



Planning &
Infrastructure

MAJOR PROJECT ASSESSMENT
Remediation of Former Orica
Chemical Facility, 2 Christina Road,
Villawood



Director-General's
Environmental Assessment Report
Section 75I of the
Environmental Planning and Assessment Act 1979

May 2012

Cover Photo: A Directly-fired Thermal Desorption soil-treatment plant under construction at Rhodes. This machine or one like it is proposed to treat contaminated soil in this Project Application.

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Published May 2012
NSW Department of Planning and Infrastructure
www.planning.nsw.gov.au

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EXECUTIVE SUMMARY

Orica Australia Pty Ltd (Orica) proposes to remediate contaminated soil underlying its former chemical plant at 2 Christina Road, Villawood. The Project involves treatment of around 27,000m³ of contaminated soil in a Directly-heated Thermal Desorption (DTD) plant to be temporarily installed on the site.

The total amount of soil to be treated comprises:

- 15,000m³ *in-situ* soil that is to be excavated from the site;
- 10,000m³ of soil previously excavated from the site and currently stored under an EPA licence in an enclosed 'Secure Soil Facility' on the site; and
- a 2,000m³ stockpile of soil also stored on the site under an EPA licence, which was previously imported to the site from another of Orica's EPA approved contamination remediation projects at 127 Orchard Road, Chester Hill. The contaminants in this soil are similar to the contaminants in the soil on the site.

A DTD plant is a large gas-fired rotary soil-dryer fitted with an emissions control system to oxidise and filter chemical compounds as they vaporise from the drying soil. Treated soil would be re-instated on the site making the site suitable for industrial uses.

Soil sampling carried out by Orica shows the site is contaminated with chemicals associated with the manufacture of hydrocarbon compounds including chlorinated hydrocarbons. The EPA has declared the site a Remediation Site and issued a Remediation Order under the *Contaminated Land Management Act 1997* because the contamination is likely to continue to present a significant risk of harm to human and environmental health if not treated.

In addition to the usual Environment Protection Licence required for the proposed work, the EPA would also administer a separate licence under the *Environmentally Hazardous Chemicals Act 1985* dealing with the Scheduled Chemical Wastes specified in the Chemical Control Order that are present on the site. Many of the Scheduled Chemical Wastes present are known as Persistent Organic Pollutants under the Stockholm Convention and include DDT, Lindane and Dieldren.

The Project has a capital investment value of \$20 million and would generate 35 jobs for its 58-week duration. The Project constitutes a transitional 'Major Project' under Part 3A of the *Environmental Planning and Assessment Act 1979* as it involves Category 1 remediation work, and consequently requires the Minister's (or delegates) approval. As the Environmental Assessment for the Project was lodged prior to the repeal of Part 3A on 1 October 2011, the Project is a transitional Part 3A Project.

The Environmental Assessment was publicly exhibited for 46 days from 5 May 2011 to 20 June 2011. There were no submissions from the public. All consulted agencies were supportive of the Project provided conditions were in place to minimise and monitor potential environmental impacts.

The site is in the Bankstown Local Government Area and it is zoned 4A *General Industrial* where the proposal is permissible with consent under *State Environmental Planning Policy No. 55 – Remediation of Land*. The proposed site is bound by Christina Road to the south and Birmingham Avenue to the west. The Villawood Detention Centre is located some 200m to the north. The nearest homes are 150m to the east and Chester Hill High School is located 500m to the north-east.

The Department has reviewed the Environmental Assessment and is satisfied that the proposed remedial work will be adequate to render the site suitable for ongoing industrial uses. A Remediation Action Plan for the Project has been audited by an EPA accredited Site Auditor. Orica will need to obtain a Site Audit Statement from an accredited Site Auditor at the conclusion of work to verify proper completion of the work in accordance with the *Contaminated Land Management Act 1997*.

The Department is also satisfied that the remedial work can be carried out within all relevant air-quality, human health and other environmental guidelines. Notwithstanding, the Department has recommended strict conditions for air, noise and other emission limits, as-well-as a suite of environmental management plans to consolidate the day to day operational aspects of the Project and provide ongoing monitoring and review of the Project to ensure off-site impacts are minimal.

The Project would remove a long-term source of contamination from the area and return the site to productive industrial uses in-line with its industrial zone. On balance, the Department believes the Project is in the public interest and should be approved subject to the aforementioned conditions.

1. BACKGROUND

1.1 Project Background

Hydrocarbon-based compounds contaminate the soils underlying the Project site. The compounds entered the soil during the manufacture of explosives and pesticides that occurred on the site from the 1940s until manufacturing ceased in 2000. The compounds present include chlorinated hydrocarbons. Some of the chlorinated hydrocarbons present, such as the pesticides; DDT, Lindane and Dieldren, degrade very slowly in the environment, potentially causing harm for a long time unless treated. These kinds of compounds are also listed as Persistent Organic Pollutants under the Stockholm Convention.¹

1.2 Site Description and Surrounding Land Uses

The site is in the Bankstown Local Government Area and is zoned 4A General Industrial. The site is located within an industrial area in the suburb of Villawood, with other industrial developments located to the south and west. Christina Road is on the southern boundary and Birmingham Avenue is on the western boundary. The Villawood Immigration Detention Centre is located around 200m north. The nearest homes are some 150m to the east and Chester Hill High School is located 500m to the north-east. **Figure 1** shows the site on a locality map.

