

BEYOND

SMART CITIES

CONSTRUCTION ENVIRONMENTAL

MANAGEMENT PLAN - CEMP

KRISHNAJI PAWAR, LEED AP BD+C, GSAS CGP, ISO 14001:2015, GCP

ENVIRONMENTAL SPECIALIST COURSE

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MONITORING AND AUDITING

FOR ENVIRONMENTAL

PROFESSIONALS

KRISHNAJI PAWAR, LEED AP BD+C, GSAS CGP, ISO 14001:2015, GCP

ENVIRONMENTAL SPECIALIST CURRICULUM

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WHAT SHOULD YOU LEARN

Requirements for monitoring, inspections, registers and reporting

Environmental Monitoring Requirements

Air Quality and Emissions Monitoring

Environmental Inspections

Environmental Reporting

Registers

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SOIL MONITORING

Item	Monitoring Requirement	Frequency	Parameters ¹	Location
1.0	Soil sampling in any areas which have been contaminated	After a spill has occurred or visible signs of pollutants have been observed	As appropriate depending on the substance released	Location of spill

If the contamination discovered on site is more extensive, a suitably qualified environmental consultant will be engaged to undertake a Contaminated Site Assessment and develop a remediation plan



NOISE AND VIBRATION MONITORING

Item	Monitoring Requirement	Frequency	Parameters	Location
1.0	Noise levels	Daily for a 20 minute interval during the period of high impact activities. Weekly for a 20 minute interval- when high impact activities are not being undertaken	L _{max} , L _{1min} , L _{1min}	Locations: - Site office - Staff camp (if on project site) within 100 m of main construction activities close to sensitive receptors.

The contractor will monitor for noise and vibration and will undertake monitoring at variable locations using hand-held devices. The criteria for noise monitoring will be set for Residential around any staff workers accommodation facilities and commercial for the project offices and industrial for the remaining construction areas.



NOISE CRITERIA

Area	Maximum Limit (dBA)	Standards
Staff camp (if on site)	Residential Area: 55 (Day time) 45 (Night time)	Qatar National standards for Noise (2002) - Residential
Site office (Outside)	68 (Day & Night time)	Qatar National standards for Noise (2002) - Commercial
Construction site, including outside site offices	75 (Day & Night time)	Qatar National standards for Noise (2002) - Industrial

Residential areas comprise of areas where homes or buildings for residence are more than 50% of the buildings, including schools, hospitals and mosques



AIR QUALITY AND EMISSIONS MONITORING

Item	Monitoring Requirement	Frequency	Parameter	Location
1.0	PM ₁₀	20 minutes at each station. Weekly	PM ₁₀	<ul style="list-style-type: none">One background sample at the boundary fence, upwind of the active construction.One sample downwind, within 50m of active site excavation areasOne sample between active crushers and batch plants.One sample downwind, within 50 m of site deposition areas.One sample along the key access road (unpaved)
2.0	Exhaust emissions from vehicles, plant and equipment	Once every 6 months	Petrol Vehicles <ul style="list-style-type: none">- Carbon Monoxide- Hydrocarbons- Lambda Diesel Vehicles <ul style="list-style-type: none">- K factor	Maintenance area.

INSPECTION

The purpose of this chapter is to guide the Contractor and sub-contractors on how the environmental compliance of the Project construction activities with respect to the CEMP will be periodically inspected.

- ✓ Contractors develop their own Environmental Inspection Checklist for their site and activities;
- ✓ Completed Environmental Inspection Checklists must be retained at the contractor's site office;
- ✓ The non-compliance must be checked during the next routine site inspection, or earlier. Progress must be noted, until the action has been satisfactorily completed;
- ✓ Contractor environmental inspection records are subject to audit by the Supervising Consultant, PMCM and/or Client, and must be produced upon request.

ENVIRONMENTAL AUDITS

An independent internal environmental audit team will undertake site audits at least every six months. Items that will be included are shown below:

- ✓ Current environmental laws and regulations;
- ✓ Responsibilities of project organisation;
- ✓ Results of environmental aspects identification;
- ✓ Subcontractors and purchase control;
- ✓ Operational control of environmental protection;
- ✓ Training and competence; Emergency preparedness;
- ✓ Incidents and corrective actions; Audits and inspections; and
- ✓ Compliance with CEMP.

All corrective actions resulting from the audit will be documented with the issue, corrective action and due date detailed. All audit findings will be submitted to the Client.

ENVIRONMENTAL REPORTING

Environmental Reports will be prepared by the Contractor as per the contractual conditions and the current work activities. A Monthly Environmental Report will summarize Contractor's monitoring results, site inspection findings and environmental performance.



REGISTERS

Registers will be maintained by the Contractor's Environmental Representative/ Manager for the following, as a minimum:

✓ Quantities of:

- Hazardous materials brought on site;
- Solid waste and wastewater transported offsite;



REGISTERS +

✓ Waste generation quantities for:

- Building and construction waste;
- Excavation waste;
- Wastewater;
- Waste chemicals/oils/fuels;
- Waste chemical/oil/fuel containers;
- Paper and cardboard;
- Toner cartridges;
- Plastics; Glass bottles/ aluminium cans; General solid waste;



REGISTERS +

✓ Consumption rates for:

- Water;
- Wastewater;
- Fuel; Oil and grease;
- Chemicals;
- Hazardous materials;



REGISTERS +

- ✓ HSE training undertaken;
- ✓ Maintenance of all vehicles and equipment;
- ✓ Spills or incidents;
- ✓ Complaints; and
- ✓ All permits and instrument calibration data including reference numbers, issuance dates, expiration dates and application dates.



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