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Figure -1, ISO 14001 Structure

The Contractors shall develop a project-specific climate change strategy as part of the EMS. The Contractors shall undertake all necessary investigations, modelling, benchmarking and reporting and similar activities to determine the climatic conditions for the Project over the lifetime of the project. Climatic conditions shall be predicted for 1, 10, 30, 50 years and the final date of the Project's lifetime.

This standard does not relieve the Contractors of their liabilities under the applicable Laws and where there is a discrepancy in the documents, the higher requirement will take precedence.

The EMS shall be self-regulating, be primarily controlled and assessed by implementing an internal audit process, in which the [YOUR COMPANY/CLIENT's NAME] shall be invited to participate throughout.

The overall philosophy of the control of environmental impacts shall embody a positive culture by continual improvement of the EMS in delivery of [YOUR COMPANY/CLIENT's NAME] Environmental Policy. Contractors shall provide evidence that there are regular reviews of the performance of the EMS and improvement actions are implemented as necessary.

1.6. Project Details

Contract Duration :
Contract Start Date :
Completion Date :
Client :
PMC :
Consultant :

Description:

The project comprises of the following:

- Peripheral surrounding and roads around the [YOUR COMPANY/CLIENT's NAME].
- Demolition of the existing building and utility services
- Backfilling and compaction activities;
- Construction of Manholes
- Pipe laying activities;
- Construction of all necessary works and connections
- Construction of valve chambers;

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- Electrical Works;
- Construction of different types of Chambers
- Landscaping Works
- Earth works

1.7. Project Location and Layout

The project site is located in the [SITE/PROJECT LOCATION AND NAME HERE].

Figure 1: Site Location Map

> Insert here

1.8. Existing Environmental Conditions

Geology

[WRITE HERE WHICH REGION, COUNTRY AND EXISTING ENVIRONMENTAL, SOIL AND GEOLOGICAL CONDITIONS HERE]

Site Topography

[write here the site Topography (the slope and level of the land)]

Land Use

[Commercial or Residential or industrial]

Flora and Fauna

The site itself has somewhat low ecological value. Trees and plants can only be found near the project limit as part of the landscaping.

Air Quality [write as per your own]

It has been found that the general air quality on the site is of good quality as the area is not yet too congested and vehicle movements are low apart from peak periods when numbers of vehicles increase. There are no industrial premises to be found near the project site area. Most likely, the sources of air pollution are vehicle emissions, dust emissions/clouds from the ongoing works, windblown dust and sandstorm. The usual wind direction is to the east.

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Environmental Noise

The existing background noise levels vary depending on the time of the day and the location. However, in general, the background noise levels can be considered low, e.g. 50 to 60 dBA. Main sources of noise will be from private vehicles plying around the area, construction vehicles and equipment and the ongoing construction activities.

Identified noise-sensitive receptors are of people residing and working in establishments near the area.

Water Supply and Water Features

No surface water features are present within the project site. [WRITE AS PER YOUR SITE LOCATION]

1.9. Environmental Constraints Map

Insert the map here.....

1.10. Environmental Aspects Register

The Environmental Aspect Register, which includes the potential environmental impacts and their significance, is provided in subsection 2.4. This identified the following potentially significant impacts:

- Air Quality
- Waste Management
- Contamination of land and water
- Use of raw materials and natural resources
- Noise and other local environmental issues
- Visual Aspects

2. GENERAL ARRANGEMENTS

2.1. Responsibilities

Activity	Responsible Person	Name	Email	Contact No.
Carry out Emergency Procedures				
Carry out Environmental Audits				
Carry out Environmental Induction Training on-site				
Carry out Environmental				

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Toolbox Talks				
Carry out Waste Management duties on site				
Ensure measures detailed in the CEMPS are carried out				
Investigate Environmental Incidents / Near Misses				
Liaison with other interested parties / Statutory Bodies				
Liaison with the GAMEP				
Produce CEMP				
Produce Environmental Method Statements / Risk Assessments				
Review CEMP				
Review Environmental Method Statements / Risk Assessments				
Undertake Monthly Environmental Site Inspections				
Undertake Weekly Environmental Site Inspections				

Project Organization Chart to show the lines of authority can be found in Appendix B.

2.2. Site Liaison

Meeting/Briefing	Frequency	Attendees
Risk Assessment / Method Statement	As per need basis	Foreman, Site Engineer, Project Manager, HSE Engineer
Weekly Look ahead meetings	Weekly	Project Manager, HSE Engineer
Progress meetings	Monthly	Consultant, Contractor Team
Approvals and Permits Workshops	As per need basis	Foreman, Site Engineer, Project Manager, HSE Engineer

2.3. CEMP Implementation

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To ensure that this CEMP is implemented on-site, the following environmental training and ongoing communication methods are to be carried out:

Training	Frequency	Attendees
Induction	One time and every newcomer	All personnel working on the project
Toolbox Talks	Weekly	All personnel working on the project
Environmental Bulletins / Legislation Briefings / Best Practice Briefings	As per need basis	All personnel working on the project
Environmental Policies and Procedures	As per need basis	All personnel working on the project
Risk Assessment	As per need basis	Identified personnel
Internal Audit Training	As per need basis	Identified personnel

The project will have maintained copies of all training records. These will include but are not limited to the training mentioned above.

2.4. Environmental Targets

As part of the effective implementation of the Environmental Management, the following targets have been set to determine the degree of compliance and continual improvement. This will be also an input of the Management Review However, these targets will be redefined along the way of implementation.

Environmental Aspect	Target	Measurement
Waste Management	100% Effective implementation	zero major finding from inspection/audit
Air Quality	100% Compliance with regulations	Number of violations
Soil and Groundwater Contamination	No incident of contamination	Number of occurrences
Noise	100% Compliance with regulations	Number of violations
Feedback	100%Timely resolution	Number of delays

2.5. Environmental Policy

The [YOUR COMPANY/CLIENT's NAME]/ Stakeholders General Construction (Contractor) Environmental Policy will be applied for this project. Refer below for the Policy.

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Insert here.....

2.6. CEMP Review

This CEMP is a live document; thus, it will be reviewed and/or revised as and when major changes happen. As a minimum, the review should take place once in 12 months.

2.7. Contractors Documentation

CONTRACTOR will maintain documents and records following our document control procedures

Below is the list of documents that are going to be maintained and updated as necessary in the [YOUR COMPANY/CLIENT's NAME]/ projects. This list is also subject to update, as and when documents are identified.

1. Construction Environmental Management Plan
2. Environmental Permit
3. Waste Collection Report
4. Environmental Incident Investigation Reports
5. Environmental Aspects and Impacts
6. HSE Communication Log
7. Resource Consumption Report
8. Environmental Inspection Checklist
9. Vehicle and Equipment Checklist
10. Hazardous Substance Checklist / Inventory
11. Environmental Control Plans and Procedures
12. Method Statements
13. Noise Level Monitoring
14. Non-conformance Reports
15. Audit Reports
16. [State/country] Construction Specifications
17. Permits and Licenses (Excavation, Road Openings, Building Permits, Advertising, Landscaping, License to transport materials, Disposal of excavated materials, Electricity, Traffic Signs, Street Lighting, Road Markings)

3. GENERAL SITE MANAGEMENT

3.1. Key Points

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It is recognized by the Contractor that any construction work affects the environment. Through effective implementation of our approved Construction Environmental Management Plan (CEMP), possible and foreseeable potential adverse effects to the environment are identified and appropriate controls are introduced to avoid or mitigate any adverse effects.

All activities undertaken by the Contractor in the construction of the project will support the [YOUR COMPANY/CLIENT's NAME]'s commitment to the environment and overall management of the project. The identified aspects that have potential adverse effects on the environment are the following (but not limited to):

- Air Pollution – Traffic / Dust / Excavation and equipment using petroleum products
 - Soil Contamination – Storage and transfer of chemicals, wastes and oil leaks and overflows.
 - Groundwater Contamination – Chemical spills, oil leaks and overflow of wastes.
 - Flora and Fauna – Excavation / Excessive noise / Construction activities.
 - Noise Pollution – Traffic Movements, Plant and Equipment.
- Mitigation measures, Control Plans and Procedures for the abovementioned activities are described in the succeeding sections and appendices.

3.2. Site Roads and Site Traffic

CONTRACTOR is going to implement traffic management that is appropriate to the needs of the site to minimize disruption of flow and in providing a safe access/egress of all interested parties.

Access to the worksites for vehicles will be via agreed routes to segregate where possible pedestrians and vehicles. The segregation will be by solid barriers and/or fences. Barriers and/or fences are placed in some areas to prevent unnecessary access for vehicles. Vehicles other than those used for construction activities are not allowed to enter the construction worksites.

Appropriate signs are going to be placed in the appropriate location to guide the drivers and pedestrians as well. A speed limit of 20 kph will be implemented.

Traffic diversion plans are being developed and sought for approval in advance of being needed. Environmental aspects, such as noise, smoke, odour, dust, visual, etc. are considered in the creation of traffic diversions and they have to comply with the Work Zone Traffic Management Manual.

3.3. Plant and Equipment

To ensure that the needed plant and equipment for an activity is identified and to include guidance and development of every method statement.

It is anticipated that the following major plant and equipment are going to be utilized during construction:

- Excavators
- Trenchers

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- Water Pumps
- Crane Pick-up
- Backhoe Loaders
- Generators
- Asphalt cutter
- Ground Cutter / Breaker
- Trucks
- Milling M/c
- Hiab
- Gas detectors
- Saver sets

Reference to approved method statements for the complete list of plant and equipment needed in any particular section of work.

3.4. Materials Management

The contractor will provide designated areas for the receipt, quality inspections and storage of materials being delivered to the site. The areas are secured in a location that will be commensurate to the material risks on the environment like spills and pollution of water runoff.

Here are some of the general materials identified. Other materials are as per the Procurement requirement program.

Material	Storage Location
Pipes	Different materials
Steel	To be finalized
Pumps	For dewatering
Paints	For waterproofing
Fibre optics	To be finalized
Concrete	As per required specifications

Moreover, temporary storage of materials near the working area is done due to operational matters. This is managed by careful planning and determination of the necessary numbers to be present in the area on a particular day. Quality inspection is covered in the Approved Project Quality Plan.

To prevent loss and preservation of materials, they are stored in dry conditions away from sunlight.

3.5. Control of Hazardous Substances

All anticipated hazardous materials to be stored on-site are identified and corresponding control on its handling and disposal as per Hazardous Material Control Plan being implemented. A Hazardous Material Inventory List is to be maintained by the storekeeper and reviewed by the Safety Engineer. Corresponding Safety Sheets (SDS) will be kept in

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the store and a copy to the site office. / Clinic. They also need to be added to method statements

3.6. Housekeeping

Housekeeping is a very fundamental and vital activity on any project and is the responsibility of every individual working on the project. All areas are to be kept clean and in good sanitary condition, free from adverse odour from any other source.

Work areas, passageways and other areas are to be kept free of debris and materials. Trash containers are to be placed in proper places at all worksites and used for the disposal of scrap materials and other construction-generated debris. Storage areas are kept tidy and materials neatly stacked and placed. Construction materials are to be stored or placed in an orderly manner. Walkways and other areas where personnel to travel are to be maintained free of equipment, obstructions and other materials that will cause an accident or injury. This is following the state's Law. Refer (Law on Environmental Protection).

Solvents, empty paint cans, oils, greases and other such materials and containers that contain chemicals, are to be disposed of following the state's Law as per hazardous wastes. Transfer notes must be received from places of disposal.

Cleaning operations are to be carried out at the end of each day. Inspections will be carried out daily by the Safety Engineer and Officer before the commencement of the following working day. Likewise, the Project Manager will conduct inspections of the tidiness of the site every week. Observations are to be noted and analyzed monthly and likewise communicated to all workers on-site and form part of the toolbox talks. Actions are demanded from the concerned supervisors/foreman to correct the concerns noted. If no recurrence is noted, then it is considered a close issue.

4. ENVIRONMENTAL ASPECTS AND CONTROL

4.1. The Summary Table of Significant Environmental Aspects and Controls can be found in Appendix C. The list is updated if and when necessary but at the most six months.

5. TRAFFIC MANAGEMENT

5.1. Key Points

The contractor will develop a traffic management plan that will consider the environmental aspects of traffic to the sensitive receptors. Content shall outline the following but not limited to the management of vehicular access to the site, traffic diversions and site layout, segregation of pedestrians and vehicles, mud and debris during transport, etc.

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6. NOISE

6.1. Key Points

Typical construction activities which can result in noise generation include drilling, cutting, rock removal, dewatering, demolition, heavy machinery, trucks, excavators, shovels, cranes, generators, pumps, etc., and the movement of construction plants and vehicles. The contractor will carefully develop a procedure to mitigate the identified impacts from noise and vibration at the site boundary.

A table of applicable noise limits is shown in Section 6.2 below.

6.2. Information additional and Project CEMP

The contractor will consider appropriate working time to mitigate nuisance to local communities. This includes retailers near the construction works and passers-by.

As part of operations, the noise levels presented in the table below shall not be exceeded without prior approval from appropriate authorities.