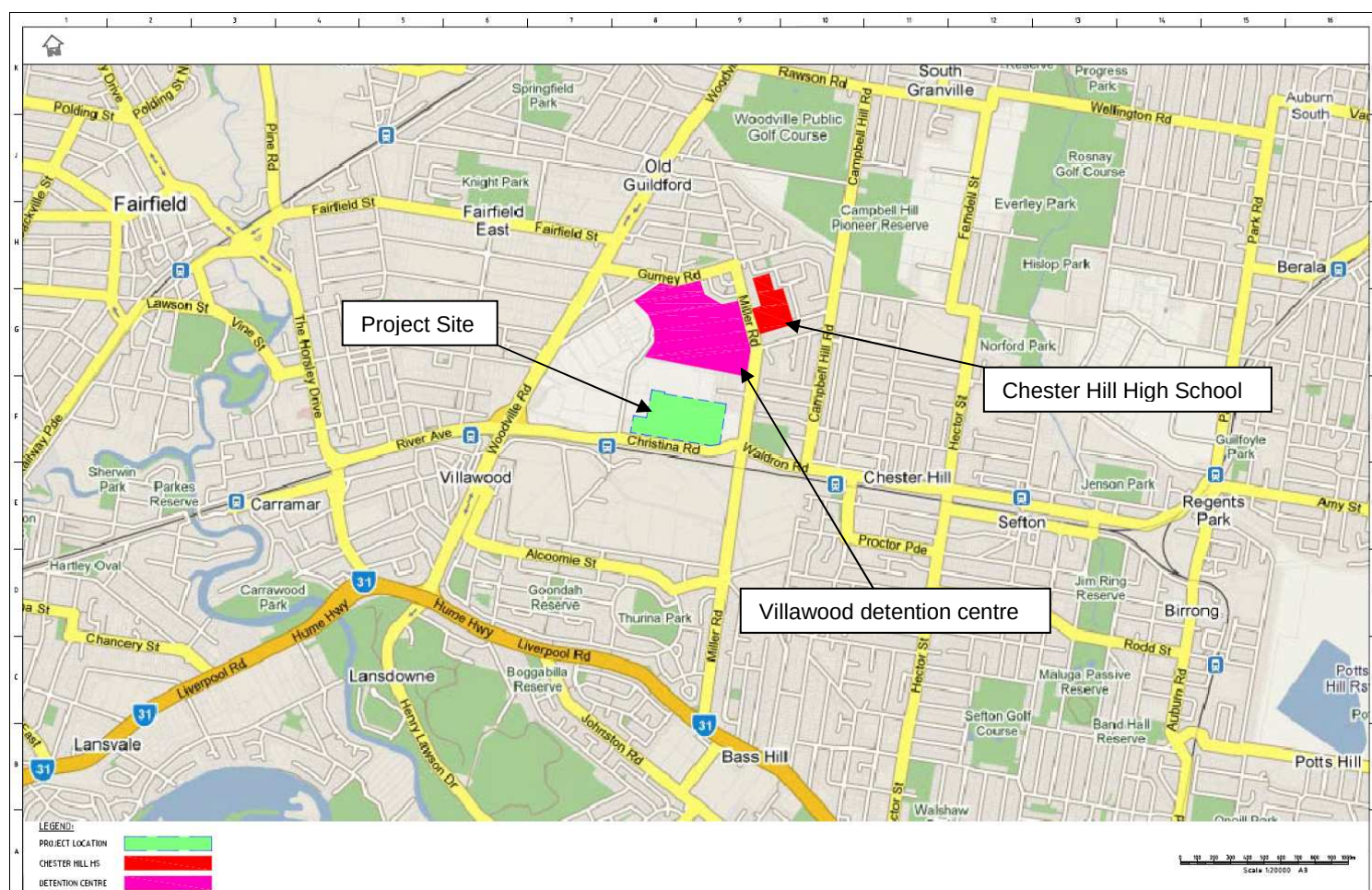


Figure 1 – Locality map. The subject site is shown in light green

The site was originally part of a much larger holding acquired in 1941 by the Commonwealth for a munitions factory. During World-War 2, the factory employed nearly 3,500 people to make hydrocarbon explosives (Trinitrotoluene or TNT) for the Department of Munitions. At the end of the War, the State Housing Commission converted much of the original larger holding into industrial and residential areas.

¹ The Stockholm Convention is an international environmental convention, which aims to eliminate or treat Persistent Organic Pollutants. The Convention was adopted on 22 May 2001 in Stockholm, Sweden. The Convention entered into force on 17 May 2004 and Australia is a party to it. The convention sets out human and environmental health objectives for listed organic pollutants that have toxic properties, resist degradation, bio-accumulate and are transported, through air, water and migratory species, across international boundaries and deposited far from their place of release, where they accumulate in terrestrial and aquatic ecosystems.

The subject site, which is a smaller part of the original larger holding, was taken over by Taubmans (1946-1953) and then ICIANZ (later known as Orica) to make hydrocarbon-based agricultural and pharmaceutical pesticides. Orica ceased manufacturing on the site in 2000 and it remains under Orica's care and maintenance.

1.3 Declaration of the site as a 'Remediation Site' and issue of the 'Remediation Order'

On 29 July 2004, Orica notified the EPA under Section 60 of the *Contaminated Land Management Act 1997* that the site presented a potential risk of harm to human health and the environment because of contaminants associated with its historical uses.

Following Orica's notification, on 22 April 2005, the EPA declared the site to be a 'Remediation Site' under the *Contaminated Land Management Act 1997*, and later on 2 November 2005 issued Remediation Order No. 23019 - Area 3200. The Remediation Order specified that Orica must:

- carry out additional contamination investigations;
- engage an EPA accredited Site Auditor to oversee remedial work;
- assess suitable treatment technologies; and
- prepare a Remedial Action Plan.

By way of addressing the Remediation Order, the Proponent has:

- carried out a range of soil and groundwater contamination investigations;
- engaged an EPA accredited Site Auditor;
- assessed suitable treatment technologies (note: the Proponent's preferred treatment technology is outlined below in Section 1.5 of this Report); and
- prepared a Remedial Action Plan, which has been audited by the accredited Site Auditor (Attached at Appendix E).

The remediation work required by the Remediation Order requires approval from the Minister for Planning and Infrastructure or delegate and on 1 March 2010, Orica lodged a Project Application.

1.4 Other contaminated stockpiles on the subject site that require treatment

Secure Soil Facility (10,000m³ of contaminated soil)

There is a Secure Soil Facility (SSF) on the site built under a 2003 development consent from Bankstown City Council. The SSF stores about 10,000m³ of contaminated soil under an existing EPA Licence (No 2149). The contaminated soil was excavated in 2004-05 from another part of the subject site known as the 'pharmaceuticals area' (see Figure 2). This contaminated soil excavation and storage was part of Category 2 remediation works undertaken by Orica for the pharmaceuticals area under *State Environmental Planning Policy No 55 – Remediation of Land*. The work was carried out according to a Remedial Action Plan that had been audited by an EPA Accredited Site Auditor. Clean soil was imported to replace the contaminated soil.

The Category 2 work to the pharmaceuticals area has been validated by way of a 2007 validation report prepared by CH2M Hill Australia Pty Ltd. The validation report presently awaits a Site Audit Statement from an EPA Accredited Site Auditor. This statement must be completed to fully address the EPA's 2005 Remediation Order for the whole site (as mentioned above).

The compounds that contaminate the soil in the SSF are similar to the compounds that contaminate the *in-situ* soils on the subject site. While the Project proposes to treat the soil in the SSF along with the *in-situ* soils, the finalisation of the Site Audit Statement for the pharmaceuticals area will proceed independently of the current Project. Therefore, while the pharmaceuticals area is part of the subject site, it is not subject to this assessment. **Figure 2** shows the location of the pharmaceuticals area and SSF.

Chester Hill Stockpile (2,000m³ of contaminated soil)

There is a stockpile of about 2,000m³ of contaminated soil in the south-east of the subject site, which is to be treated as part of the Project. The stockpile is also stored under an EPA Licence (No 2149 - as above). The stockpile was imported to the subject site during Category 2 remediation of Orica's former chemical plant at 127 Orchard Road, Chester Hill under *State Environmental Planning Policy No 55 – Remediation of Land*. The Chester Hill site was declared a Remediation Site (No 21026) by the EPA in 2004 and remediation work was completed by Orica under a 2006 Voluntary Remediation Agreement between Orica and the EPA (Agreement No 26077). The Chester Hill Stockpile is contaminated with

chlorinated hydrocarbons that are similar to the compounds that contaminate *in-situ* soils on the subject site. **Figure 2** below shows the location of the Chester Hill Stockpile.

