



Project: COCKATOO ISLAND POLLUTION AUDIT

Location: Sydney, NSW

Client: Australian Department of Defence

Highlights

- Contamination audit of a former naval dockyard, situated on an island in Sydney Harbour
- Extensive soil, groundwater and sediment sampling programs
- Liaison with regulatory authorities and preparation of remediation plan.

Background

Cockatoo Island had operated for over 100 years as the principal naval dockyard and naval shipbuilding establishment in Australia. Previous uses had included a convict penal settlement, women's prison, reformatory and seamanship training centre. The Commonwealth Government, having decided to sell the island, required an audit to assess the nature and extent of soil and groundwater contamination on the island, and to provide the data necessary to formulate and cost appropriate remediation strategies.

Hydrogeological Environment

The central core of Cockatoo Island is composed of Triassic sandstone (Hawkesbury Group). This core has been quarried and tunnelled. Surrounding the core is an area of deep fill which had been progressively emplaced on top of harbour floor sediments throughout the industrial history of the island. This fill comprises sandstone blocks, concrete, rubble, steel plates and general waste materials. The groundwater level is tidal, and generally 2 to 3 metres below surface in the filled areas.

Contaminants

Potential contaminants included hydrocarbons, heavy metals (including mercury and lead), marine paints and industrial degreasing agents.

Scope

Stage 1. In 1991 Coffey Partners International was commissioned by the Australian Department of Defence to carry out an initial pollution audit coincident with the decommissioning of the Dockyard; Coffey appointed C. M. Jewell as project manager. A historical uses survey carried out by Defence was reviewed and supplemented by additional material collected by Coffey. A detailed work plan was prepared, and discussed with and approved by the NSW State Pollution Control Commission (SPCC). An intensive period of sampling and analysis followed, and results were compiled in a series of factual and interpretive reports, culminating in the development of a remedial strategy for the island. This strategy has been approved by the SPCC. Additional work commissioned from Coffey by Defence included a survey of background concentrations of heavy metals in areas surrounding Cockatoo Island, a forensic study to assess the age and origin of some contaminants detected on the island, and briefing of Queen's Counsel.

Stage 2. In 1993 the need for further more detailed assessment to support a legal claim against the former operators of the island became apparent. The Australian Government Solicitor and the Department of Defence appointed CH2M HILL Australia to carry out an investigation of structures, soils, groundwater and sediment contamination. This work was to lead into preparation of human health and ecological risk assessments, and development of a final remediation strategy and a defensible costing. CH2M HILL Australia subcontracted management of the initial field program to C. M. Jewell & Associates.

The intensive field program involved supplementary soil sampling; forensic sampling from buildings, drains and tunnels; drilling, sampling and testing a series of groundwater monitoring boreholes; and a program of offshore sediment sampling using a drop corer.

Results were compiled for incorporation in the risk assessment and remediation costing programs.

Subsequently, C. M. Jewell & Associates has provided ongoing support to CH2M HILL and Defence, including review of the risk assessment report, input to the remedial strategies and remediation costing report, management of a further phase of drilling and groundwater sampling, tidal monitoring, and assessment of changes in ground conditions during the Coffey and CH2M HILL investigations.