



CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN - CEMP

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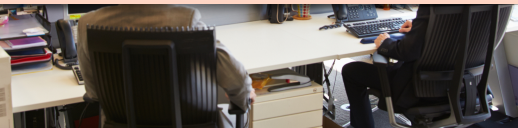




ENVIRONMENTAL BASELINE CONDITIONS

FOR ENVIRONMENTAL PROFESSIONALS

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WHAT SHOULD YOU LEARN



The purpose of this chapter is to describe the existing environment at the Project site for the intention of determining the existing environmental conditions at the project Development, which may have an influence over the construction works in terms of environmental impacts and identifying potential environmental impacts which require particular environmental management actions to be implemented during the construction phase to maintain their integrity.



STRATEGIC ENVIRONMENTAL ASSESSMENT

As part of the environmental permitting requirements of the project Development, the Client commissioned Any Consultant to undertake separate Strategic Environmental Assessment (SEA) instead of an Environmental Impact Assessment report in order to understand the environmental sensitivity of the project area.

The SEAs concluded that the negative impacts of the infrastructure construction and operation for the Project Development are expected to be concentrated around disposal of groundwater from dewatering, waste disposal, noise and emissions.

The CEMP therefore consists principally of conditions placed upon contractors to ensure compliance with environmental standards and implementation of mitigating measures where appropriate.



EXISTING ENVIRONMENTAL CONDITIONS

The existing environmental conditions were established through the SEAs or EIAs.

Current Environmental Baseline conditions characteristic of the site and surrounding environments are described by Clients in the Strategic Environmental Assessment (SEA) for the project.

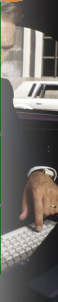


METROLOGY AND CLIMATE

Qatar has a subtropical desert climate that is characterised by hot dry summers and mild winters. The daily maximum temperature can reach 45°C or more from June to September. Winter is cooler with night temperatures as low as 7°C in January.

Doha's average rainfall is 81 mm/year; rainfall is generally confined to an eight month period from October to May.

Humidity levels also vary during the year with mean relative humidity ranging from 71% in December and January to 41% in June.



LAND USE

Vacant land/desert: at present the majority of land surrounding the Um Alhoul QEZ-3 project comprises vacant land/desert and is not being utilised for any significant purpose;

Major residential centres of Al Wakrah approximately 2 kilometres north of the project and Mesaieed adjacent the project to the south.

Industrial areas: Mesaieed Industrial City (MIC) lies approximately 5 km to the south of QEZ-3, Coastal Road and Plots project. MIC comprises predominantly oil and gas industries;



TERRESTRIAL ECOLOGY

The large stand of dense and well established mangrove trees occur within a shallow tidal lagoon adjacent the project. Terrestrial habitats and associated plant communities encountered in the project area include:

Mangroves with *Avicennia marina* trees;

Sabkhas, devoid of vegetation;

Sandy desert plain with a *Zygophyllum qatarense* community; and

Gravelly desert plain with an *Acacia tortilis* community.



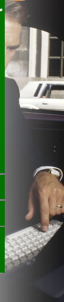
SOIL

A baseline soil analysis was undertaken by for the SEA and the results were compared with the Dutch Target and Intervention Values. All parameters were found to be below the "intervention" values, thus indicating no contamination and no additional clean up measures are required as part of the mitigation measures.

Soil and waste accumulation control:

Control of containers of contaminants

Control of usage of pesticides and fertilizers:



GROUNDWATER

The groundwater levels (Piezometric levels) in the upper aquifer, consisting of superficial deposits and limestone, were observed to generally vary across the study area from a low of -1.5 m to a high of +3.2 m QNHD (2014).

Although the majority of groundwater parameters that were analysed were found to be within applicable standards or referenced background concentrations, a number of parameters were detected in elevated concentrations, which included: salinity, total dissolved solids, boron and sulphide.



NOISE AND VIBRATION

Noise monitoring data was collected from December 2014 through to January 2015 including weekdays and weekends during daytime and night-time hours.

Noise levels collected on weekdays during daytime hours varied between 43 and 71 dB, with an average of 61dB, while night-time levels varied from 47-71 dB, with an average of 49 dB. The high noise levels were attributable to traffic on the expressway.



AIR QUALITY

Air quality was monitored for the project SEA between December 2014 and March 2015. Carbon Monoxide, Hydrogen Sulphide and Sulphur Dioxide air quality baseline monitoring results were within Qatar and international standards (Worley Parsons, 2015). Nitrogen Oxide results exceeded the Qatar standard while Ozone monitoring results were close to but did not exceed the Qatar standards.

PM10 levels from the baseline air quality study undertaken for the SEA exceeded the MME standards on 22 occasions during the 3-month monitoring period.



CULTURAL HERITAGE AND ARCHAEOLOGY

Contractor shall avoid the impact on sites of cultural heritage interest and to preserve in-situ or by record all cultural heritage resources disturbed in coordination of QMA or any local authority .

This includes:

- ✓ Detailed survey evaluation of those sites directly affected by the preferred option prior to construction work commencing.
- ✓ Establishment of a Mitigation Strategy and a Chance Find Management Procedure to prevent or minimise impacts on unexpended buried archaeological artefacts.
- ✓ Target Archaeological Monitoring in the form of watching briefs during construction in case archaeologically sensitive locations are found.



Water and Sediment Quality

Marine Fauna

Bathymetry, coastal morphology and oceanography



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