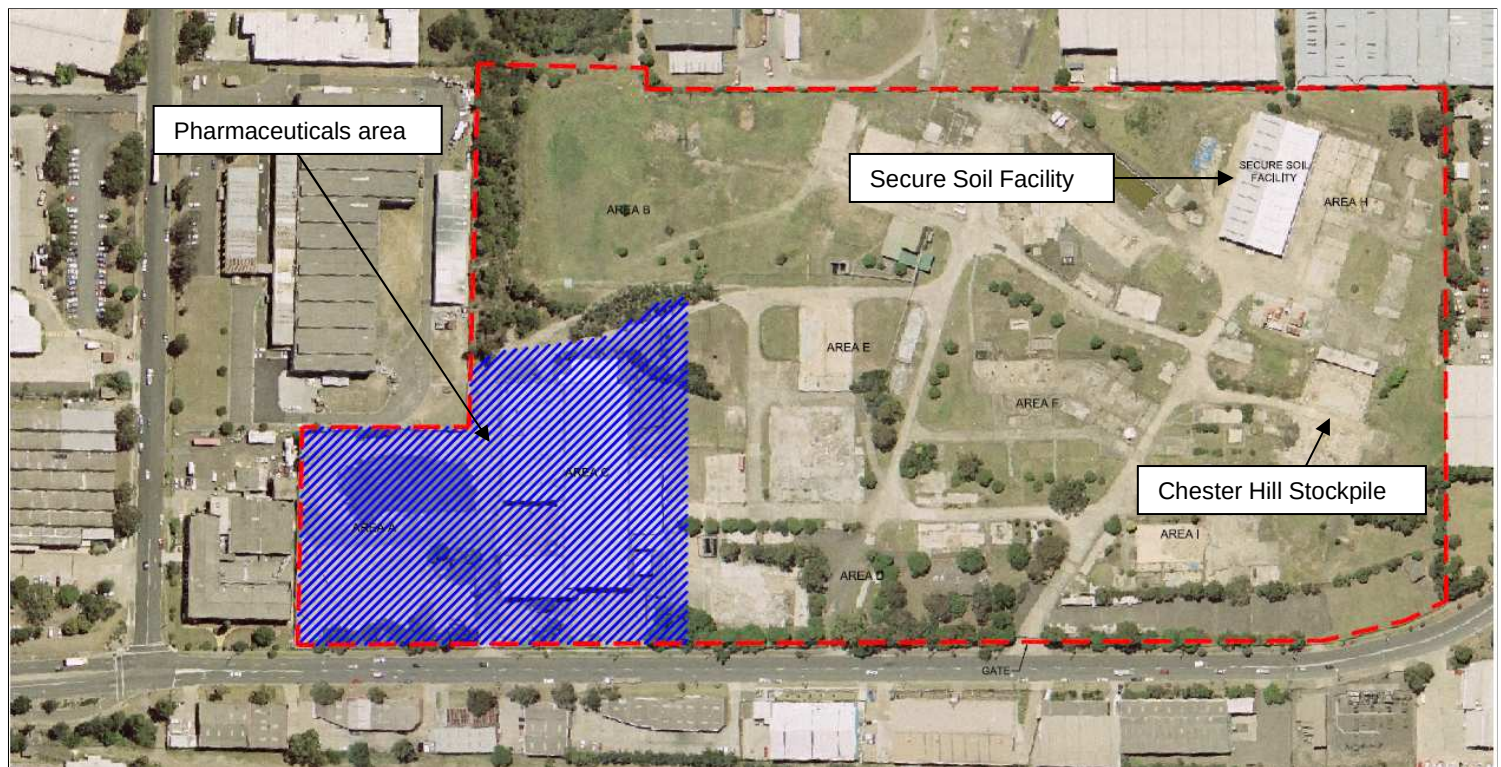


Figure 2 - Pharmaceuticals area (blue hatching) previously remediated and not subject to this assessment

1.5 Preferred Soil Treatment Technology

Orica canvassed 25 different processes for treating the contaminated soil. All of the processes involved treating soil on the site because there are no off-site facilities that are licensed to accept the material or suitable for its treatment. Some processes involved treating the soil *in-situ* while others required excavation. Typically, the various processes involved applying heat or electricity to vaporise or destroy the contaminants.

Orica selected a 'Directly heated Thermal Desorption' (DTD) plant. Orica selected this method because:

- the technology is proven. A DTD plant previously treated 180,000 tonnes of soil contaminated with chlorinated-hydrocarbon pesticides at the Allied Feeds site (completed in August, 2009), and 80,000 tonnes of soil contaminated with chlorinated compounds at the Lednez site on the Rhodes Peninsula (completed in May, 2010). The compounds that once contaminated these other sites are similar to the compounds that presently contaminate the subject site;
- the DTD plant is relatively simple and robust when compared to other technologies, leading to a higher likelihood of operational success;
- the air emissions from the plant can be treated with an emissions control system;
- contaminants are destroyed in the process; eliminating the need to handle or dispose of concentrated residue;
- DTD is expected to be quicker than other methods; reducing the duration of the Project; and
- the DTD plant will physically fit on the site and it is suitable for treating the contaminants present.

1.6 DTD plant operation

A DTD plant is basically a large gas-fired rotary soil-dryer fitted with an emissions control system to destroy chemicals as they vaporise from the drying soil.

Earth moving equipment excavates contaminated soil from the site at a moderate rate to minimise dust emissions. Validating the soil that remains *in-situ* ensures removal of all targeted material. Covered trucks convey the excavated material to a Feed Soil Building. This building is negatively pressurised, fitted with double air-lock doors and emission controls on the exhaust vent. The trucks unload inside and exit via a wheel-wash decontamination unit.

Inside the Feed Soil Building, contaminated material is screened and homogenised to ensure uniform texture and concentration of contaminants. Bulky material like concrete, timber or steel is crushed or shredded, or transported to a licensed landfill.

Inside the plant, a continuous conveyor-belt feeds the plant up to 35-tonnes of contaminated soil per hour, 24-hours per day. Contaminated soil enters one end of the 12-metre long rotating dryer-tube and contaminants vaporise in the high temperature created by the gas burner. The soil leaves the other end of the dryer-tube about 30-minutes later, hot, dry and clean. A pug-mill mixes clean soil with water to cool before it is stockpiled, checked for residual contamination and covered for later reinstatement.

The vaporised chemicals create a waste gas stream that flows to a cyclone device where heavier (clean) dust particles drop-out and return to the pug mill to join the clean soil. After the cyclone, a thermal oxidiser burns the waste-gas stream at up to 1000 degrees Celsius. The waste gases oxidize to form carbon dioxide, water, hydrogen chloride, and small amounts of other compounds including chlorine and sulphur.

An induction fan draws the hot gas to an evaporative cooler to rapidly cool. Rapid cooling is important because toxic dioxins will form if combustion gases remain at several hundred degrees for a couple of minutes. Another induction fan draws the cooled gas (and steam from the pug mill) to a bag-house to remove fine particles. Finally, an acid scrubber uses a recirculating caustic solution to convert acids like hydrogen chloride and chlorine to salt before the treated gas stream vents to the atmosphere via a vertical emission stack.

A Wastewater Treatment Plant will treat contaminated water from the wheel wash and any other water (across the site) that comes into contact with contaminated material.

Figure 3 below shows a process flow-diagram of the way a DTD plant operates. **Figure 4** on page shows a typical layout for a feed soil building with DTD plant.

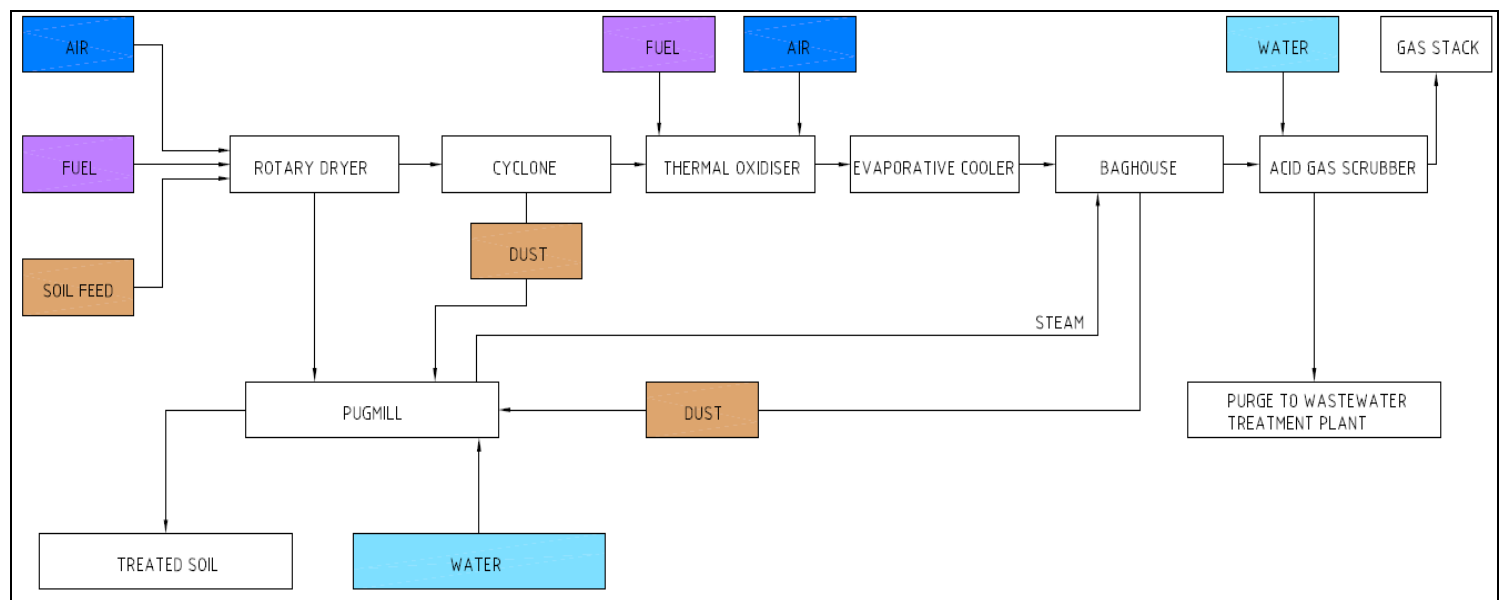


Figure 3 – Flow diagram of DTD operation (left to right)

