

Decommissioning of Cheoy Lee Shipyard at Penny's Bay Environmental Impact Assessment

Introduction

The former Cheoy Lee Shipyard (CLS) is located on the north and eastern shores of Penny's Bay with a site area of about 19 hectares. CLS had been in operation since 1964. The site reverted to Government in April 2001 and is required for the construction of the necessary infrastructure in support of HKD (including the Penny's Bay Section of Chok Ko Wan Link Road and Road P2).

2. The decommissioning of CLS involves two designated projects, one for the decommissioning of the shipyard under item 17, Part II of Schedule 2 of the EIA Ordinance and the other for the waste disposal facility under item G4, Part I of Schedule 2 of the Ordinance. An EIA study has been carried out by the Civil Engineering Department. The study revealed the existence of hazardous substances in the soil at the site and recommended a comprehensive remediation and clean up plan which is in line with international practice.

Project Description

3. The decommissioning project comprises mainly demolition and removal of all buildings and structures, remediation of the site area, excavation and treatment of contaminated soil and implementation of appropriate mitigation measures to avoid or minimise any adverse environmental impacts arising from the decommissioning works.

Key Findings

4. The EIA Report has fully analysed the conditions of the CLS site and examined all possible environmental impacts. The Report has recommended a remediation and clean up plan for the site which is in line with international practice and is very comprehensive and effective. Key findings of the EIA Report are summarised below.

Land Contamination

- A total of about 87,000 m³ of soil have been found to contain different types of contaminants.
- About 65% of the 87,000 m³ of contaminated soil (about 57,000m³) is contaminated with metals, total petroleum hydrocarbons (TPH) and semi-volatile organic compounds (SVOCs).
- The remaining 30,000 m³, found mainly in the southeastern portion of the site, is contaminated with a combination of metals and dioxins.
- Risk assessment results indicated that the impact of land contamination on groundwater is insignificant.

Remediation Plan

- A combination of remediation methods is recommended for treating different groups of contaminants. All these remediation methods are technically advanced and in line with international practice.
- For *soil contaminated with metals only*, it will be excavated and solidified on-site by adding cement to the contaminated soil to immobilise the metal constituents in the soil (i.e. cement solidification).
- For *soil contaminated with TPH/SVOCs*, it will be excavated and treated off-site at To Kau Wan (TKW) by biopiling (a biodegradation process making use of micro-organisms to disintegrate

the TPH/SVOCs). If the soil is also contaminated with metals, cement solidification will be carried out after biopiling.

- For *soil contaminated with a combination of dioxins and metals/TPH/SVOCs*, it will be excavated and first treated off-site at TKW by thermal desorption, followed by cement solidification. The residue arising from the thermal desorption process will be collected and incinerated at the Tsing Yi Chemical Waste Treatment Centre.
- A thermal desorption plant will be set up at TKW. Thermal desorption is a separation process in which heat is used to evaporate the contaminants from the soil to gaseous phase, which are subsequently condensed and collected for disposal. A diagram on the thermal desorption process is at Annex. This method is in line with international practice for treating soil contaminated with dioxins.
- To avoid any adverse impact on nearby water and fish culture zones, the contaminated soil to be treated at TKW will be transported from CLS to TKW via dedicated road access. The residue arising from the thermal desorption process will also be transported by land to the Chemical Waste Treatment Centre in Tsing Yi.
- Confirmation sampling and testing will be conducted to ensure that the contaminated soil has been completely removed from CLS and treated to attain the respective cleanup standards. The soil after treatment will be clean inert material suitable for use as public fill.
- With the implementation of the comprehensive control measures including engineering controls, personal protection and air monitoring recommended in the EIA report, the health risks to the workers associated with the project would be negligible.

Air Quality

- Air modelling test concluded that the impact of dust is very low. Mitigation measures including spraying of water mist and covering the stockpiles will be implemented.
- The impact of air emissions from the treatment facilities at TKW will comply with established standards.

Waste Management

- The Construction and Demolition (C&D) material generated by this project will be reused and recycled on site as far as practicable to minimise the amount of C&D material to be disposed of at public filling areas.
- The soil after treatment will be clean inert material suitable for use as public fill.

Water Quality

- With the implementation of best site practices and the recommended mitigation measures, no adverse water quality impact is envisaged for the decommissioning and decontamination works.

Ecological Impact

- The potential impact on the restricted/protected plants around CLS and the Rice Fish habitats at Mong Tung Hang Stream (MTHS) will be minimized through controlling construction practices and implementing mitigation measures.
- Restricted/protected plants will be fenced off and preserved in situ. Plants directly affected by the works will be transplanted to a suitable receptor site at Tai Tam Country Park.
- The habitat of the Rice Fish will be recreated at MTHS. Environmentally friendly design will be incorporated in the future drainage channel to encourage recolonisation of the lower stream fauna.

Cultural Heritage

- Some artifacts of different periods have been identified by the Antiquities and Monuments Office (AMO) during its survey at CLS from August to November 2001.

- Preservation measures and rescue works will be carried out before commencement of the decommissioning works to minimize the potential impact on archaeological resources.

Environmental Monitoring and Audit (EM&A)

- All the recommended mitigation measures will be incorporated into an EM&A programme for implementation.

Conclusion

5. The primary objective of the decommissioning exercise is to return the CLS site to a condition suitable for use by the community. All potentially harmful contaminants at CLS will be thoroughly removed, treated and disposed of in an environmentally acceptable manner. After treatment, the soil will be suitable for use as public fill. With the implementation of the precautionary and mitigation measures recommended in the EIA report, the decommissioning project will comply with all environmental standards and legislation.