Zones	Maximum Noise Level at Property Line (dBA)	
	Day Time	Night Time
Residential and Institutional	55	45
Commercial	65	55
Industrial	75	75

Table 2: Noise Levels Category

The following have been defined as per the state's Environmental Protection Standards:

- A Residential Zone is an area where more than 50% of the properties are for accommodation. This includes Schools, Hospitals and Mosques.
- A Commercial Zone is an area where more than 50% of the properties are for Shops, Offices, Garages and Trading places.
- An Industrial Zone is an area where more than 50% of the properties are for manufacturing facilities.

Planned working hours at the site is 6:00 am to 18:00 from Monday to Thursday except during summer working hours. Friday is an OFF day. No work during night time.

6.3. Environmental Control Strategies

Generally, the Contractor will implement the following as control measures in minimizing noise level brought about by its activities:

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- Vehicles and equipment including generators and pumps are to be well maintained and fitted with mufflers if appropriate to reduce noise.
- Generators and pumps are to be positioned away from residential areas or religious places as much as possible.
- Nighttime/Friday work will not be carried out unless urgent or unavoidable (e.g. to maintain continuity of program of works). In such circumstances, additional noise attenuation measures are implemented as required.
- As per Environmental Protection Standards, the overall noise levels at the boundary of the construction site for residential shall not exceed 55 dBA (15 minutes weighted average) from 4 am to 10 pm and 45 dBA from 10 pm to 4 am.
- Use of natural noise barriers if available.
- The use of more advanced machines with lower noise emissions is practicable.
- Adequate monitoring to implement and practice all control measures.
- Maintain the manufacturer's specifications.
- All noise or vibration complaints are to be investigated and addressed appropriately.

6.4. Monitoring and Measurement

All noise control and monitoring should comply with the regulations set by the Ministry of Environment.

- The overall noise levels at the boundary of the construction site in residential area shall not exceed 55 dBA (15 minutes weighted average) and 65 dBA or less in the commercial area from 4 am to 10 pm and 45 dBA or for the latter 55 dBA from 10 pm to 4 am.
- Area monitoring is to be recorded and conducted on-site. A noise meter is to be used for this purpose.

6.5. Associated Statutory Requirements

Executive By-Law of Environmental Protection.
ISO 14001.
OSHAS 18001:2007 Regulations
General Authority for Meteorology Environmental

7. DUST AND AIR POLLUTION

7.1. Key Points

Construction activities like vehicle movement on loose soil, earthworks, excavation, reinforcement cutting activities have the potential in generating dust emissions to the surrounding environment unless it is properly managed. Dust emissions from the above-mentioned activities could have an intense localized effect but it is unlikely that this will have an effect beyond a several meter radius from the worksite.

In addition, there is also a potential for several greenhouse gasses and other gaseous emissions to the atmosphere during the construction of peripheral surrounding and roads

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around the state's Projects as a result of the operation of construction vehicles, generators and other equipment and overall traffic which will give rise to carbon dioxide, sulfur dioxide and nitrogen oxide/dioxide emissions.

Welding fumes from the machines will also be expected during construction but these emissions are relatively less significant compared to dust generation.

Air pollution due to hazardous substances is very minimal as the project only require a small number of paints, cement and fuel.

7.2. Information additional to project CEMP

Activities that are expected to produce the most significant dust or air pollution are the following:

- Earthworks (excavation of peripheral surrounding and roads around [YOUR COMPANY/CLIENT's NAME] Projects.
- Movement of vehicles within the site
- Use of machinery and equipment for the construction activities
- Stockpiling of materials

Identified sensitive receptors are the flora and fauna in the surrounding area, personnel working at the site, neighbouring houses and the passersby in the area.

7.3. Environmental Control Strategies

General Control Measures

- Fencing with nets or screens is provided around dusty activities.
- Damping down of areas by hose and sprinklers
- Regarding vehicles entering the site;
 - ☐ the engines are switched off;
 - ☐ loads of loose materials carried by vehicles are covered;
 - ☐ the appropriate speed limit is imposed around the site;
 - ☐ If there is a risk for sensitive receptors, vehicles are washed before leaving the site.
- Limiting the height of stockpiles and covering it as necessary.
- Controlled work due to climatic conditions

7.4 Monitoring and Measurement

Visual Monitoring

Visual inspections by HSE Engineer together with HSE Officers on the site are to be undertaken at least twice per day at random to identify dust problems on the site. This would include the following:

- Identification of construction activities that are likely to result in significant dust generation (e.g. movement of materials, vehicles and stockpiles);
- Determination of the weather conditions suitability for working;
- Verification of the implemented dust mitigation measures;

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- Taking immediate and corrective actions on issues identified;
- Reporting and recording of observations on the actual conditions. A dust classification or category is developed.
- Monitoring data is to be captured in the HSE site log.

Workforce and affected communities

- A complaints procedure is to be put in place to allow workers and residents or people of nearby communities to raise concerns regarding the construction.
- If a complaint is received from the interested parties, immediate and corrective action is determined and implemented to prevent recurrence; and
- Upon resolution, feedback is provided to the complainant.

7.4. Associated Statutory Requirements

Compliance to Protection of the Air Environment from Pollution of the State's Labor Law and State of State's Environmental Protection Standards and/or GAME&P.

8. CONTAMINATED LAND

8.1 Key Points

No historical soil and/or ground contamination was identified and reported for this project as per the pre-condition survey.

During construction activity, the land or soil can be exposed to contamination from accidental spills and leaks to the ground. This can occur through the machinery and vehicles used on the construction site and from the improper handling and storage of hazardous materials like fuels and chemicals. The following are the hazardous materials that are going to be used or generated during the construction of the Project:

- Contaminated excavated soil;
- Paint materials;
- Diesel oil;
- Lubricants for maintenance of equipment; and
- Other chemicals.

These chemicals would need to be properly handled, transported, and stored to prevent any accidental spillage that would result in soil contamination.

8.2 Information additional to Project CEMP

As most of the area within the project scope is asphalted other than in the pumping station, there is less chance of superficial soil and ground contamination.

Although rainstorms are rare in states/country's, stormwater runoff can cause significant erosion of soil, sand, gravel and other materials if they are not protected. Contaminated

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materials could be eroded through runoff which would lead to potential contamination across the site and adjacent lands. Excavation activity also could have the potential to cause ground contamination due to oil leakage in a minimal amount only. Dewatering activity too could be a factor of transporting aggregates and contamination of not properly done. To avoid that, a necessary permit is going to be sought, a required method statement is going to be submitted for approval and necessary test are going to be performed.

8.3 Environmental Control Strategies

Prevention of leaks and spills is the first thing that Contractor will undertake to prevent. This is by using the well-maintained equipment, using proper handling techniques and provisioning plastic sheets for each site vehicle or machine. Adherence to the Site Waste Management Plan (see Section 10.0 below) should also be strictly imposed.

If a known chemical is to be used in abundance then adequate control measures and proper equipment will be made available. Workers involved in the activity will receive training in handling and spill containment in preparation for any untoward incident happening.

If suspected contamination is encountered due to a chemical spill (historical or current activities), work is to be stopped immediately and the area closed off to entry. Foreman or concerned personnel will notify the Project Manager and/or HSE Engineer. Subsequently, the Project Manager will notify the Consultant Resident Engineer and CS. Local authorities will also be notified by the Project Manager of the nature of the spill.

The Project Manager is responsible for the coordination of all spill clean-up activities while waiting for further advice from the authorities.

Contaminated soil should be stored separately on a hard standing area to prevent the spread of contamination. Moreover, it should be stored away from uncontaminated material and have to be covered to prevent any runoff.

8.4 Monitoring and Measurement

Visual Assessment

A visual assessment should be done twice or thrice daily as applicable on the identified high-risk areas like delivery and refuelling areas and storage for possible leakage or spillage.

The result of assessment and spillage incidents with its corresponding corrective actions taken are maintained.

Getting of sample for soil inspection and testing is done if and when necessary.

8.5 Associated Statutory Requirements

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Permit for the transport of materials for disposal -- Traffic Police
 Permit for the disposal of excavated materials
 Compliance with State/Country's Labor Law
 Conformance to CEP

9. SURFACE WATER AND GROUNDWATER

9.1 Key Points

The contractor will do all that is feasible to prevent water pollution. The sites within its boundaries do not have surface water features unless it rains heavily. The contractor will ensure that our construction operations will not contribute to any water pollution in the construction areas, thus controls will be identified and implemented. Pollutants not generated from the construction activities will be addressed with appropriate controls not to mix with the construction materials on site.

As dewatering is part of the construction activity, its discharge will be constantly monitored 24 /7 when required. Moreover, impact assessment, the establishment of controls will be implemented.

In the unlikely event of water pollution, the Contractor will take careful actions and dispose of the polluted water to an approved disposal area.

9.2 Information additional to the project CEMP

Improper storage of wastes, especially liquid wastes imposes a high risk to water pollution. Also, the risk of chemical/oil/fuel spillage as part of operational activities is a potential incident.

During rainy weather, excavated materials are to be covered to avoid runoff and water deposited in the excavated area is going to be dewatered and disposed to an approved location. Identified areas that would possibly be in contact with a runoff should be protected with rock formations and sandbags.

9.3 Environmental Control Strategies

The contractor shall take all precautions to prevent water pollution including groundwater and rainwater. These include but are not limited to:

- Where appropriate construction areas to be barricaded appropriately to prevent runoff of surface water from the construction activities to nearby areas;
- Waste is stored within waste skip bins or containers, and not directly on the ground;
- The concrete residue will not be washed out on the site. It is brought to an appropriate concrete wash-out bay, dried and crushed to be recycled where possible;
- Dewatering discharge will only be carried out following local regulations and with the appropriate permit;

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- Diesel, oil and other fuels and liquid chemicals are to be kept in sealed labelled containers, drums or tanks;
- Drums and containers used for fuel or liquid chemical storage (including waste oil, paints, and thinners) are in good condition and free from rust or damage and stood in drip trays.
- A set of SDSs will be available in the HSE site office, Stores and Clinic for all chemicals used on-site;
- Diesel, oil and other fuels and liquid chemicals stored in bulk quantities including storing drums/ tanks are placed within bounded areas and with a capability of storing 110% volume of the total contents, and adequately sealed to prevent seepage;
- All fuel and chemical storage are going to be in above-ground facilities;
- Refuelling of plant and equipment is to be done at a designated area over an impervious concrete pad of sufficient size so that spills and overflow do not fall onto the ground or with a plastic sheet placed under the vehicle fuelling point.
- Mobile refuelling, i.e. delivery to site equipment/plant by tanker is carried out where equipment/plant cannot be easily returned to a designated refuelling area. This should be done only in unavoidable circumstances. In such cases, the transfer should be through hoses fitted with nozzles or through funnels. Before refuelling, a drip tray and ground protective sheet is placed under the refuelling point;
- Hoses used for refuelling from bulk diesel storage tanks are kept within the bounded area or over concrete when not in use;
- Tankers delivering fuel to site-based equipment/plant must have the following equipment available within the vehicle:
 - ☐ drip trays
 - ☐ ground protective sheets
 - ☐ a labelled and sealed container for storing spills
 - ☐ an earthlings cable
- Proper and adequate spill clean-up kits are to be available at bulk storage and waste storage locations. Staff are provided with appropriate training in the use of spill clean-up kits;
- Routine maintenance and repair of mobile equipment/vehicles must be done in a workshop as much as possible;
- Sewage holding tanks are to be pumped out as frequently as required, to prevent overflow. A schedule for regular sewage tanker pump-out of sewage holding tanks is to be established.
- All tanks, drums, pipes and sewage holding tanks are decommissioned and removed upon demobilization from a site;
- Mixing of concrete and asphalt on the ground is prohibited;
- Maintenance/fuel transfer and washing of equipment/vehicles are prohibited other than at designated locations or as per necessity;
- Mixing or dilution of various waste streams is prohibited;
- Dumping and burning waste are prohibited.

9.4 Monitoring and Measurement

Visual Assessment

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- A visual assessment should be done twice daily as applicable on the identified high-risk areas like delivery, refuelling and the hazardous materials stores for possible leakage or spillage.
- Check if containers are adequately and clearly labelled with the information required.
- Check if site personnel wear appropriate PPE when working with Hazardous Materials.
- If and when check the colour of the deposited water due to excavations.
- Waste collection and proper placement of waste to its designated areas will also be monitored for compliance.
- Results of assessment and spillage incidents with their corresponding corrective actions taken are to be maintained on-site.

9.5 Additional Statutory Requirements

According to the GER general environment regulation (GAME), which entrusted the Presidency of Meteorology and Environment with the control of pollution and protection of the environment following the arrangement set forth by the competent agency. The Competent Agency responsible for the protection of nationally and internationally designated sites as Presidency has established the standards,

10. SITE WASTE MANAGEMENT PLAN

10.1 Key Points

Within the construction period, the Contractor shall implement waste management that covers the minimization, monitoring, handling, recycling and disposal of hazardous and non-hazardous waste materials and other wastes associated with our construction activities.