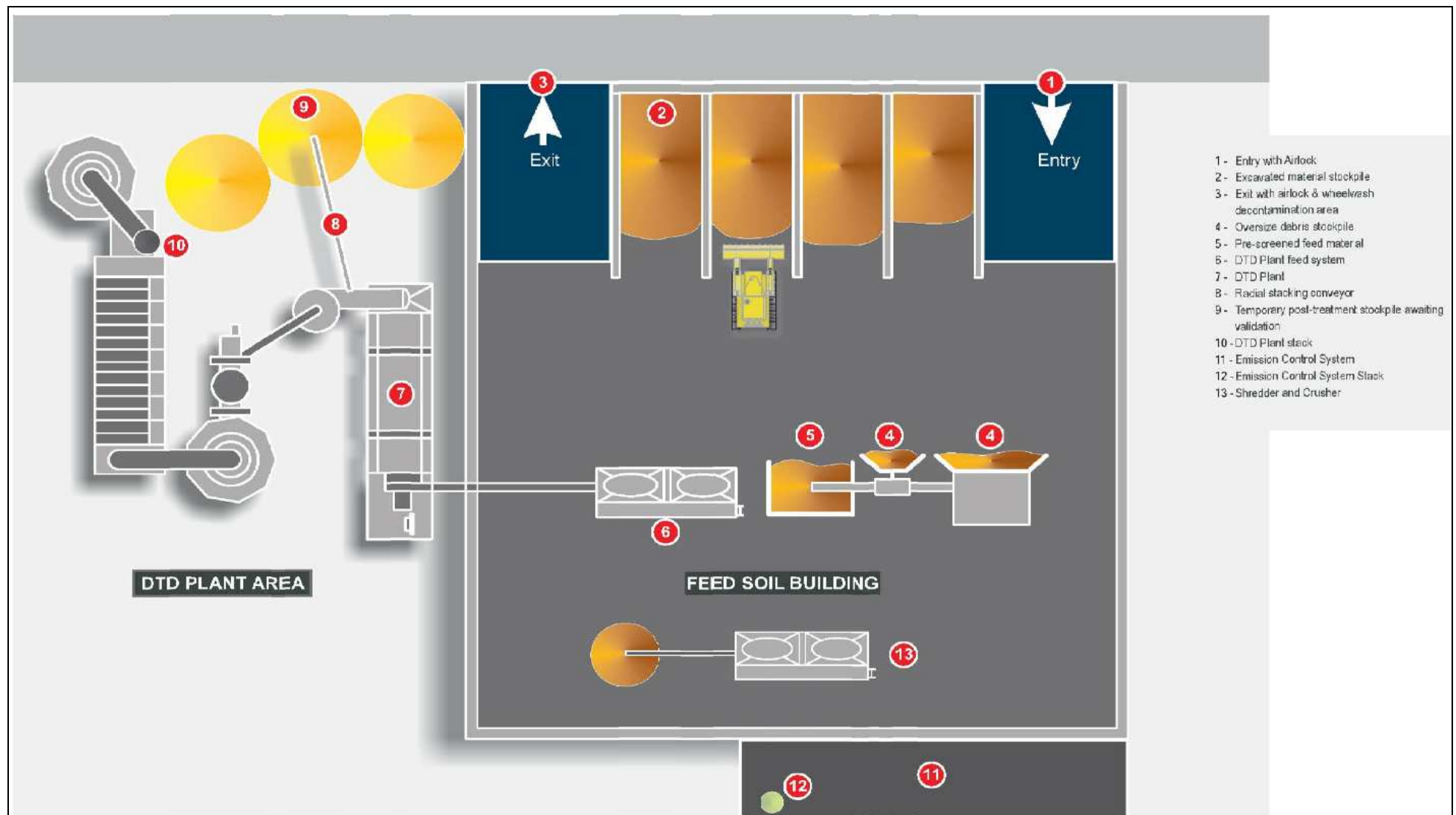


Figure 4 - Typical Layout of a Feed Soil Building and DTD Plant operation

2. PROJECT DESCRIPTION

2.1 Project Description

Orica Australia Pty Ltd proposes to remediate contaminated soil underlying its former chemical plant at 2 Christina Road, Villawood. The Project involves:

- installing a Directly-heated Thermal Desorption (DTD) Plant, Emissions Control System (ECS), and Wastewater Treatment Plant (WTP), all of which would be decommissioned and removed from the site at the end of the Project;
- additions to an existing building (the Secure Soil Facility) to form an enclosed Feed Soil Building (FSB) for handling and blending of contaminated soil prior to treatment;
- excavating about 15,000m³ of contaminated soil and treating it in the DTD plant; and
- DTD treatment of about 10,000m³ of contaminated soil stored in the on-site Secure Soil Facility and about 2,000m³ of contaminated soil stockpiled on the site from Orica's remediation work at 127 Orchard Road, Chester Hill (Chester Hill Stockpile). The origin of these additional stockpiles of contaminated soil is explained in section 1.4 on page 2).

Figure 5 on page 7 shows the site layout including the location of the DTD, WTP and additions to form the FSB. **Figure 6** on page 7 shows the location of the proposed excavation zones including the location of the Chester Hill stockpile. The main components of the Project are summarised in **Table 1** below.

Table 1 – Summary of Project

Component	Description
<i>Project summary</i>	Site remediation by excavation and treatment of contaminated soil using a 'Directly heated Thermal Desorption' (DTD) plant to be installed on site.
<i>Key Infrastructure</i>	<ul style="list-style-type: none"> • Feed Soil Building with Emissions Control System; • Water Treatment Plant; • DTD plant with Emissions Control System; and • Internal haul roads, site offices, stores and staff amenities.
<i>Contaminated soil sources</i>	<ul style="list-style-type: none"> • 15,000m³ <i>in-situ</i>; • 10,000m³ in an existing on-site 'Secure Soil Facility'; and • 2,000m³ in the Chester Hill Stockpile located on the site.
<i>Soil contaminants</i>	Generally, chemicals associated with the production of hydrocarbon based explosives, pesticides and pharmaceuticals including pre-cursor and degraded chemicals. Some of the chlorinated hydrocarbons present such as DDT, hexachlorobenzene, Lindane and Dieldrin are Persistent Organic Pollutants under the Stockholm Convention.
<i>Other waste for off-site disposal</i>	Concrete slabs, asbestos pipes, asbestos impacted soil, thermal plant solids and sludge, emission control system filters and filter media, water-treatment plant sludge.
<i>Project duration and stages</i>	Approximately 58 weeks, including: <ul style="list-style-type: none"> • 26 Weeks - Site establishment, construction, commissioning and Proof of Performance trials; • 20 Weeks - Excavation and treatment of contaminated soils, testing and validation; and • 12 weeks - Decommissioning and reinstatement of treated soils.
<i>Capital Value</i>	\$20 Million
<i>Jobs</i>	Construction: 35 Operation: 35
<i>Operating Hours</i>	Construction: 7am-6pm Mon-Fri and 8am-1pm Sat. Operation: 7am-6pm Mon-Fri (to 7pm during daylight savings) and 8am-1pm Sat. DTD soil treatment: 24 hours, seven days a week.

