

Shallow EDC Plume Hydraulic Containment

Description

Some sections of the groundwater downgradient of Orica's operating site have been affected by chlorinated hydrocarbons associated with former manufacturing operations. Orica has developed a number of options for remediating the shallow aquifer, including a permeable zero valent iron (ZVI) barrier. However, ZVI will not treat ethylene dichloride (EDC or 1,2-dichloroethane), which is present in some areas. Orica's preferred option for removing the EDC from groundwater is bioremediation. However, if bioremediation field trials prove unsuccessful, Orica has designed a facility to extract and treat shallow groundwater as a contingency.

Objectives

- To prevent ingress of EDC-affected groundwater into Springvale Drain
- To reduce the mass of chlorinated hydrocarbons in the shallow aquifer
- To avoid adverse hydraulic impacts on Springvale Drain and the Qenos tank farm

Technology

The facility is designed to extract the groundwater through a 180 m long line of wells, adjust the water's pH, strip off the contaminants in an air stripper, and then discharge the treated water via a constructed wetland.

Resources

Project management: Orica
Consulting – design: URS Australia

Measures

- Decreasing downgradient concentrations of EDC in shallow aquifer
- Reduced EDC concentrations in Springvale Drain
- No adverse hydraulic impacts on Springvale Drain or Qenos Nant Street tank farm
- No unacceptable risks to receptor groups in the area

Timing

Design is completed, and has been submitted to EPA NSW and Botany Bay City Council. Installation is on hold. The shallow EDC plume hydraulic containment system **is not** a preferred strategy. Orica's preferred strategy for the remediation of the EDC plume is bioremediation. The possible use of hydraulic containment is subject to triggers such as unacceptable levels of EDC in surface waters, and any use of hydraulic containment is subject to further consideration including planning requirements and emission controls.

Process flow diagram for the shallow EDC plume hydraulic containment facility that has been designed as a contingency