The Project Manager supported by the HSE Engineer and Waste Sub-Contractor Representatives is responsible for waste management in their scope of work. All personnel under their charge should be aware with regards to their responsibilities on the waste generated and how it is handled and disposed of. Moreover, they are also responsible for identifying measures to minimize waste generation.

Waste is segregated at the source as practicable. This will enable easy handling, recycling and disposal.

The HSE Engineer and HSE Waste Sub-Contractor Representatives are responsible for providing clear and up to date information regarding site waste management. This will

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include storage, minimization, disposal and transportation procedures. They will also take charge of developing specific site waste management plans for each major construction phase to ensure the effectiveness of waste management.

10.2 Information additional to project CEMP

It is anticipated that the following wastes will be generated during the construction cycle: these will include iron and steel waste, contaminated sand and soil, contaminated wastewaters, concrete waste, plastic, rubber, metal, wood, waste oil, domestic and office waste. Moreover, waste could also come from accidental spillage or tip-off of materials that resulted in its damaged condition.

It is acknowledged that if the waste generated during the construction period is not properly managed, this will lead to ground contamination and potential groundwater contamination that would affect health and safety.

10.3 Environmental Control Strategies

Waste minimization

Contractor reviews all of its overall work activity areas to decide where either minimization and/or recycling can be done. This will not only reduce the cost of operations but have a good effect on the environment and sustainability.

During procurement stages, the Contractor will review all material take-offs in attempting to minimize the wastes through this process.

Recycling of materials is going to be promoted. The contractor will have a program in the following areas of material recycling:

- Office products (stationeries)
- Material off-cuts to be stored and reused for other activities instead of scrapping
- Aluminium and stainless steel
- Electrical wire
- Excavated soil (as applicable)
- Cardboard boxes,
- Timber sheets and lengths of wood

The contractor will review the overall recycling program on a semi-annual basis for its effectiveness and continual improvement.

Waste handling

The waste handling within the Contractor site is bounded by local regulations and the environmental management system. Safety Data Sheets or content tags are used as a measure for employees' health and safety along with the use of ecological data sheets where applicable.

The contractor will maintain proper waste storage areas throughout the site as close to all

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identified work activities. This will allow wastes to be maintained and controlled distinctly through labelling and moved later to the main location for wastes removal. All storage locations are to be marked and waste segregated to allow assigned personnel to efficiently remove the waste materials. All locations will have labelled containers/drums allocated solely for the wastes.

Transportation of wastes is to be through the use of approved sub-Contractor trucks and/or local waste management hauliers. Industrial/domestic waste containers are checked before leaving the site to ensure the following:

- The waste containers are labelled.
- The waste containers are clean on the outside, properly sealed and have no leaks.
- The required forms and documents for the transport are completed and correct.

Waste disposal

Within the project site, two methods are going to be used to control waste disposal. These are the following:

- Waste removal through Contractor and/or approved sub-Contractor
- Designated Landfill

Non-hazardous waste

- All non-hazardous wastes generated from construction activities are to be collected in the designated areas and disposed of outside site premises on a landfill area approved by the government.
- Domestic solid wastes from the offices are to be stored in predetermined collection points before their removal and disposal by the approved sub-Contractor.
- The uncontaminated aggregate of suitable grade from excavations at each working area is to be collected for reuse in the construction phase. For contaminated waste aggregates, they should be disposed of in the allocated disposal area.
- Timber and other scrap materials which can be recycled or with a commercial value are separated and stored in segregated areas before removal.
- Oil and other lubricants are collected in metal drums and disposed of by approved local waste management Sub-Contractor.
- Covered plastic containers are to be provided in the clinic for the items used in providing first aid and also clearly identified bagging for infectious or contaminated items.
- Food wastes are to be collected in metal skips designated for this purpose and disposed of by local waste management Sub-Contractor.

Hazardous waste

- All solvent and chemical wastes are to be kept in a sealed container and segregated for this purpose and disposed of by the Contractor or Sub-Contractor after proper approval.
- All waste containers shall specify the content using a tag or sticker until the waste is delivered to the disposal area/facilities.

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- All waste containers are to be closed at all times. Storing an open waste container anywhere on the project site is a violation.
- The different wastes (solid vs. liquid, solvents vs. aqueous) should be accumulated in separate containers.
- Do not put liquid waste in plastic containers to prevent degradation of the container and resulting in leakage.

10.4 Monitoring and Measurement

The contractor will monitor the following:

- Amount and type of waste generated within the site
- Transportation of waste as to regulatory compliance
- Internal programmes through internal and external controls

The monitoring of all waste movements is to be continuous and we will provide further avenues within the bounds of regulatory and contractual requirements.

10.5 Additional Statutory Requirements (Licenses and Permits)

The contractor will coordinate with the various issuing authorities and government regulatory agencies such as the Ministry of Environment (MoE), to establish and verify that all licences and permits that are required by law for any of the involved parties are in order. Regarding Waste (Hazardous and Non-hazardous) Management, required licences and permits of involved parties are defined in Environmental LAW – Issuance Law of Environment Protection (the latest amendment always applies).

Table 3: Waste Management Permits

Type of Permit	Issuing Authority
Waste Management (Hazardous & Non-Hazardous)	Ministry of Environment
Waste Collection (Hazardous & Non-Hazardous)	
Waste Transportation (Hazardous & Non-Hazardous)	
Waste Disposal (Hazardous & Non-Hazardous)	
Waste Recycling (Hazardous & Non-Hazardous)	

The list of permits required in waste management is listed below:

11. LANDSCAPING AND VISUAL IMPACT

11.1 Key Points

The contractor will adopt or set out a methodology detailing mitigation measures and actions to be taken to minimize the impact of construction in the surrounding areas.

11.2 Environmental Control Strategies

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- Provision of barriers and good site housekeeping will increase the positive impact of the construction site. This will minimize the distraction of passersby to the construction activities done in the area.
- Worksites close to houses to be bounded with barriers and fencing up to at least 1.8 meters high to restrict entry and ensure construction activities do not have any negative impact outside the site boundary.
- Construction activities are to be limited to the proposed s and measures taken to avoid damage to adjacent areas.
- Ensure that after excavated areas are backfilled, they are to be reinstated/ restored to their original state.
- Dedicated transport access ways or pedestrian lanes should be designated to avoid damage to the existing condition.
- Lights should be beamed towards and within the site to minimize nuisance to the passing public.
- If complaints are received from traders and neighbouring residents, appropriate and practicable landscaping and screening measures are implemented around the perimeter of the sites to aid the screening of construction activities from sensitive receptors.

11.3 Monitoring and Measurement

- Housekeeping and safety inspections are to be conducted at least twice per day or as necessary to ensure barriers are in place and no waste is crossing the fence line.
- Night inspections should be conducted as per the above parameters plus luminosity checking.
- Complaint monitoring is to be continuous, especially on the timely closure of complaints and effectiveness of the action taken.
- Reporting and review by the team are to be done every month.

11.4 Additional Statutory Requirements

A landscaping permit is sought from the local municipality.

Compliance with State's Law.

Conformance to GAME&P.

12. ECOLOGY AND NATURE CONSERVATION

12.1 Key Points

Although the area is identified with low ecological status, the Contractor will adopt or set out A methodology detailing mitigation measures and actions to be taken in the unlikely event that a protected species is sighted in the area. This will include stopping the work, staying away so as not to disturb the fauna, never uprooting or destroying flora without proper approval, and contacting concerned agencies or authorities for further study and advice. See Section 12.3 for more detailed control strategies.

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12.2 Information additional to project CEMP

When nesting birds are sighted in a work site area or other wildlife have been observed during the visit within the vicinity of a worksite area. Local authorities will be notified with all work ceased until permission is received to continue.

12.3 Environmental Control Strategies

- All personnel involved in the project are inducted concerning ecology and nature conservation. Follow-up meetings are to be done through toolbox talks and awareness campaigns;
- In the event of sightings of any protected species in the vicinity of the work area, the Contractor's Project Management Team shall be informed immediately;
- Works must cease in that particular area until the animal has moved away;
- If the animal does not, or cannot move away, the site Project Manager must then inform the Ministry of Environment for further advice;
- There should be no movement of flora or fauna without proper approval from the appropriate authorities;
- The project site is properly protected or restricted to prevent access of unauthorized persons;
- Wastes from construction activities should be adequately managed in terms of a waste management regime for proper waste removal to ensure that it does not end up in the terrestrial environment. An adequately enforced waste management plan also serves to reduce the attraction of pest species such as rodents and flies to the site.

12.4 Monitoring and Measurement

- Suspected sightings of protected species should be reported to the Project Manager;
- Sightings in or within the vicinity of the site should be recorded within the monthly environmental site report;
- Continuous vigilance should be maintained for chance sightings.

12.5 Additional Statutory Requirements

Compliance to State's Law

Compliance with Environment Standards

13. ARCHAEOLOGY AND CULTURAL HERITAGE

13.1 Key Points

Although the work areas have been identified with low archaeological status, the Contractor will adopt or set out methodology detailing mitigation measures and actions to

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be taken in the unlikely event that archaeological remains are discovered during the site excavation.

13.2 Information additional to project CEMP

Not applicable.

13.3 Environmental Control Strategies

- Toolbox talks concerning potential archaeological finds during earthworks to be provided to all construction workers;
- Construction staff (Contractor and Sub-Contractors) should be instructed to be aware of the importance of contacting the HSE Engineer should they uncover any archaeological or cultural artefacts;
- Any finds or suspected evidence of archaeological and/or cultural materials must be immediately reported by any person/s involved to the HSE Engineer and all works must be stopped immediately until further notice;
- Museums Authority should be contacted immediately and a representative is requested to assess any find within 72 hours to determine the next steps.
- Any unexpected finds of archaeological or cultural value should not be removed unless given clearance from the relevant departments (i.e. National Museums Authority).
- Work in areas adjacent to the archaeological find will continue as per plan unless additional finds are found;
- An archaeological watching brief should be kept in case further discoveries are made.

13.4 Monitoring and Measurement

Visual inspection is to be carried out during all excavation works to identify any artefacts of archaeological or cultural importance. This will involve the following:

- Observation during excavation activities to identify the presence of any artefacts of archaeological or cultural value; and
- Immediate reporting of details of any potentially archaeological sensitive finds.

All reports or records are filed, maintained and readily made available to all interested parties.

13.5 Additional Statutory Requirements

Meteorology and Environment are designated as the responsible authority for the protection of the environment and the development of environmental protection standards in the State.

14. COMMUNITY MATTERS AND COMMUNICATIONS STRATEGY

14.1 Key Points

The contractor will develop a range of mitigation measures that are going to be

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implemented and monitored in ensuring environmental protection from any construction-related impacts to local communities within the vicinity of the Project and along the main access roads as there will be an increased probability for nuisance to receptors along the main access roads from dust, noise, emissions, traffic and increased level of activity. These can affect local communities through disturbance to residential homes, businesses and commercial outlets and therefore public participation and communication of construction information, where relevant should be actively undertaken and communication pathways available to air grievances or questions throughout the construction period.

Project signboards are to be placed on the appropriate and approved locations for maximum viewing. Contact details and information are to be legibly printed for easy recognition.

14.2 Information additional to the CEMP

As part of a communication strategy in addressing community issues, a grievance mechanism is to be put in place. This will provide full documentation of complaint handling. The following should be followed:

- All complaints are to be acknowledged within 48 hours of receipt and reported to the Project Manager.
- The HSE Engineer will spearhead/dispatch an investigation team for the filed complaint.
- The investigation team will take action without undue delay.
- Remedial actions raised by the investigation team are to be implemented.
- The complainant is going to be contacted by the HSE Engineer on the outcome of the investigation within one week unless clarifications and/or additional information are needed.

As much as possible the following should be recorded:

- ☐ Date and time of the complaint
- ☐ The method by which the complaint was made
- ☐ Complainant's details
- ☐ Nature of the complaint
- ☐ Actions are taken in addressing the complaint and by whom
- ☐ Details of response provided to the complainant

All complaints and actions taken are to be discussed as a toolbox and at site coordination meetings.