2.2 Commissioning and Proof of Performance

Once installed, the DTD plant will undergo 'proof of performance' trials and a Technology Assessment in consultation with the Department and the EPA to establish optimum operating parameters (see licensing under the *Environmentally Hazardous Chemicals Act 1985* in section 3.2 on page 8). The soil treatment temperature will be set (between 350 and 550 degrees Celsius) for optimal contaminant desorption and energy efficiency. A higher temperature is better for vaporising chemicals, but it uses more energy and produces more greenhouse gas emissions.

The EPA will use the proof of performance results and relevant health and environmental guidelines to review and if necessary specify revised maximum contaminant concentration limits for treated soil, air

and water emissions. Soil that is tested and complies with the maximum concentration limits is considered to be 'validated' and safe for re-use on the industrial site.

2.3 Project Need

The Orica Villawood site has been declared a remediation site and in its current form poses a risk to human health and the environment. The notice issued under Section 21 of the *Contaminated Land Management Act 1997* requires the Proponent to remove the source of contamination.

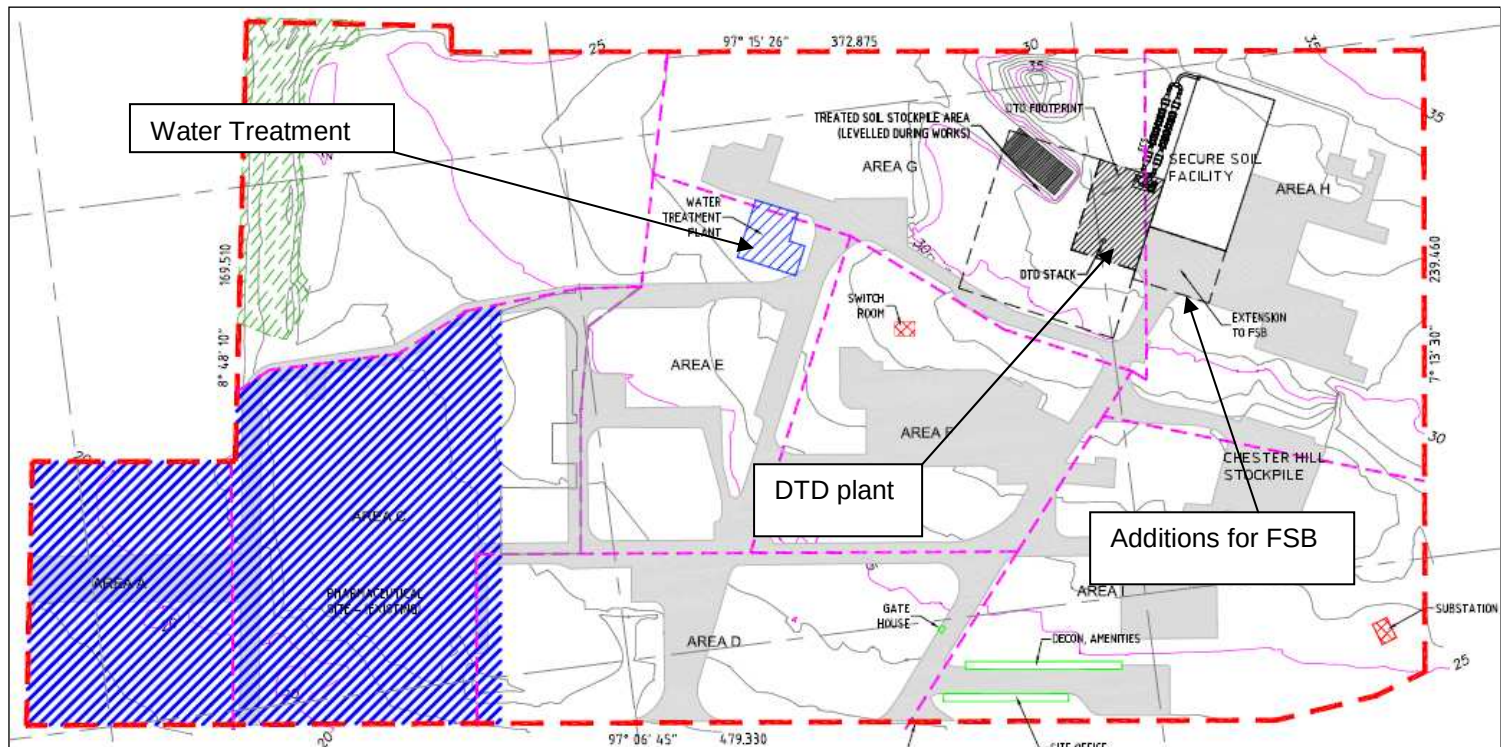


Figure 5 – Site layout

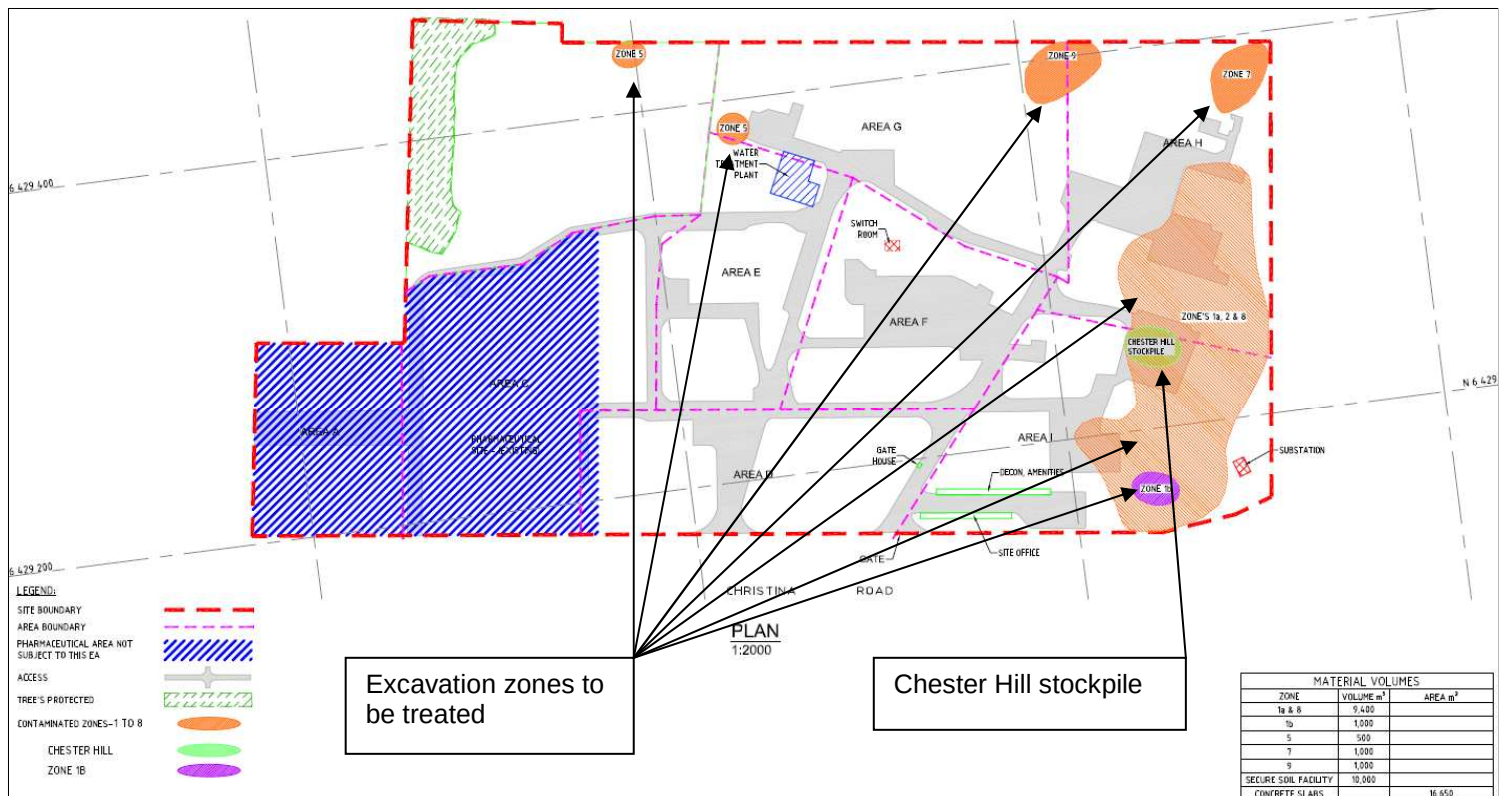


Figure 6 - Proposed excavation zones (also showing the Chester Hill stockpile)

3. STATUTORY & STRATEGIC CONTEXT

3.1 Major Project

The proposal is classified as a transitional Major Project under Part 3A of the *Environmental Planning and Assessment Act 1979* (EP&A Act), because it is development for the purpose of Category 1 remediation work, and therefore triggers the criteria in Clause 12 of Schedule 1 of State Environmental Planning Policy (Major Development) 2005.

