

9. Harvey Norman Remediation Post Project: 21000 Tonnes (2008) - PCB

917 Princes Highway Springvale, Victoria

Introduction

INNOVA SOIL TECHNOLOGY was engaged by Harvey Norman, as Head Contractor, to undertake the ~21,000 T remediation of PCB impacted soils at their 8 hA site in Springvale, VIC. The onsite thermal desorption of PCB contaminated soil was the largest project of its type ever undertaken in Australia.

Project Stages

There were several stages involved in undertaking the thermal desorption project at Springvale, these included:

- Regulatory approvals and permissions,
- Contaminated soil earthworks, screening, crushing and stockpiling
- Additional site earthworks removing in-ground concrete structures
- Site preparation and services installation for the temporary project
- Plant mobilisation and set-up
- Plant commissioning and shakedown
- Proof of Performance (POP) testing
- 24/7 Production treatment operations
- Plant decommissioning and removal

As the remediation project formed only a small part of Harvey Norman's overall development of a homemaker centre, timely execution of **INNOVA's** treatment operations was crucial. The overall remediation project was completed on time, with the entire ~21,000T of soil being processed over a 12 week period.

Earthworks and Site Preparation

Remediation earthworks operations were undertaken from February—April 2008. Soil was blended and homogenised by alternating excavations between high and low PCB concentration areas, before being stockpiled (under tarps) on an impermeable surface at the north-western end of the site. Soil was screened and crushed to less than 50mm and blended further in order to provide as homogenous as possible feed soil for the plant.

Site preparation for the plant involved laying a concrete slab to support the plant as well as installing gas, electricity & water services.

8 hA Remediation Site, Springvale (View towards Melbourne CBD)





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DFTD Operations

The **INNOVA DFTD** plant was transported over 1,000km from Newcastle, NSW to Springvale, VIC on 30+ semi-trailers and set up in readiness for treatment operations within a 3 month period.

Prior to operations starting a contaminated soil shakedown test and a Proof of Performance (POP) Test was carried out. The shakedown test helped to determine the optimum soil treatment temperature for the operations in terms of PCB and dioxin removal (166T soil treated). It was revealed that a process temperature >465°C was necessary to meet both the PCB and dioxin soil treatment goals of less than 2mg/kg and 0.1µg/kg respectively.

Following the shakedown test, the POP test was carried out (351T soil treated). The POP test involved rigorous stack emission testing and soil analysis by NATA accredited organisations to certify that the **INNOVA DFTD** plant was removing PCB contamination to below the necessary levels, whilst keeping plant emissions below the EPA regulatory limits. The **INNOVA** plant

performance was very good, with PCB concentrations of 130 to 227mg/kg in the feed material reduced to between 0.35mg/kg and <0.1mg/kg (non-detectable) levels in the product soil. Similarly, stack emissions were found to be compliant with Victorian EPA requirements — notably dioxin and particulate levels of 0.033ng/m³ and 6.6mg/m³ were measured respectively, both significantly less than their respective EPA emission limits of 0.1ng/m³ and 35mg/m³.

Continuous treatment operations of 20,224T of soil began four weeks after the POP test. Treatment was undertaken on a 24/7 basis at an average processing rate of ~15 Tonnes per hour, with a very high plant uptime of over 85%.

For the 12 week soil treatment duration of the project, all 383 independent product soil analyses showed PCB levels below the detection limit, <0.1 mg/kg. Extensive stack emissions testing results showed compliance well within with all regulatory licence limits and at all times < 0.1 ng/m³ for dioxin (9 stack tests undertaken in total).



Soil Results Summary	FEED SOIL RANGE	TREATED SOIL RANGE
Total Polychlorinated Biphenyls (PCB)	11 - 227 mg/kg	< 0.1 mg/kg
Dioxin (WHO Toxic Equivalent - TEQ)	0.3 - 0.5 µg/kg	< 0.1 µg/kg