14.3 Key communication issues

It has to be ensured that necessary permits and communications are done before undertakings of the following activities:

- Erection of fencing/barriers – visual impacts, loss of space
- Traffic diversions – impact on accessibility, impact on traffic movements
- Diversion of pedestrian paths – impact on accessibility

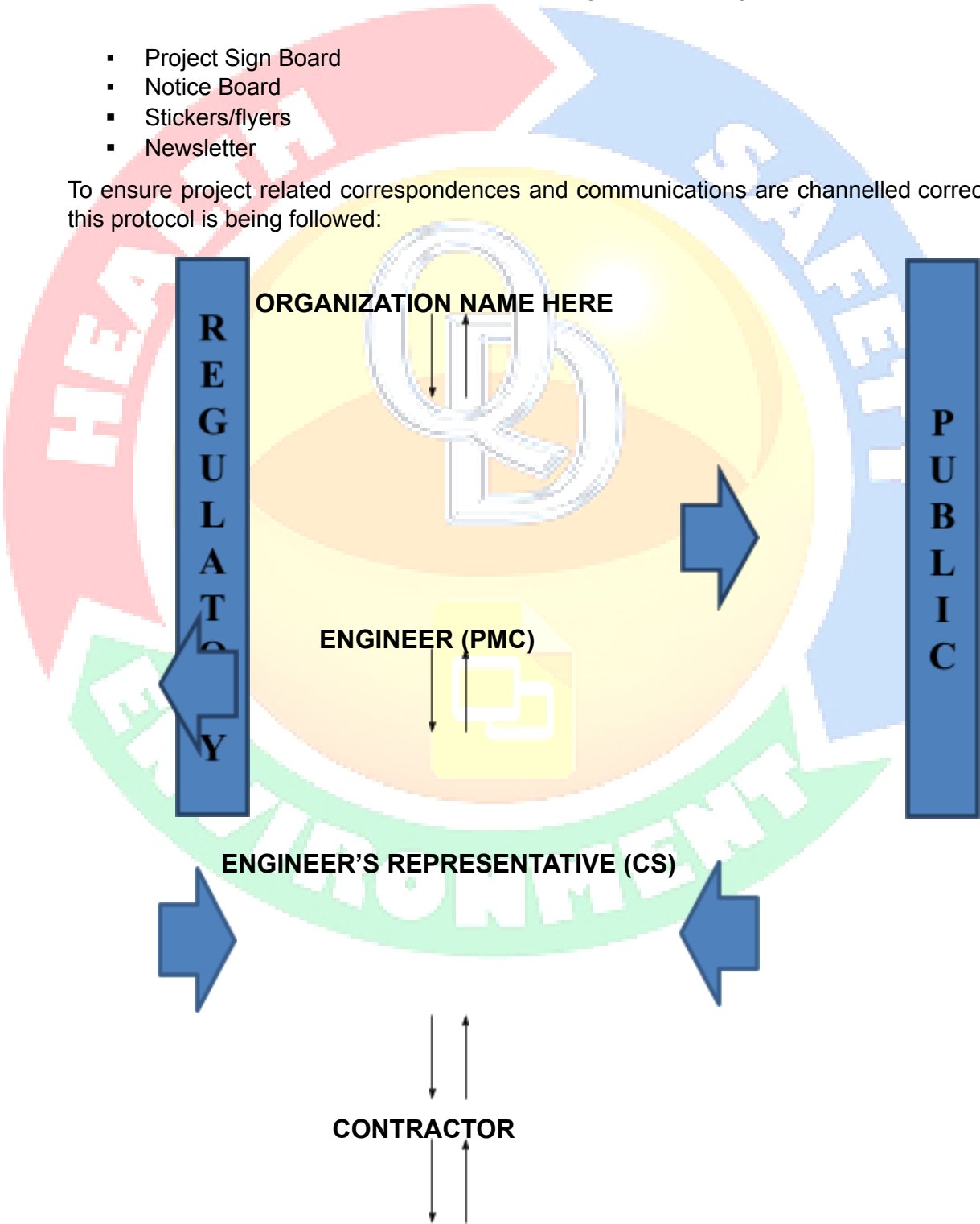
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- Installation of construction equipment – visual impact and entice concern of what is contained with
- Construction routes and accesses – enforcement to avoid residential areas.

Provide contact details to local communities through the following means:

- Project Sign Board
- Notice Board
- Stickers/flyers
- Newsletter

To ensure project related correspondences and communications are channelled correctly, this protocol is being followed:



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SUB-CONTRACTOR / SUPPLIER

15. EMERGENCY PREPAREDNESS AND RESPONSE

15.1 Key Points

Incidents may happen unpredictably and each will present a unique set of challenges. To manage these things, procedures are laid out and tested for their effectiveness.

15.2 Definitions

Environmental Aspect – is a feature or characteristic of an activity, product, or service that affects or can affect the environment.

Environmental Impact – is a change to the environment. Such change can be positive or negative.

Environment Incident – is an event that has either caused an uncontrolled pollution release or an incident that has breached legislative or other requirements.

Environmental Emergency – is an incident that requires immediate action to prevent and control excessive damage to the environment.

Other definitions of terms can be found in **Appendix A**.

15.3 Information additional to the CEMP

Identified potential emergencies are the following:

- Hydrogen Sulphide releases
- Chemical/Oil/Fuel spillage
- Excessive dust releases
- Flooding of excavations
- Soil erosion
- Generation of excessive noise
- Discovery of unexpected contamination.
- Archaeological finds or historical features, unidentified artefacts and protected species (flora and fauna)

15.4 Environmental Emergency Plan

As important as it is, potential environmental incidents should be contained in the

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environmental emergency plan. The following are the identified potential environmental incidents for this project.

- Leakage or release of gaseous substance
- Chemical / Oil / Fuel Spillage
- Excessive dust release
- Generation of excessive noise
- Archaeological finds or historical features, unidentified artefacts and protected species

15.5 Emergency Contact Details

Sr.NO	Name	Designation	Organization	Contact NO.
1.				
2.				
3.				
4.				
5.				
6.				
8.				
9.				

15.6 Immediate Actions to be taken in the event of an Environmental Incident

The contractor will take appropriate and immediate actions in the event of an environmental incident happening.

Generally, work will be put to stop and the area is condoned or seal off. Then workers will be moved to a safe location and an initial report will be sent out to [YOUR COMPANY/CLIENT's NAME] and or representative, PMC, Police, Civil Defense and Ambulance. Immediate actions depending on the situation will be taken. An Incident investigation will be done and a report is generated. The report will then send out to the stakeholders including therein the immediate action plan and corrective action (refer to Procedure on Reporting Accidents/Incidents and Near Misses).

The Project Manager should take charge in activating the appropriate response procedure to minimize impact and mitigate damage to the environment. Overall responsibility of the implementation lies in the hands of the Project Manager. Proper recording of related information should be applied.

15.7 Specific Emergency Situations

Hydrogen Sulfide releases

In the event of major H₂S releases, the steps listed below should be followed.

- Raise the alarm.
- The area should be cleared of all people.

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- All personnel to vacate the area and proceed to Muster Point. Remember to observe the direction of the wind.
- Roll call should be performed to ensure all persons are accounted for.
- Essential staff to wear adequate Personal Protective Equipment and attempt to contain the source.
- If attempts to contain the source are unsuccessful, consider initiating evacuation of people out of the site.

Chemical / Oil / Fuel spillage

During a Chemical / Oil / Fuel Spillage or leak, the priority actions listed below should be taken.

- Ensure personnel are safe.
 - ☐ If personnel are injured and can be removed from the area safely, do so.
 - ☐ Check Safety Data Sheet (SDS) as to the hazards and first aid measures.
- Stop the flow of leaking material.
 - ☐ Reposition the drum to stop the flow.
 - ☐ Shut off the source of the leak.
 - ☐ Equipment filled with the material that is found leaking should be removed from service as soon as possible.
- Contain the spill.
 - ☐ Bund and protect all open sumps and manholes that discharge to the stormwater system.
 - ☐ If the chemical has entered the drains, inform the supervisor/foreman immediately.
 - ☐ Put dike on major spills with soil or other material.
 - ☐ Prevent spill material from entering drains, waterways or onto the ground.
 - ☐ Where it is not possible to remove equipment from service immediately, some means of collecting the leaking material should be used, such as metal trays, buckets, polyethene sheeting.
- Protection of Personnel.
 - ☐ Personnel entering the leak or spill area are provided with and use appropriate protective equipment, as set out in the Safety Data Sheet for that particular chemical.
 - ☐ All non-essential personnel are kept out of the immediate leak or spill area.
- Report the spill.
 - ☐ Report the incident once the spill is contained or get a fellow worker to report the incident to the foreman or supervisor.
- Actions of Responsible Person.
 - ☐ The foreman and/or supervisor assess the situation quickly to determine the need for external help.
- Clean up.
 - ☐ Minor spills or leaks can be cleaned up using absorbent material, sand, sawdust, or kitty litter. Check SDS for the appropriate material to be used.

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- ☐ All liquid and contaminated material must be collected for disposal.
- ☐ Transfer contents of leaking drum to new clean drum.
- ☐ Ensure collected material is placed in a container that will not leak during transportation off-site for disposal.
- ☐ Check SDS that the disposal route is appropriate, e.g. to landfill.
- Incident/investigation.
 - ☐ Foreman/supervisor to prepare a short incident report.
 - ☐ Comment on contingency plans: Were they effective in dealing with the situation?
 - ☐ If any improvements are identified, inform the person responsible.

Excessive dust releases

If an excessive dust release happened as a result of the construction activities, the following should be observed:

- Identify the source.
- When dampening the dust down, ensure that the run-off does not enter any drains or groundwater to prevent water pollution.

Generation of excessive noise

If excessive noise is generated as a result of the construction activities, the following should be observed:

- Identify the source.
- Assess the situation and associated noise level.
- Meet the complainant as soon as any complaint has been received.
- Decide on what to do to minimize the noise in propagating on site with regards to the duration of the works.

Discovery of an unexpected contamination

If unexpected contamination is discovered during construction, the following should be observed:

- Stop the work.
- Report the situation.
- Demarcate or barricade and seal off the area.
- Clear the site if a risk of fire or explosion is present.
- Contact appropriate authorities.
- Arrange an inspection and testing by a competent person or agency.
- Record the incident

Archaeological finds or historical features, unidentified artefacts and protected species (flora and fauna)

Although less chance of having this type of situation, the following should be taken in case an incident occurs.

- Stop all the work near to the findings.

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- Demarcate or barricade the area.
- Restrict access to the area.
- Contact environmental experts and appropriate government agencies.
- Report the incident.

15.8 Environmental Incident and Near Miss Reporting

Environmental Incident

The incident must be categorized so that proper and appropriate actions can be taken. So, upon identification or notification of the incident, it is categorized into using the parameters below:

Category	Definition	Responsibility
A	Minor Incident <i>An incident that can easily be controlled and prevented from recurrence</i>	After implementing the incident response for a specific situation, HSE Officer shall notify the HSE Engineer
B	Medium Incident <i>An incident that can only be controlled and prevented from recurrence upon consultation with the HSE Manager</i>	After implementing the incident response for a specific situation, HSE Engineer shall notify the Project Manager and local authorities.
C	Major Incident <i>An incident that can't be controlled by the Project Team or will affect local communities/authorities</i>	HSE Engineer in agreement with the Project Manager and will make contact with relevant authorities for the response plan.

Table 4: Incident Categories

Near Miss Reporting

The near-miss reporting of incidents with the environment shall adhere to the same principle of health and safety.

All environmental incidents and near misses reported should merit a Non-conformance report. This is to ensure that corrective and preventive actions taken are properly recorded and responsible personnel are taking actions without undue delay.

15.9 Emergency Response Plan Communication

Emergency plans are communicated to all interested parties using induction training, during toolbox talks, through short briefings and usage of bulletin boards. The language to be used is suitable to the intended audience.

The communication program is an ongoing activity to ensure that everyone working on the project is updated and competent in implementing the actions needed in times of emergency.

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16. CRITICAL ACTIVITY

All critical activities will be done as per defined standards, policies, procedures and Local / State regulations.

17. DEMOBILIZATION

When Contractor considers that the Works are complete, the following will be performed:

- All temporary works are dismantled
- Perform reinstatement as necessary and keep the area tidy and clean before handover

Appendix A -

1. 0 ABBREVIATIONS

Abbreviations and Definitions:

CEMP	Construction Environmental Management Plan
DAF	Dissolve Air Floatation
EN	Environment
EMP	Environmental Management Plan
H & S	Health and Safety
HazMat	Hazardous Materials
HSE	Health, Safety and Environment
ISO	International Organization for Standardization
EIA	Environmental Impact Analysis
ERA	Environmental Risk Assessment
EPRP	Emergency Preparedness & Response Plan
EMS	Environmental Management System
MSDS	Material Safety Data Sheet
PM	Project Manager
PMC	Project Management Consultant
PR	Procedure
PWA	Public Works Authority
Contractor	General Construction Contractors
TSE	Treated Sewage Effluent
GAME& P	General Authority for Meteorology Environmental & Protection

2.0 DEFINITIONS

ADVERSE WEATHER CONDITIONS	Impairment of the natural quality of the environment for any use that it can be put to. Injury or damage to property, or plant, animal or aquatic life Harm or material discomfort to any person. Adverse effect on the health of any person
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	Impairment of the safety of any person.
AMBIENT AIR	The main body of atmospheric air outside an enclosure or closed working spaces including manmade offshore locations.
CLIENT	
CONTRACTOR	General Construction
CORRECTIVE ACTION	Action is taken to prevent the recurrence of the problem
DISCHARGE	This means the addition of contaminants to the ambient air, Orceiving water, or through a conveying system to a treating device.
ENVIRONMENT	Means earth, air, water and coastal areas of the state
ENVIRONMENTAL QUALITY STANDARD	This means the Standards that dictate the level of pollution or nuisance shall not be exceeded.
IMMEDIATE ACTION	Action is taken to correct the concern/situation immediately
INSPECTION	Conformity evaluation by observation and judgement accompanied as appropriate by measurement, testing or gauging
POLLUTANT	This means any solid, liquid, gas, odour, noise, radiation, heat, vibration or any combination of these resulting directly or indirectly from human activities that may cause an adverse effect.
PREVENTATIVE ACTION	Action adopted by Contractor to control activities specific to the project taken to prevent the occurrence of a problem
PROCEDURE	A document that details the methods adopted by the Contractor to control activities specific to the project.
PMC (The Engineer)	Program Management Consultant-
CS Engineer's Representative	The engineer, representative – Construction Supervision
SUPPLIERS / SUB-CONTRACTOR	Any organization from which Contractor procured materials and/or services that is integral to its operation.
WASTEWATER	Means any process water resulting from industrial, domestic or agricultural processes or other activities.