Part 3A of the EP&A Act 1979, as in force immediately before its repeal on 1 October 2011 and as modified by Schedule 6A to the Act, continues to apply to transitional Part 3A Projects. Director-General's environmental assessment requirements (DGRs) have been issued in respect of this Project and the environmental assessment report was lodged prior to the repeal of Part 3A on 1 October 2011. The Project is therefore a transitional Part 3A Project.

Consequently, this report has been prepared in accordance with the requirements of Part 3A and associated regulations, and the Minister (or his delegate) may approve or disapprove of the carrying out of the Project under section 75J of the Act.

The Minister has delegated his functions to determine Part 3A applications to the Department where:

- the council has not made an objection;
- there are less than 25 public submissions objecting to the proposal; and
- a political disclosure statement has not been made in relation to the application.

There have been no submissions received from the public and although Council has made a number of submissions requesting additional information, Council has no formal objection to the Project. There has been no political disclosure statement made by the Proponent for this application or for any previous related applications, and no disclosures made by any persons who have lodged an objection to this application.

Accordingly, the application is able to be determined by the Deputy Director-General under delegation.

3.2 Other Approvals

In addition to a Part 3A approval, Orica would be required to obtain approval from the Roads and Maritime Services (RMS) and Bankstown City Council for any roadwork proposed outside of the site boundary.

The Project would be classified as a Scheduled Activity and would require an Environmental Protection Licence (EPL) under the *Protection of the Environment Operations (POEO) Act 1997*.

The Project will also require a separate licence from the EPA under the *Environmentally Hazardous Chemicals Act 1985* because it involves the treatment of chemical compounds that are listed in the EPA's Chemical Control Order. The EPA's Chemical Control Order is an additional regulatory tool for particularly hazardous compounds like DDT and Dieldrin. Any treatment process that involves chemicals listed in the Chemical Control Order must be the subject of a 'Technology Assessment' by the EPA under the 'National Protocols for Approval/Licensing of Trials of Technologies for the Treatment/Disposal of Schedule X Wastes 1994'. The EPA's Chemical Control Order and the National Protocols are part of the State and Federal policy arrangements that satisfy Australia's obligations to the Stockholm Convention on Persistent Organic Pollutants.

3.3 Permissibility

Under Section 75J of the EP&A Act, the Minister or his delegate cannot approve the carrying out of a project that would be wholly prohibited under an environmental planning instrument.

State Environmental Planning Policy No. 55 – Remediation of Land (SEPP 55) stipulates that remediation works are permissible on the land, "despite any provision to the contrary in an environmental planning instrument, except as provided by clause 19(3)". Clause 19(3) is not relevant in this instance as the proposed remediation works are part of a project that is defined as "category 1 remediation works". SEPP 55 prevails over the LEP and subsequently the proposal is therefore permissible on the site.

The Minister or his delegate may approve the carrying out of the project.

3.4 Exhibition and Notification

Under Section 75(3) of the *EP&A Act 1979*, the Director-General is required to make the Environmental Assessment (EA) of a Project publicly available for at least 30 days. After accepting the EA for the Project, the Department:

- made it publicly available for 46 days from 5 May 2011 to 20 June 2011:
 - on the Department's website,
 - at the Department's Information Centre,
 - at the Nature Conservation Council's Sydney office,
 - at the Bankstown City Council Administration Centre;
- notified landowners in the vicinity of the site about the exhibition period by letter;
- notified relevant State government authorities, interest groups and Bankstown City Council by letter; and
- advertised the exhibition in the local newspapers, the *Fairfield Advance* and the *Bankstown Torch*.

This satisfies the requirements in Section 75H(3) of the *EP&A Act*.

During the assessment process the Department also made a number of documents available for download on the Department's website. These documents included the:

- Project Application;
- Director-General's Environmental Assessment Requirements;
- Orica's Environmental Assessment (including all technical appendices); and
- Orica's response to issues raised in submissions.

3.5 Environmental Planning Instruments

Under Section 75I of the *EP&A Act*, the Director-General's report is required to include a copy of, or reference to, the relevant environmental planning instruments (EPIs) that substantially govern the carrying out of the Project.

In relation to this particular Project, the key EPIs that potentially govern the Project are:

- SEPP No. 33 – Hazardous and Offensive Development;
- SEPP No. 55 – Remediation of Land;
- SEPP (Major Development) 2005; and
- Bankstown LEP 2001.

The Department has assessed the Project against the relevant instruments and considers:

- The remediation work is not an 'industry' to which SEPP No 33 – Hazard and Offensive Development applies although the proposal is accompanied by a Preliminary Hazard Analysis;
- The remediation work is Category 1 remediation work under SEPP No 55 – Remediation of Land and requires approval (see also section 5.1 of this Report);
- The remediation work is Category 1 remediation work on a declared Remediation Site and therefore meets the threshold criteria in the Major Development SEPP. The Project is a transitional Part 3A Project; and
- The Project does not conflict with any relevant provision in Bankstown LEP 2001.

3.6 Objects of the *Environmental Planning and Assessment Act 1979 (the Act)*

The Minister's consideration and determination of the application must be consistent with the relevant provisions of the *EP&A Act*, including the objects set out in the Act's section 5. The objects of most relevance to the Minister's decision on whether or not to approve the Project are found in section 5(a)(i), (ii), (vi) and (vii). They are:

(a) to encourage:

- (i) *the proper management, development and conservation of natural and artificial resources, including agricultural land, natural areas, forests, minerals, water, cities, towns and villages for the purpose of promoting the social and economic welfare of the community and a better environment,*
- (ii) *the promotion and co-ordination of the orderly and economic use and development of land,*

- (vi) *the protection of the environment, including the protection and conservation of native animals and plants, including threatened species, populations and ecological communities, and their habitats, and*
- (vii) *ecologically sustainable development”.*

The Department has fully considered the objects of the EP&A Act, including the encouragement of Ecologically Sustainable Development (ESD), in its assessment of the application. The assessment integrates all significant economic and environmental considerations and seeks to avoid any potential serious or irreversible damage to the environment, based on an assessment of risk-weighted consequences. Orica has also considered a number of alternative remediation technologies, and considered the Project in the light of the principles of ESD. The Project would ensure appropriate management of land by removing a long-term source of contamination and would promote economic use of the land by enabling future industrial land uses on the remediated site.

3.7 Statement of Compliance

Under Section 75I of the EP&A Act, the Director-General's report is required to include a statement relating to compliance with the Environmental Assessment Requirements with respect to the Project.

The Department is satisfied that the Environmental Assessment Requirements have been complied with.

3.8 Strategic Context

The key strategic policy documents that are relevant to the proposal are NSW 2021, which is the NSW Government's strategic business plan, setting priorities for action and guiding resource allocation, and the Metropolitan Strategy for Sydney 2036 (Metro Plan).

These key strategic policy documents include targets to rebuild the economy, assist in growth of business investment and delivery of new jobs. It is considered that the Project is consistent with the strategies in both NSW 2021 and the Metro Plan as it would remove a long-term source of contamination from the area and return the affected land to productive industrial uses in line with its industrial zoning.