Appendix B - PROJECT ORGANIZATIONAL CHART

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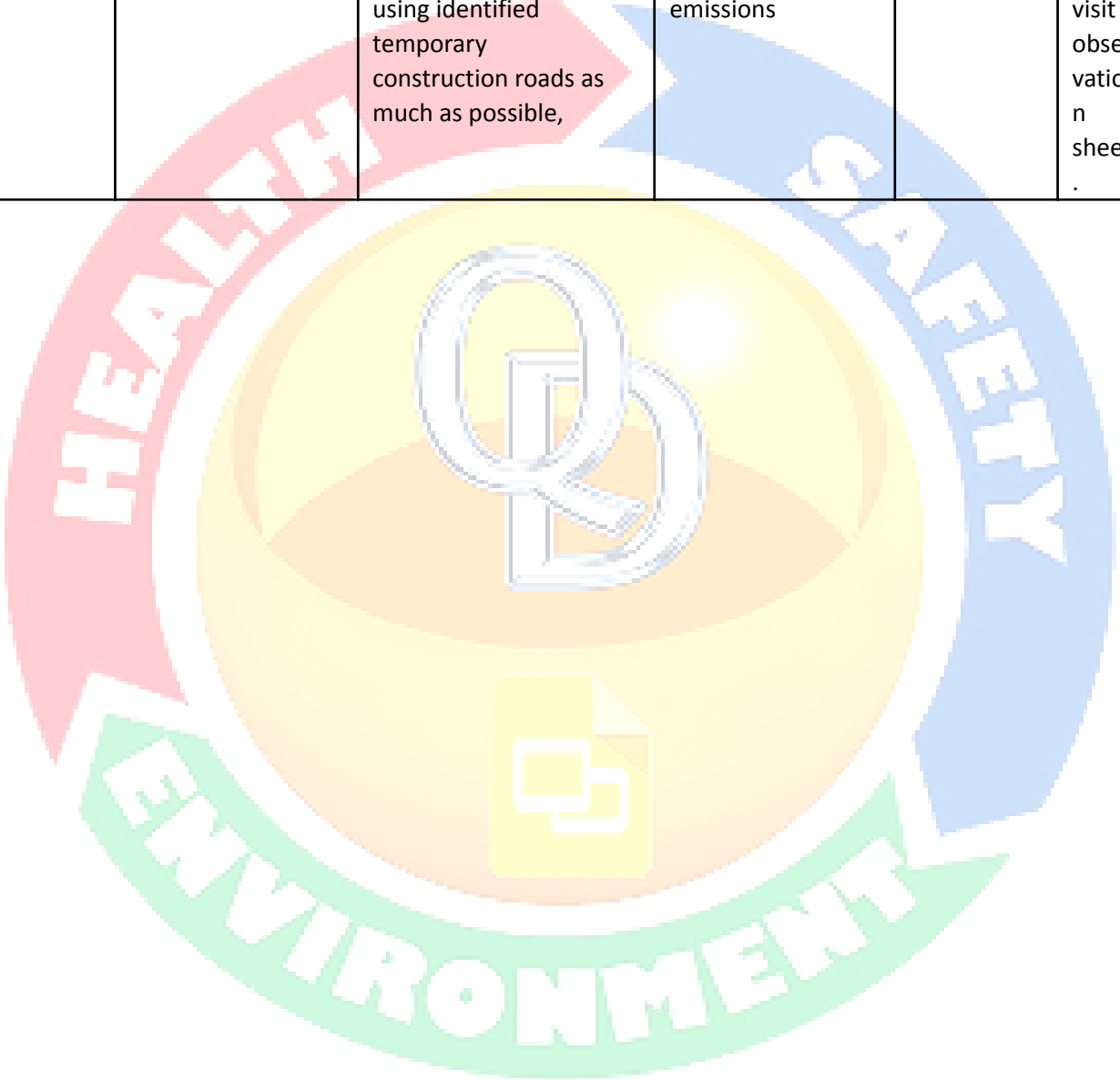
Appendix C - Significant Environmental Aspects and Controls

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Aspect	IMPACT	MITIGATION MEASURES	MONITORING REQUIREMENTS	TIMING	REPORTING
Air Quality Use of gases Dust emission	Deterioration of Air Quality and potential human health impacts from gaseous pollutants and dust emissions from onsite and offsite activities	Low Sulphur diesel fuel will be used, if available, through the local supply chain.	The procurement department will be informed and monitoring will be made for the supply of diesel.	Pre-Mobilization	Monthly Report
		Power generators will have appropriate stack heights following national and IFC EHS Guidelines.	Measure stack height.	Post generator installation	Monthly Report
		ASH will develop a vehicle/equipment maintenance schedule and all equipment will be maintained in good working condition for optimum emissions.	Vehicle/equipment maintenance checklists Log of all vehicle/construction equipment maintenance records	Monthly	Monthly Report.
		Dust emissions at the site will be minimized by implementing good housekeeping and sound management practices including dust suppression through sprinkling where required.	Visual check for dust emissions site-wide. Non-Compliance Record (NCR) in the daily report highlighting both application of the mitigation as well as effectiveness.	Daily	Daily site visit observation sheet.

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		Limiting the speed of construction vehicles to 20 km/hr on unpaved areas and using identified temporary construction roads as much as possible,	Visual monitoring for dust emissions	Daily	Daily site visit observation sheet .
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		following the project's approved Traffic Management Plan.			
		Minimization of dust from open area sources, including stockpiles, by using appropriate control measures such as installing enclosures and covers, and increasing the moisture content.	Visual check for dust emissions	Daily	Daily site visit observation sheet
		Where possible avoiding simultaneous side by side operation of excessive dust-generating activities such as material handling.	Visual check for dust emissions	Daily	Daily site visit observation sheet
		Any equipment or machinery observed to be emitting dense exhaust emissions will be taken out of service and the cause will be investigated and corrected.	Visual check of exhaust emissions	Daily	Daily site visit observation sheet
		All mobile plants will comply with National Emission Standards for exhaust emissions.	Exhaust Emissions Report	Pre-mobilization and then yearly	Monthly Report
		Turn off engines and equipment when not in use.	Visual checks	Daily	Daily site visit observation sheet

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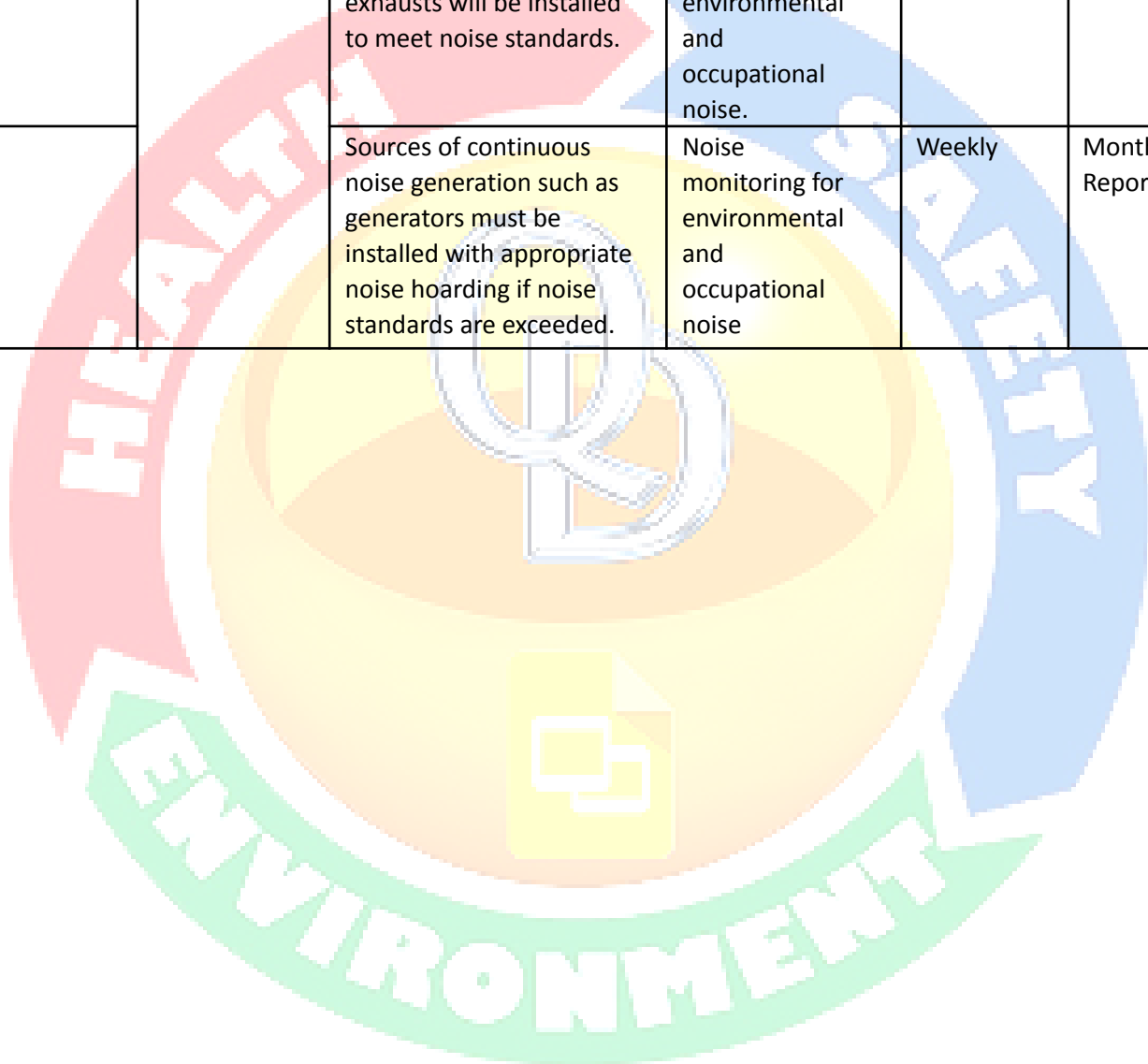
		Uncontrolled fires will be avoided and open fires will be prohibited; fire and smoke detection devices will be adequately positioned and maintained throughout activities and in living quarters.	Visual checks	Daily	Daily site visit observation sheet
		Any equipment will be avoided that requires the use of ozone-depleting substances (ODSs) such as, but not limited to, halons, chlorofluorocarbons, 1,1,1trichlorofluorocarbon, carbon tetrachloride, methyl bromide or hydrobromofluorcarbon.	Review of SDS for potential ODS such as refrigerants	Before the use of potential ODS	Material usage request

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		Notification and approval from the HSE department will be obtained in advance of bringing it to the project site.			
Traffic / Vehicles manoeuvring	Greenhouse Gas emissions contributing to Climate Change	Traffic Management Plan which considers the reduction of GHG emissions by ensuring reduction of vehicular traffic (for material supply and workers transportation) as much as possible	Transportation Plan will be followed	Pre-mobilization	Monthly Report
		All stationary and mobile machinery with fuel combustion engines will be used only to the minimum required and engines are switched off when not in use.	Visual checks	Daily	Daily site visit observation sheet
Noise	Potential Impacts from noise on employees' health and nearby receptors including workers at Camp	Noise Management Plan will be followed which is a part of the CEMP.	All control measures were addressed.	Pre-mobilization	Submission for approval and update as required
		The environment Manager or other competent staff will conduct a noise risk assessment as required by the Noise Monitoring Plan to identify which noise sources poses a risk to noise-sensitive receptors such as residents at nearby towns, workers camps etc.	Conduct ambient noise monitoring at identified receptors for monitoring parameters. As a minimum for comparison with national standards (GAMEP 2012: National Environmental	Monthly	Monthly Report

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			Standards for Noise) and IFC EHS Guidelines		
		Installation of suitable mufflers on engine exhausts will be installed to meet noise standards.	Noise monitoring for environmental and occupational noise.	Weekly	Monthly Report
		Sources of continuous noise generation such as generators must be installed with appropriate noise hoarding if noise standards are exceeded.	Noise monitoring for environmental and occupational noise	Weekly	Monthly Report