4. ISSUES RAISED IN SUBMISSIONS

During the exhibition period, the Department received a total of five (5) submissions on the Project:

- All five (5) submissions were from public authorities – including the Environment Protection Authority, Bankstown City Council, NSW Office of Water, Roads and Maritime Services, and NSW Health.

A summary of the issues raised in submissions is provided below. Full copies of the final submissions are attached in Appendix D.

4.1 Public Authorities

The **Environment Protection Authority** (EPA) recommended approval conditions for waste classification, water management, air emission control, contaminated material handling, and noise control. Appropriate conditions are included in the recommended approval instrument.

Bankstown City Council (Council) raised a number of issues with the Project including impacts on the local road network, air quality, vegetation on the site, surface and groundwater. Departmental officers met with Council and Orica to discuss Council's concerns. Council agreed to appropriate approval conditions addressing Council's concerns by way of an email dated 7 March 2012 (see email in Appendix D).

Office of Water (NOW) requires any groundwater intercepting work including monitoring bores to be licensed. NOW also recommended groundwater monitoring to ensure that remediation does not exacerbate or mobilise contamination plumes in the groundwater. An appropriate condition is included in the recommended approval instrument.

Roads and Maritime Services (RMS) requires preparation of a traffic management plan, and vehicle entry/turning in accordance with AUSTROADS. An appropriate condition is included in the recommended approval instrument.

NSW Health do-not object to the proposal and reiterates the recommendations of other agencies.

The Department consulted with and have the agreement of the Proponent, EPA and Bankstown City Council on the recommended approval instrument.

4.2 Response to Submissions

Orica provided a response to the issues raised in submissions (see Appendix E) in November 2011. In addition, a Site Audit Statement for a Remediation Action Plan, as requested by Council and the Department was submitted to the Department on 19 April 2012.

The Department has considered the issues raised in all submissions, and Orica's responses to these issues, in its assessment of the Project.

5. ASSESSMENT

In assessing the merits of the Project, the Department has considered:

- the Proponent's Environmental Assessment (See Appendix C);
- all submissions and the Proponent's Submissions Report (see Appendix D and Appendix E);
- the objects of the *Environmental Planning and Assessment Act 1979* (the Act), including the object to encourage Ecologically Sustainable Development (see section 3.6 of this Report);
- relevant Environmental Planning Instruments (see section 3.5 of this Report);
- relevant guidelines and policies; and
- relevant statutory requirements of the Act and Regulations.

The Department considers the key issues for detailed assessment in this report are the remediation criteria, air quality and human health impacts, and noise impact. The following sub-sections of this report assess the key issues in detail. **Table 5** in section 5 of this Report shows an assessment of all other relevant issues for the Project.

5.1 Remediation criteria

Issue

On 29 July 2004, the Proponent reported to the EPA that the site presented a potential significant risk of harm to human health and the environment because of the contamination present. On 22 April 2005, the EPA declared the site a Remediation Site and later on 5 November 2005 issued a Remediation Order (No 23019, Area 3200) because the following chemical compounds were understood to be present:

- Total Petroleum Hydrocarbons;
- Benzene;
- DDT (and its degradation products DDD and DDE);
- 1,2-dichloroethane;
- Trichloroethane;
- Chlorobenzene;
- 1,4-dichlorobenzene;
- Hexachlorobenzene;
- Lindane;
- Polycyclic Aromatic Hydrocarbons, including Benzo(a)pyrene; and
- Cyanide (although later investigations did not find cyanide on the site).

The Remediation Order specified that Orica must:

- carry out additional contamination investigations;
- engage an EPA accredited Site Auditor to oversee remedial work;
- assess suitable treatment technologies; and
- prepare a Remedial Action Plan (RAP).

As a consequence of the Remediation Order, Orica proposes to remediate the site to a standard suitable for industrial uses by way of treating contaminated soil through a DTD plant and reinstating the soil on the site. The proposed remediation criteria require assessment to ensure they are suitable for the proposed end-use.

Consideration

The proposed remediation criteria are included in a Remedial Action Plan (RAP), which has an appropriate Site Audit Statement from an EPA accredited Site Auditor. Orica must obtain another Site Audit Statement from an EPA accredited Site Auditor once the remedial work is complete to verify that the site is suitable for industrial uses.

The accredited Site Auditor's role is to review the proposed remediation work to ensure it complies with current regulations and guidelines and that it meets the standard appropriate to ensure the proposed land use. Both the EPA and the accredited Site Auditor are satisfied that the remediation criteria and treatment methodology set out in the RAP are appropriate. While it would not remove all contamination from the site, it would ultimately lead to the treatment of any compounds in concentrations that are harmful to human health or the environment, rendering the site suitable for future industrial uses.

Contaminated soil identification

To identify the contamination that requires treatment, the EA included a "Human Health and Environmental Risk Assessment" (URS, February 2011), which establishes Risk-Based Site-Wide Criteria (RBSWC). The RBSWC are concentration limits for those chemical compounds found on the site and they are derived by examining the likelihood and severity of harm from:

- toxicity and concentration of the chemical compounds; and
- degree of likely exposure to the chemical compounds during uses of the site.

To determine harmful quantities the assessment examined exposure that might result from ingestion, skin contact and gas inhalation by workers while excavating or moving soil around the site. This activity presents the highest likely risk of human and environmental health impacts on this particular site. Soil with concentrations less than the RBSWC will be left *in-situ* and not treated because the concentration of chemicals present is not deemed to be a human or environmental health risk.

Figure 7 on page 13 shows the site and the comprehensive soil testing that has been undertaken since 2000 to identify the level of contamination across the site and areas with elevated contaminants (also known as Impacted Soil Zones). Contaminated soil in the Impacted Soil Zones numbered ISZ2 and ISZ3 will not be excavated and treated because the contamination does not exceed the RBSWC threshold. Impacted Soil Zones ISZ4, and ISZ6 are in the pharmaceuticals area of the site, which has previously been remediated (see section 1.4 on page 2). ISZ10 is beneath the slab of the existing pharmaceuticals building, and will need to be remediated in the future before that building is used, but will not be treated as part of this Project.

Contaminated soil treatment criteria

Treated soil must have contaminants reduced to less than the maximum treatment criteria concentration before it can be reinstated on the site. In this case, the soil treatment criteria are nominally the same as the RBSWC (because the soil is to be reinstated on the site), except for Scheduled Chemical Wastes under the EPA's Chemical Control Order, which have an aggregate maximum treatment criteria, as specified in the Order of 2mg/kg, unless otherwise approved by the EPA.

Table 2 below sets out the RBSWC for contaminated soil identification and the treatment criteria to be achieved for the treated soil.

Table 2 – RBSWC and Soil treatment criteria

Risk Factor	Chemical of potential concern	RBSWC mg/kg	Treatment criteria mg/kg
Major Risk Contributors	1,2,3-trichloropropane	0.5	0.5
	1,4-dichlorobenzene	15	15
	a-BHC (a-HCH)*	30	<2 aggregate
	b-BHC (b-HCH)*	15	<2 aggregate
	Benzene	5	5
	DDX (DDT, DDE and DDD)*	2000	<2 aggregate
	Endosulfan II	100	100
	g-BHC (Lindane)*	15	<2 aggregate
	Hexachlorobenzene (HCB)*	5	<2 aggregate
Minor Risk Contributors	1,2-dichloroethane (EDC)	700	700
	Vinyl chloride	10	10

Risk Factor	Chemical of potential concern	RBSWC mg/kg	Treatment criteria mg/kg
Minor Risk Contributors (continued)	Chloroform	80	80
	Carbon tetrachloride	10	10
	Trichloroethene (TCE)	400	400
	Tetrachloroethene (PCE)	5	5
	Chlorobenzene	2500	2500
	Toluene	200	200
	Ethylbenzene	200	200
	Xylenes	800	800
	PAHs (BaP equivalent)	10	10
	Bis(2-chloroethyl) ether	1	1
	d-BHC*	1.2	<2 aggregate
	Deildrin*	15	<2 aggregate
	Mercury	75	75