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		Reducing project traffic routing through community areas such as the neighbours-towns wherever possible. mechanism.	Records of community grievances will be, due to construction traffic-related noise issues.	Weekly	Monthly Report
		Workers will be identified that will be exposed to elevated noise levels and brief them of occupational risks from noise exposure. Noise reduction PPE's will be provided to workers. Any noise-related complaints from workers will be addressed.	Records of PPE distribution. Daily site visits to ensure PPE use at high noise areas. Record any grievances from workers.	Daily	Monthly Report
		Construction traffic of heavy vehicles via local community residential areas will be banned between nighttime hours of 10 PM to 6 AM.	Spot checks of traffic movements.	Daily	Monthly Report
Handling, transporting and servicing, refuelling and working with Chemicals	Potential contamination of soil and groundwater from routine activities or unplanned events due to spills of hazardous materials/chemicals	The good storage infrastructure for storage and handling of hazardous materials such as fuel, oil and chemicals on site including verifying that secondary containment with a minimum capacity of 110% of the maximum storage capacity available.	Site inspections to check storage infrastructure is adequate	Pre-mobilization	Daily site visit observation sheet

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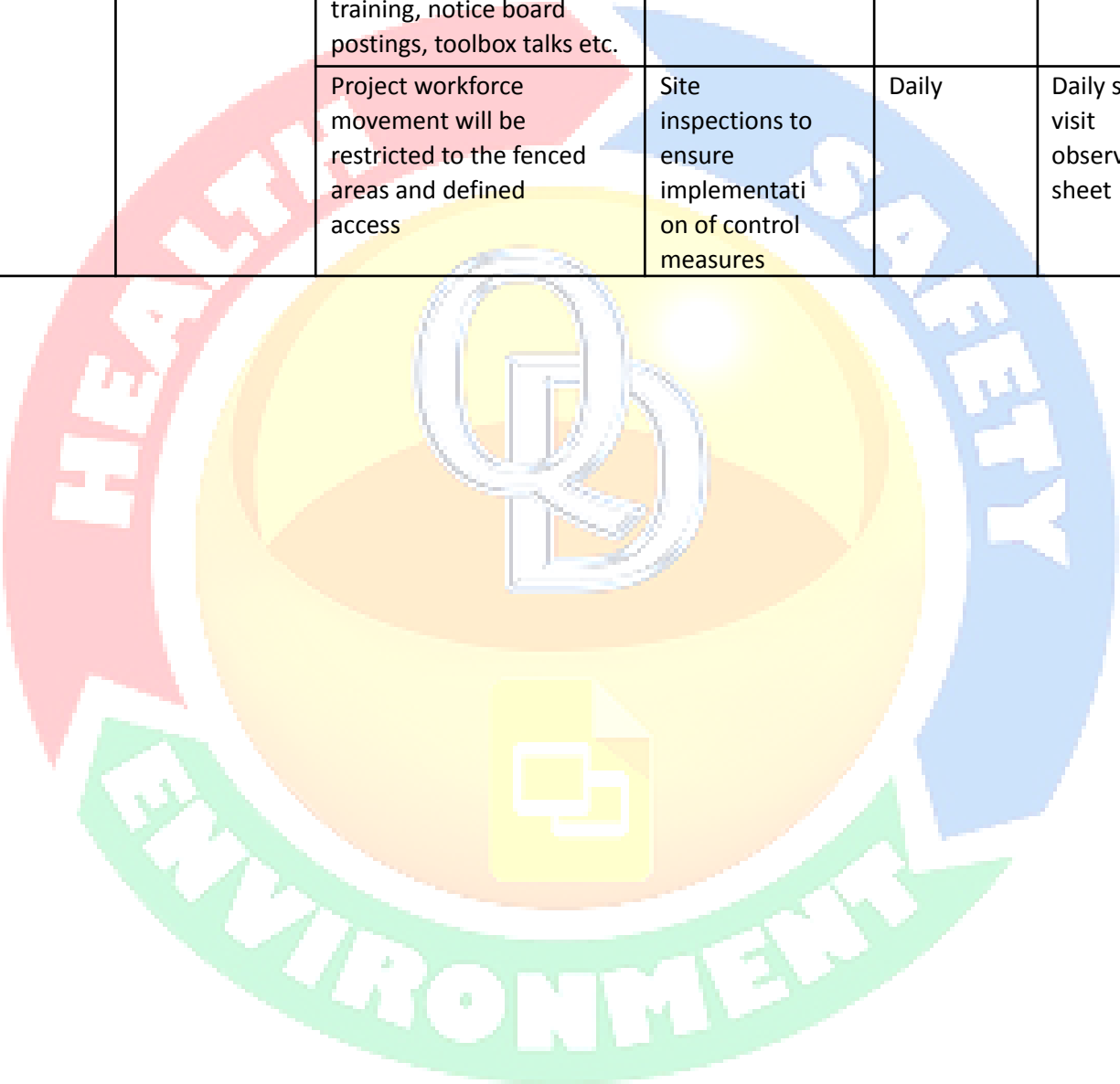
		Hazardous material storage facilities will be adequately maintained and checked for integrity.	Site inspections to check storage facilities such as fuels tanks, bund walls and chemical storage areas adequately maintained.	Daily	Daily site visit observation sheet
		Refuelling of vehicles and machinery will occur only within bunded and approved areas to contain accidental spills.	Site inspections to check the implementation of control measures.	Daily	Daily site visit observation sheet
		Spill kits will be made available on site.	Site inspections to ensure implementation of	Daily	Daily site visit observation sheet

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			control measures.		
		Training including mock spill drills will be provided for relevant personnel in the emergency response and spill contingency procedures, including reporting requirements and the deployment of spill control equipment.	Record of training and toolbox talks provided to workers.	Weekly	Monthly Report
		Underground septic tanks will be constructed in such a way as to ensure spills and leaks are avoided.	Monitoring of surrounding areas of septic tanks or wastewater holding tanks for leaks.	Daily	Monthly Report
		Drip trays will be placed underneath all static oil/fuel bearing construction equipment, including generators, to capture spills.	Site inspections to ensure implementation of control measures.	Daily	Daily site visit observation sheet
		Concrete mixer truck washing will be carried out only at dedicated and approved wash bays which has adequate capacity and containment to capture cement mixed wastewater	Site inspections to ensure implementation of control measures	Daily	Daily site visit observation sheet
Ecology	Potential disturbance or injury to terrestrial fauna and flora	Any undisturbed areas (i.e., work areas not already cleared including access roads) will be subjected to a preconstruction survey to identify species such as spiny-tailed lizards and if found will be relocated to an approved location before the start of work.	Pre-construction ecological survey	Before the start of site work	Pre-construction Ecological Survey Report

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		General awareness of the crew will be enhanced regarding the wildlife, through environmental training, notice board postings, toolbox talks etc.	Maintenance of training records and site visits	Daily	Monthly Report
		Project workforce movement will be restricted to the fenced areas and defined access	Site inspections to ensure implementation of control measures	Daily	Daily site visit observation sheet

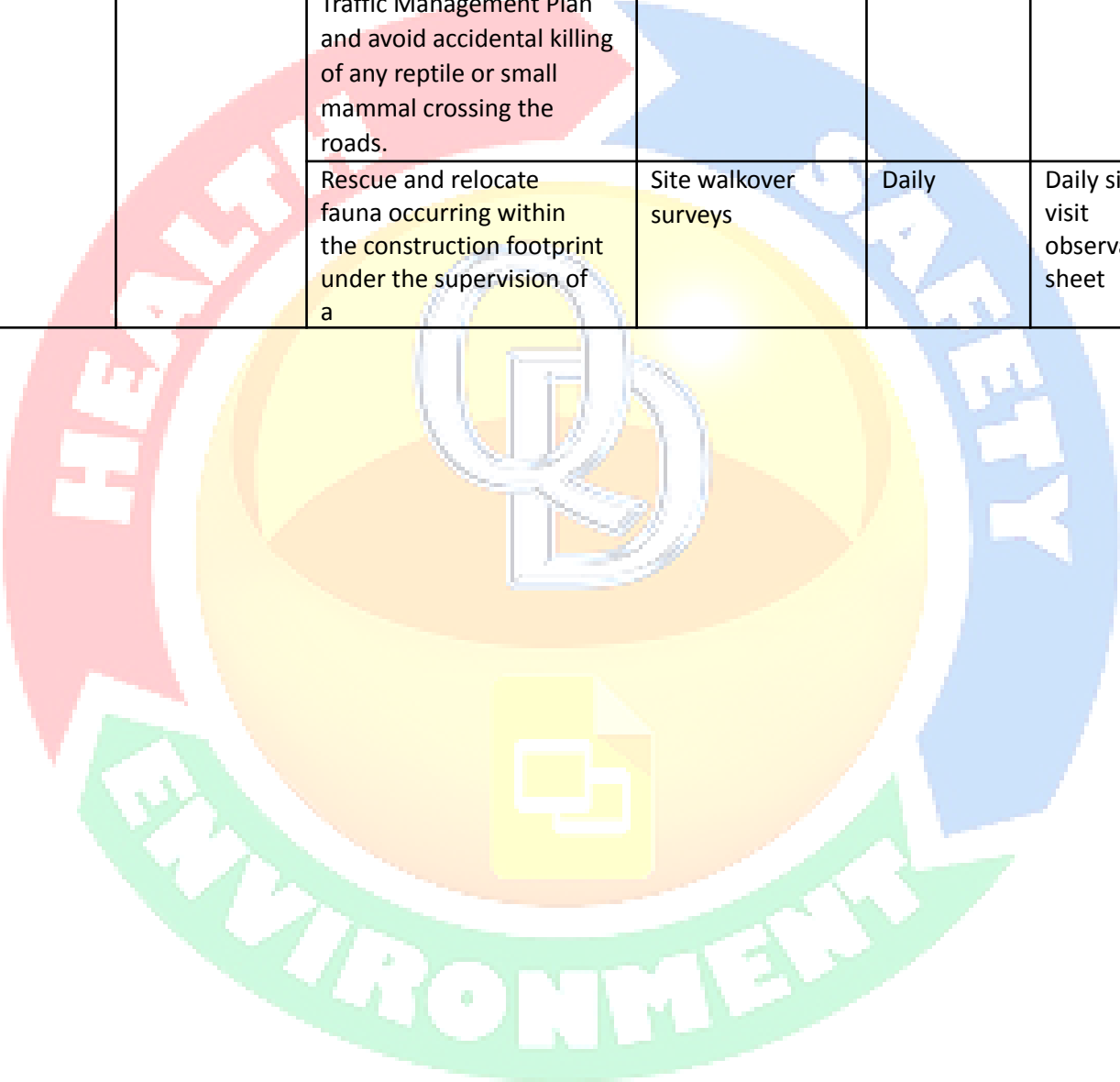


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		roads in the areas surrounding the site.			
		Illumination on the construction site and/or campsite will be minimized using appropriate shades, the security lights will be directed within a corridor of 200 m from the fence.	Site inspections to ensure implementation of control measures	Daily	Daily site visit observation sheet
		The workforce will be protected from potential ingress of snakes and other reptiles into the site, the perimeter fence will be made snake/reptile proof. Consideration will be given to the option of either using finer mesh fencing or a metal plate at the lower level (base) – upstanding to 400mm high (about 12 inches) and buried to 100mm below surface level (500mm in total) - for the perimeter fence.	Approved fencing design will be followed	Pre-mobilization	Fence design documents
		The planting palette for all terrestrial areas will use native local species only (unless otherwise agreed).	The approved landscape plan will be followed	Pre planting	Landscape Plan
		Trapping and hunting of fauna (e.g. Spiny Tailed Lizard) by construction personnel will be strictly prohibited.	Site visual inspections	Daily	Daily site visit observation sheet

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		The speed limit of 40 km/hr will be enforced for construction vehicles or as per the project approved Traffic Management Plan and avoid accidental killing of any reptile or small mammal crossing the roads.	Site walkover surveys	Daily	Daily site visit observation sheet
		Rescue and relocate fauna occurring within the construction footprint under the supervision of a	Site walkover surveys	Daily	Daily site visit observation sheet

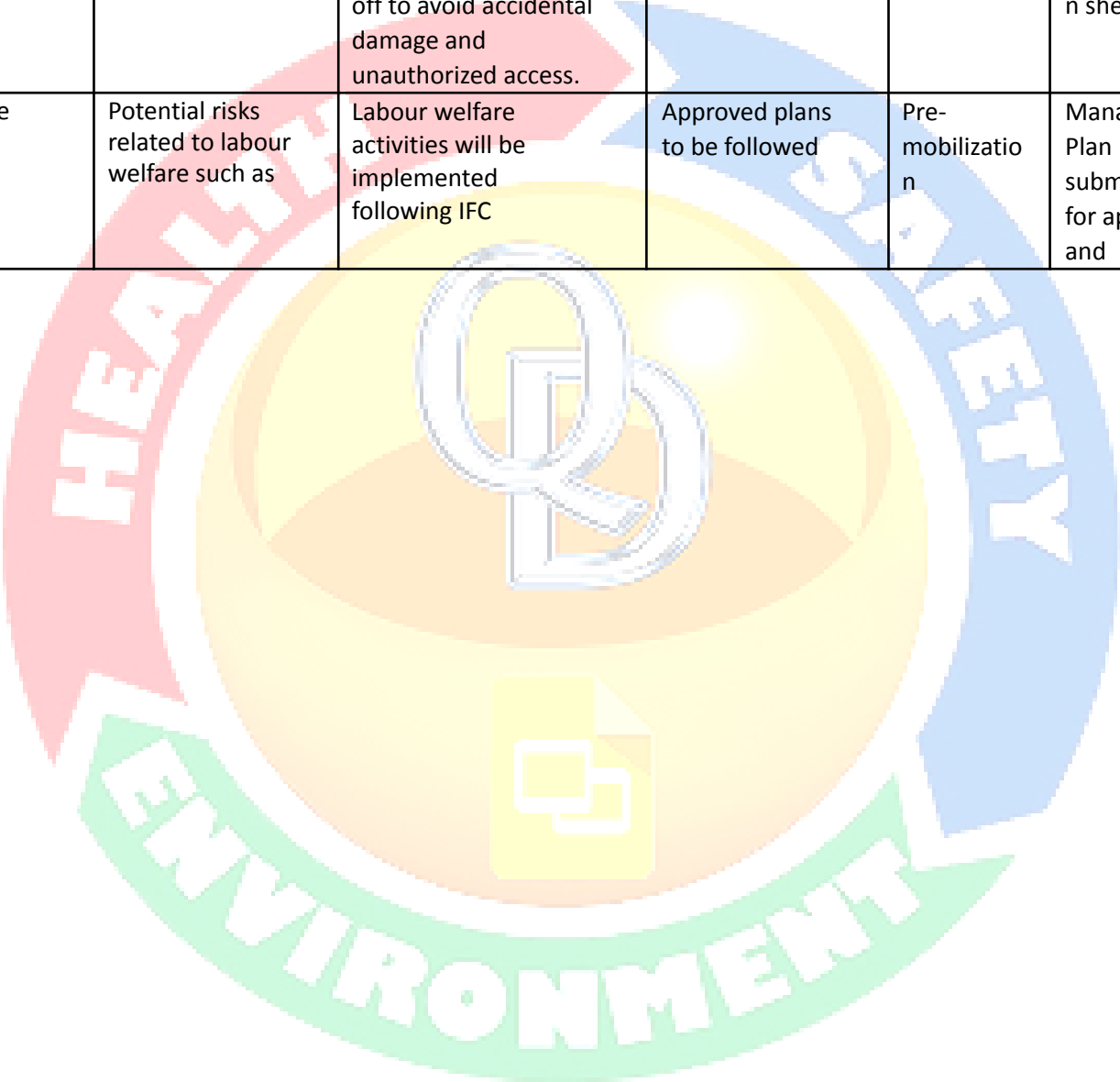


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		suitably qualified ecologist.			
		Camp waste will be kept covered and will be disposed of in such a manner that animals are not attracted to it.	Site inspections to ensure implementation of control measures	Daily	Daily site visit observation sheet
Archaeology	Potential damage to known or unknown archaeological and cultural heritage assets	The risk of encountering archaeological artefacts during construction works will form part of site induction for staff and workers.	Maintenance of training records and ensuring compliance.	Before site deployment of personnel	Monthly Report
		Project personnel will receive training and demonstrate competency in the identification of Chance Finds and Chance Find procedures (i.e., actions that are required in the case of a potential Chance Find) Training and induction for site workers	Maintenance of training records and ensuring compliance.	Before site deployment of personnel	Monthly Report
		In the event of a Chance Find, work at the site will be stopped; A heritage specialist will be called in to investigate the finding. The heritage specialist will provide management measures for the protection or removal of the find in consultation with the heritage authority. Work can only recommence in the area of the find once written permission from the heritage authority and	Monitoring of excavation works	Daily	Immediate reporting of any Chance Finds

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		the heritage specialist.			
		The archaeological resource that will be identified will be fenced off to avoid accidental damage and unauthorized access.	Site walkover surveys	Daily	Daily site visit observation sheet
Welfare	Potential risks related to labour welfare such as	Labour welfare activities will be implemented following IFC	Approved plans to be followed	Pre-mobilization	Management Plan submission for approval and



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	inappropriate labour working conditions and general health and safety requirements.	Performance Standards 2 by the preparation and implementation of the following: • Workers Welfare Plan • Grievance Mechanism Plan			update as required
		Project workers will have contracts with clearly defined and communicated terms of employment. Workers will be able to retain access to their passports.	Review of contract documents	Pre-mobilization	Monthly Report
		Accommodation will be provided to be developed and maintained to international standards.	Monitor for compliance	Monthly	Monthly Reports

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		Health care, monitoring and disease prevention measures will be carried out for the workforce. This must include the following: - Initial health check for all workers - Access to medical screening and healthcare throughout the project duration - Site clinic will be available with a medical care provider (doctor or nurse) - An emergency vehicle with a driver will be available at all times to take sick workers to the hospital. - Summer restricted working hours rules will be followed - Consumption of alcohol and other substance abuse will be strictly banned at the camps	General health checks of the workers. Training to staff related to disease prevention and best practices	Monthly	Monthly Report
		Drinking water will be	Drinking water	Monthly	Monthly Report

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		tested monthly from potable water sources at the site and camp for quality to avoid potential health issues.	samples testing by an approved laboratory and check against WHO drinking water standards.		
		Daily site visits will be conducted to ensure Project Health and Safety requirements are complied with. This includes the use of PPEs by workers enforcing health and safety measures as per approved plans on site	Monitoring/inspection of site work activities for adherence to project H&S requirements.	Daily	Daily site visit observation sheet
		Daily site visits will be conducted to ensure Project Health and Safety requirements are complied with. This includes the use of PPEs by workers enforcing health and safety measures as per approved plans on site	Monitoring of site sanitary facilities - toilets wash areas, rest areas, food storage, drinking water supply etc.	Daily	Daily site visit observation sheet
		No pet species (cats, dogs or others) will be introduced or kept at any of the work areas or accommodation	Site walkover surveys	Daily	Daily site visit observation sheet
		Records of H&S incidents and accidents following contractor HSE Plan requirements will be maintained and reported including Lost Time Incidents (LTI) and near misses	Site walkover surveys and recording of H&S statistics	Daily	Weekly reports

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Community	Potential impacts on the community surrounding from construction activities	Spot checks will be conducted near junctions for excessive delays due to construction traffic	Keep records of community grievances will be, due to construction traffic-related noise issues	During peak times of construction traffic flow	Monthly Report
		Reducing project traffic routing through community areas wherever possible. Address grievances will be, promptly and follow the Construction Contractor's approved grievance mechanism.	Spot checks of traffic movements	Daily	Monthly Report

		Construction traffic of heavy vehicles via residential areas will be banned between nighttime hours of 10 PM to 6 AM which will be included in the Traffic Management Plan.	Spot checks of traffic movements	Daily	Monthly Report
Traffic	Potential impacts from increased traffic flow on Highway 5 Flood Risks	Traffic Management Plan will address traffic flows through local residential areas and identify ways to avoid delays, especially at junctions and roundabouts. The Traffic Management Plan will include as minimum contact details of Logistics/Transport Manager	Spot checks of traffic movements	Weekly	Monthly Report
		Completion of Pioneer Camp as soon as possible to reduce traffic flow on Highway 5	Monitoring construction progress of Pioneer camps	Weekly	Monthly Report

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		All vehicles to conform to Saudi national standards for mobile source emissions	Exhaust Emissions Report	Pre-mobilization and then yearly	Monthly Report
		All construction-related vehicles will be marked as [YOUR COMPANY/CLIENT's NAME] Project with an identification number identifying the contractor. Vehicles will be registered by the contractor and approved by the consultant before use	Review of list of vehicles as part of the registration	Pre-mobilization and then yearly	Pre-mobilization Checklist
		All vehicles will be road-worthy, and drivers will have a driver's license for the class of vehicle being driven	Checking of vehicle condition and licenses	Pre-mobilization and then yearly	Pre-mobilization Checklist
Sewage	Blockage of Natural and Site Drainage	Flood Risk Assessment for the site will be undertaken and proposed risk mitigations will be implemented	Flood Risk Assessment report and confirmation of the implementation of proposed mitigation measure.	Pre-Mobilization	Pre-mobilization Checklist
		Surplus soil is properly disposed of in a manner	Visually monitor natural drainage paths	After Rain Events	Monthly Report

		that does not disturb the natural drainage	for blockages or erosion after rain events		
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Waste Manageme nt	Potential impacts due to generation and disposal of solid and liquid wastes from construction activities	Approved Waste Management Plan to be followed and implementation plans for managing construction-related wastes	Review and approval of waste management plan for adequacy	Pre- mobilizatio n	Managem ent Plan submission for approval and update as required
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		Waste will be segregated according to their composition, source, and type at source and contained inappropriately labelled and/or colour-coded waste containers or waste skips. These bins will be located at all active work areas where waste is generated and will make provision for the sorting of solid waste. Wastes will be segregated according to the following streams: • Wood/timber • Concrete • Metal/Steel • Food/perishables • Other recyclables including paper and plastic • Waste oil • Biomedical waste • Oil soaked waste including gloves and filters • Other hazardous waste • Excavation spoil • General waste (i.e. not covered by any categories above).	Site walkover inspections to check for compliance	Daily	Daily site visit observation sheet
		All food waste bins will be placed in skips or bins with lids that are kept closed when not in use and	Site walkover inspections to check for compliance	Daily	Daily site visit observation sheet

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		emptied daily to avoid pests and scavengers. All worksites will be free of discarded food wastes or other putrescible wastes.			
		All waste will be handled following its class (hazardous or non-hazardous) and all personnel collecting, handling, transporting or disposing of waste will be trained in the proper procedures for dealing with the said waste class	Site walkover inspections to check for compliance	Daily	Daily site visit observation sheet
		To promote the "4Rs" (Reduce, Reuse, Recycle and Reclaim) waste management concept, all waste will be sorted and managed as appropriate, either for reuse, recycling or disposal. Contracts will be in place with approved waste service providers including recycling companies.	Site walkover inspections to check for compliance	Daily	Daily site visit observation sheet
		Waste to be disposed of at appropriate and licensed facilities following Waste Management Plan.	Review of waste service provider license to ensure legal permit to dispose of type of waste being handled	Weekly	Monthly Report
		Transport vehicles will cater for the type, class and quantity of waste being transported in terms of its composition, load capacity, covering etc.	Supervision of waste collection activity	Daily	Monthly Report

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		The waste manifest will be kept on record for auditing purposes, including proof of waste generated, reused, recycled and disposed of, including disposal certificates, including quantities and type of hazardous waste generated.	Maintenance of records	Daily	Weekly Report
Air emissions from vehicles, machinery, and equipment used in the construction operations	Air Pollution	Motor vehicles and machines to be fitted with appropriate exhausts to minimize emissions. Clean fuel to be used Turn off engines when not in use does not leave idling. Service & maintain vehicles regularly Daily inspections of all vehicles and machines.	Maintenance of record	periodically	Weekly / Monthly reports
Use or movement of vehicles, machines, plant or equipment	Air Pollution Noise Pollution	Vehicles carrying loose aggregate or sand to be covered whilst moving. Do not overload vehicles Keep all vehicles free from mud or dust etc. wash off as required before driving on public roads Enforce speed limits on internal roads Avoid deliveries during night hours Avoid the congestion of vehicles on-site to reduce noise levels Turn off engines when stationary	Site Inspection	Daily	Daily
Stockpiling of materials	Air Pollution	Minimize stockpile heights (under 3m) Smooth surface piling as possible to reduce the possibility of wind erosion Cover stockpiles to prevent dust clouds of windblown dust	Site Inspection	Daily	Daily

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		Loader to work on the wind-sheltered side of stockpiles			
Unpaved roads on the construction Sites	Dust generation	Existing tracks to be compacted or water sprayed Regular inspections of internal roads Enforce speed limits	Site Inspection	Daily	Daily
Handling of Materials	Air Pollution	Existing tracks to be compacted or water sprayed Regular inspections of internal roads Enforce speed limits	Site Inspection	Daily	Daily
Climatic Condition	Air Pollution Land and/or Water Pollution	During windy conditions, dust emitting activities cease. During rainy days, excavated materials are to be protected to prevent runoffs.	Site Inspection	Daily	Daily
EarthWorks for Treated, Sewage effluent Lines	Air pollution Noise pollution Possible damage to archaeological artefacts	Fence with nets or screen Limit the height of stockpiles Spray earth before excavation Plant and equipment to be well serviced All possible finding to be reported HSE Dept	Site Inspection	Daily	Daily
Fuel, Tarmac and chemical spills	Deterioration of the aquatic environment	Creation of contaminated materials	Site Inspection	Daily	Daily
Waste Disposal	Landfill	Use of landfill Pollution Risk	Site Inspection	Daily / Weekly	Daily / Weekly

Appendix D - RECYCLING & SUSTAINABILITY

1. The contractor acknowledges the need for sustainability throughout the project to preserve natural resources and reduce costs in the execution of the works to protect the environment.
2. To demonstrate our commitment to the environment and sustainability the following initiatives will be executed on the project:
 - Rocks excavated or broken up from large rock formations during the formation of trenches are being screened to provide good materials for backfilling and rocks, which can be used for hard landscaping or that can be crushed to provide sub-base materials.

- Asphalt that is milled from roads will be utilized to provide top surfaces to road diversions to give a smooth ride for drivers.
- Recycling of water from dewatering systems to be utilized for spraying haulage routes for dust suppression.
- Recycling of concrete washings after they have dried and hardened to use as sub-base for roads.
- Utilizing energy-saving light bulbs.
- Recycling stationery, paper and cardboard in offices.
- Using solar-powered flashing warning lights
- Recycling used engine oil from vehicles, plants & machines.
- Recycling vehicle tyres by having them retread.
- Maintaining to the speed limits or below and turning off engines reducing fuel consumption
- Recycling formwork timbers
- Recycling scrap metal
- Dampening down spoil heaps to prevent dust dispersed.
- Recycling food waste to feed animals

Appendix E - Environmental Incident Classification and Response

Introduction

It is the nature of major incidents that are unpredictable, and each will present a unique set of challenges. In formulating a major incident plan, the task is to have a set of expertise available and to have developed a set of core processes to handle the uncertainty and unpredictability of whatever happens. Co-operation between local regulatory bodies is a necessity and must be addressed when formulating the plan.

For this purpose of this procedure, incidents have been classified into different tiers according to their significance:

- Tier A: Minor;
- Tier B: Medium; and
- Tier C: Major (also referred to as an 'Emergency').

Table 1. Potential Environmental Incidents.

Potential Environmental Incidents	
▪ Oil / Fuel	▪ Chemical
▪ Explosion / Fire	▪ Dust / Bulk Powder release
▪ Leakage of gaseous substance	▪ Generation of excessive noise
▪ Disturbance to habitats	▪ Archaeological finds

Responsibilities

The Design and Build Contractor will develop and maintain a Site Emergency Plan. The Site

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Emergency Plan will be communicated to all sub-contractors through the HSE Plan.

The Project Manager together with the Environmental Manager is responsible for ensuring that local authorities are contacted in the event of a Tier C major incident. Upon notification of an incident, the Project Manager and the Environmental Manager are responsible for ensuring all response procedures are implemented following this procedure.

In the event of a Tier B medium incident, the Environment Manager is responsible for ensuring that the incident responses are implemented, the Incident Response Form is completed and Corrective Action Plan is prepared, signed off and implemented.

In response to an event of a Tier C minor incident, the Environmental Manager will be solely responsible for ensuring that the incident response plan is implemented.

It is the responsibility of all site personnel to notify the Environmental Manager of all incidents.

Incident Classification

Upon identification or notification of an incident, it must be categorized, using the definitions in table 2 below.

Table 2 Categorisation of Environmental Incidents

Tier	Definition	Example	Responsibility
Tier A	- Minor Incident - One that is easily brought under control and prevented from re-occurring	- Small, containable spills within the site boundary. - A minor nuisance but controllable and preventable from re-occurrence. - Minimal environmental damage but controllable and preventable from re-occurrence.	Following the incident response, the Sub-contractor Environmental Representative will be responsible for notifying the Construction Environment Manager.
Tier B	- Medium Incident - One that will need to be brought under control and prevented from re-occurrences in consultation with the HSE Manager	- Un-containable or uncontrollable spills within the site boundary - Excessive uncontrollable incidents which are likely to cause nuisance or when a complaint is received - Un-rectifiable environmental damage and likely to occur	Following the incident response, the Construction Environment Manager will be responsible for notifying the Consultant PM, and local authorities and detailing actions to prevent re-occurrence.
Tier C	- Major Incident (Emergency) - One which cannot be controlled by the Project or that affects local authorities or independent parties	- Un-containable or uncontrollable spills outside the site boundary or which affect local authorities - Excessive uncontrollable incidents will re-occur to cause danger, nuisance numerous complaints or significant impact to Organisations involved in the construction phase - Massive loss of biodiversity at the site will re-occur to cause impacts to biodiversity.	Following, or as part of, the incident response, the contractor PM will in agreement with the Consultant PM be responsible for contacting the relevant authorities.

General Incident Procedure

Figure 1 provides an overview of the procedures to be implemented for each incident type identified.

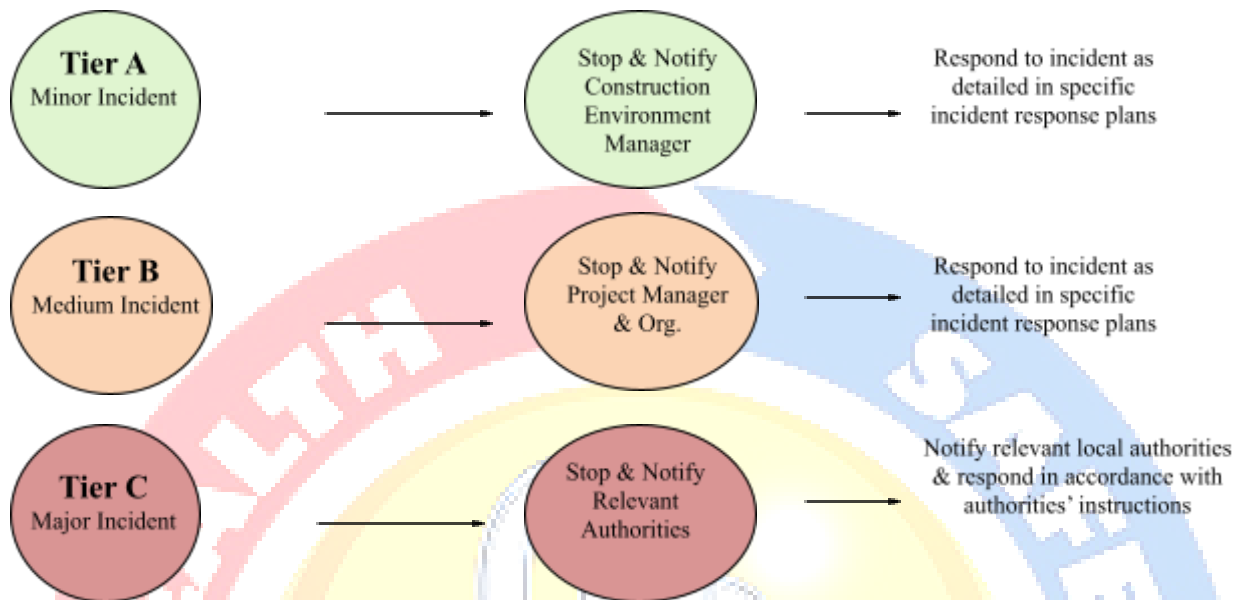


Figure 1 General Incident Procedure.

Specific Incident Response

Specific Incident response procedures for different types of environmental incidents are provided in the tables below. It should be noted that these do not cover the response to major chemical incidents. Major incidents must be dealt with following the relevant authorities' requirements, while responses to minor incidents of Tier A will be under the responsibility of the HSE Officers and Environmental Sub-Contractor Representative(s). To determine these requirements for major incidents the authority must be notified immediately, and their requirements implemented.

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Table 3 Incident Response Procedure - Oil and Fuel

STOP	▪ Wear protective clothing. ▪ Prevent further release at the source. ▪ Remove sources of ignition. ▪ Prevent access to the site.
NOTIFY	▪ Categorise incidents and notify the responsible party. ▪ Tier A: Refer to Notification Process. ▪ Tier B: Refer to Notification Process. ▪ Tier C: Refer to Emergency contacts.
CONTAIN	▪ Implement measures described within the relevant Material Safety Data Sheet (MSDS). ▪ Use absorbent materials for clean-up, e.g.: sand or pads to absorb excessive materials and dispose of within plastic bucket so as not to transfer spill. ▪ Do not rinse away spills. ▪ If spills migrate, create temporary bunds using soil, sandbags or spill kit materials. ▪ Any contaminated materials will be considered as Hazardous Waste, and therefore mitigation measures for Hazardous Waste Management must be implemented. ▪ If drains are located nearby, install drain seals.

Table 4 Incident Response Procedure - Chemical

STOP	▪ Wear protective clothing. ▪ Prevent further release at the source. ▪ Remove sources of ignition. ▪ Prevent access to the site.
NOTIFY	▪ Categorise incidents and notify the responsible party. ▪ Tier A: Refer to Notification Process. ▪ Tier B: Refer to Notification Process. ▪ Tier C: Refer to Emergency contacts.
CONTAIN	▪ Implement measures described within the relevant Material Safety Data Sheet (MSDS). ▪ Use absorbent materials for clean-up, e.g.: sand or pads to absorb excessive materials and dispose of within plastic bucket so as not to transfer spill. ▪ Do not rinse away spills. ▪ If a spill is migrating create a temporary bund using soil, sandbags or spill kit materials. ▪ Any contaminated materials will be considered as Hazardous Waste, and therefore mitigation measures described in the Hazardous Waste Management control plan must be implemented. ▪ If drains are located nearby, install drain seals.

Table 5 Incident Response Procedure - Leakage of Gaseous Substance

	▪ Identify the source. ▪ Prevent further release at the source.
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STOP	▪ Provide aeration to the area. ▪ Remove sources of ignition. ▪ Prevent access to the site.
NOTIFY	▪ Categorise incidents and notify the responsible party. ▪ Tier A: Refer to Notification Process. ▪ Tier B: Refer to Notification Process. ▪ Tier C: Refer to Emergency contacts.
CONTAIN	▪ Implement measures described within the relevant Safety Data Sheet (SDS). ▪ If not practicably possible to contain the gaseous leak, weather conditions must be checked to assess the most likely direction the pollutants will take. If there is a risk (however slight) to human health, affected areas and immediate environs must be evacuated.

Table 6 Incident Response Procedure - Release of Excessive Dust / Bulk Powders

STOP	▪ Identify the source. ▪ Prevent further release of dust e.g.: if split pipe, stop transferring dust until the pipe is replaced/repaired.
NOTIFY	▪ Categorise incidents and notify the responsible party. ▪ Tier A: Refer to Notification Process. ▪ Tier B: Refer to Notification Process. ▪ Tier C: Refer to Emergency contacts.
CONTAIN	▪ Implement measures described within the relevant Material Safety Data Sheet (MSDS). ▪ Under dry conditions, dampen the area using a bowser or similar to prevent wind-blown dust (unless dry dust can be reclaimed immediately for re-use, by use of specialist equipment). ▪ When dampening the site down, ensure the resulting mixture/run-off does not enter any drains or groundwater. ▪ Deploy dust suppression bowsters (or roads sweepers in wet conditions) on any hard surfaces affected by dust. ▪ Cover materials that are being transported or large exposed stockpiles or relocate exposed stockpiles where possible.

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Table 7 Incident Response Procedure - Noise

STOP	▪ Identify the source. ▪ Assess the situation and associated noise level. ▪ If any complaint has been received, it may be necessary to meet the complainant. ▪ Make a judgement of what can be done, if anything, to minimise the noise propagating from the site on factors such as the remaining duration of the works.
NOTIFY	▪ Categorise incidents and notify the responsible party. ▪ Tier A: Refer to Notification Process. ▪ Tier B: Refer to Notification Process. ▪ Tier C: Refer to Emergency contacts.
CONTAIN	▪ Initially ensure all plants are maintained, and with the correct appliance, to prevent excessive noise. ▪ Conduct work near sensitive receptors during daytime hours only.

Table 8 Incident Response Procedure - Archaeological Remains

STOP	▪ Stop work immediately. ▪ Cordon affected area to prevent further disturbance. ▪ Contact GAME&P immediately for advice on how to proceed.
NOTIFY	▪ Categorise incidents and notify the responsible party. ▪ Tier A: Refer to Notification Process. ▪ Tier B: Refer to Notification Process. ▪ Tier C: Refer to Emergency contacts.
CONTAIN	▪ Cease works in and around the cordoned off-site until receiving no objection from GAME&P. ▪ Implement response procedures following GAME&P requirements.

Incident Response Equipment

The incident response equipment will be inspected by the Construction Environmental Manager or the HSE Manager as part of the weekly site inspections. If any spill equipment is missing or is damaged, it must be replaced.

Safety Data Sheets (SDS) of all chemicals stored on-site must be kept with spill response equipment. The spills are to be dealt with following the SDS requirements.

Storage containers for contaminated materials will be located in the waste storage area and labelled and treated as hazardous waste.

Environmental Incident Record

In the event of Tier A, B or C environmental incident, a Non-Conformance Recording Form will be completed.

The Construction Environment Manager is responsible for ensuring that the Environmental Incident Form is correctly completed for Tier A and B incidents. The Project Manager is responsible for ensuring that the Environmental Incident Form is correctly completed for the Tier C incident. The Environmental Incident Form must include details on the following:

- Details of the contractor / sub-contractor / witness responsible for reporting the incident;
- Date of the incident;
- Condition on-site during the incident;
- Description of location of the incident;
- Cause of the incident;
- The scale of the incident;
- Potential impacts of the incident;
- Confirmation environmental control measures have been implemented;
- Describe non-compliance concerning the CEMP;
- Proposed corrective actions to correct the incident and prevent re-occurrence;
- The person responsible for corrective action;
- Date the corrective action is to be completed; and Signature upon completion.