* denotes Scheduled Chemical Wastes under the EPA's Chemical Control Order

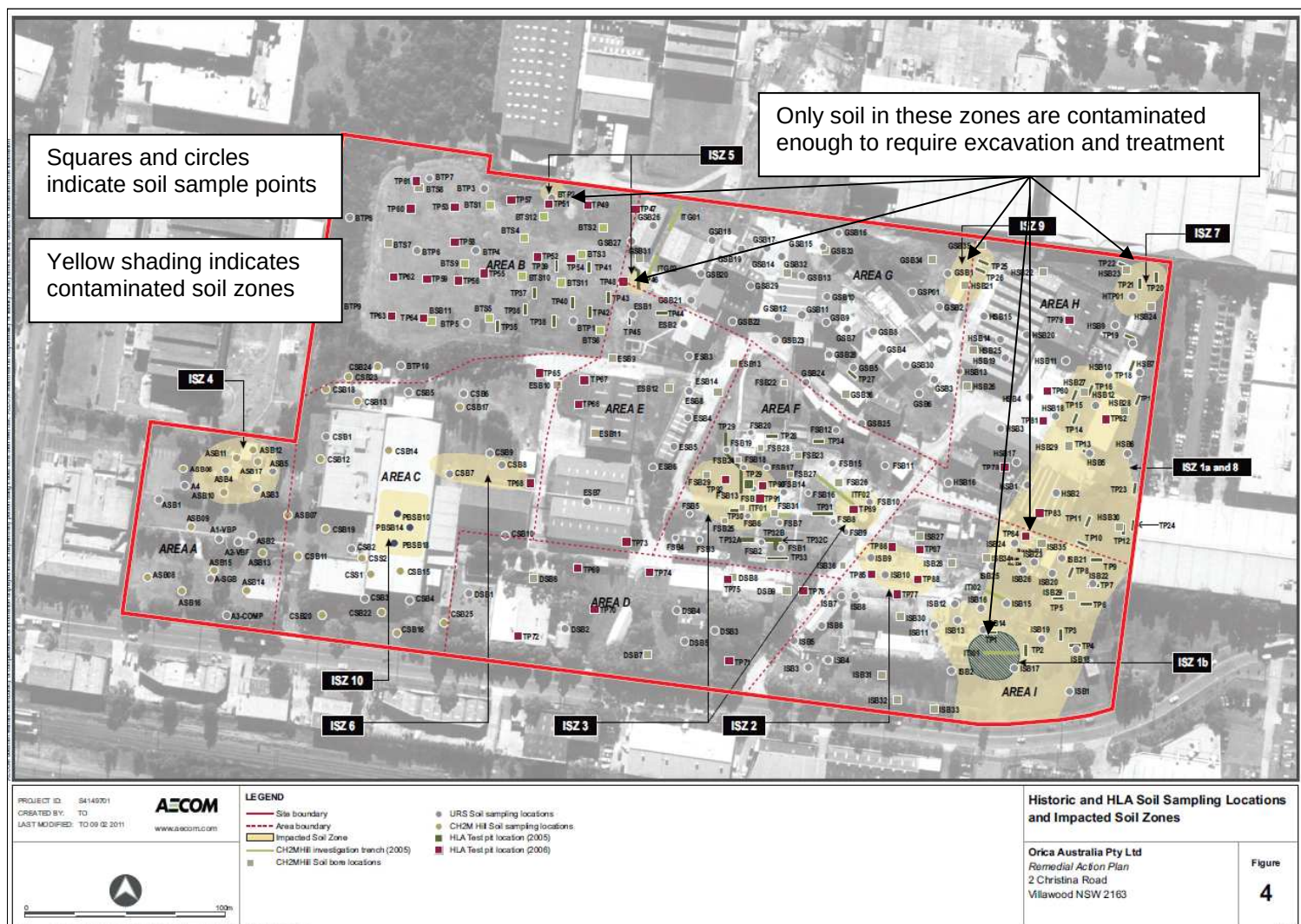


Figure 7 – Map of soil-sample locations and impacted soil zones (shaded yellow)

Conclusion

The Department, the EPA and the EPA Accredited Site Auditor are satisfied that the proposed remediation criteria are suitable for remediating the site in order to allow for future industrial uses of the site (which may involve further excavations for future construction work). Notwithstanding, the Department has included strict conditions relating to remediation criteria and remedial work to facilitate the EPA's licensing administration.

The Department has recommended a condition requiring remediation of the site be undertaken in accordance with the EPA Accredited Site Auditor approved RAP. In addition, any amendments to the RAP required as a result of further investigations are to be approved by the Site Auditor. Any changes to the treatment criteria for Scheduled Chemical Wastes must be approved by the EPA. On completion of work the conditions also require Orica to provide the Department with a Site Audit Statement which will certify that the remedial work was carried out in accordance with the RAP, the Project Approval conditions and any recommendations made by the Site Auditor. This Site Audit Statement and Site Audit Report will also need to certify that the area is suitable for its intended use. The EPA agrees with this approach, which would allow some flexibility to fine-tune the remediation approach as additional investigations are undertaken.

5.2 Air Quality and Off-site Human Health Impacts

Issue

The site is in an industrial area and residential areas are nearby to the north, east, and south-east of the site. The nearest homes are around 150m to the east in Millers Road, while Chester Hill High School is located about 500m to the north-east, the Villawood Detention Centre is 200m to the north, and Abbott Park around 160m to the east.

Consideration

The EA included the following two specialists' reports on air quality and human health impacts:

- an 'Air Quality Impact Assessment' (PAEHolmes, September 2010), which models the impacts of dust and chemical emissions according to specific concentration limits in the Approved Methods for the Modelling and Assessment of Air Pollutants in NSW (DECC 2005) (the Approved Methods); and
- an 'Air Health Risk Assessment' (GHD, July 2010), which uses data from the PAEHolmes report to calculate the cancer risk or the hazard index (for non-carcinogens) for those chemicals that do not have concentration limits in the Approved Methods, but must comply with Acceptance Criteria for cancer risk and hazard indices in the Approved Methods.

In support of its application, Orica has also committed to an extensive air-quality monitoring regime, which includes a suite of ambient monitors on the site for fugitive emissions and continuous monitoring of the DTD and FSB stacks with periodic sampling for contaminant levels. Orica has committed to best practice site operations and environmental controls to minimise fugitive emissions from site activity. Orica has also agreed to Council's request for an off-site ambient monitor and will discuss an appropriate location with Council before the site establishment phase of the Project.

Air Quality

The Air Quality Impact Assessment identified the following as the key sources of potential air quality impacts from the proposed remediation work:

- fugitive dust and vapour emissions during site establishment, excavation of contaminated soils, treated soil stockpiles and site reinstatement work; and
- emissions from the DTD and FSB stack during operation.

The air quality modelling was iterative in that where model-runs identified potential air quality impact issues, the proposal was modified (eg by increasing the stack height from 14.9m to 30m) so that acceptable air quality impacts could be achieved.

The primary findings of the air quality assessment are:

- a range of site environmental controls will minimise the off-site impacts of the Project during its construction phase to an acceptable level;
- the predicted off-site concentration of air pollutants comply with the EPA standards for those pollutants specified in the Approved Methods (see **Table 3** and **Table 4**); and
- the total odour concentration expected anywhere is 0.14 odour units, which is below the odour detection threshold and unlikely to be detected at all anywhere on or off the site.

Table 3 - Maximum predicted ground level concentrations ($\mu\text{g}/\text{m}^3$) of air pollutants at any off-site receiver.

Pollutant	Averaging period	Approved Methods Criteria	Background	Project Increment	Cumulative impact
Sulfur Dioxide	10 minutes	712	119	162	281
	1-hour	570	83	113	196
	24-hours	228	13	40	53
	Annual	60	2.3	2.7	5
Nitrogen Dioxide	1-hour	246	107	131	237
	Annual	62	24	4	28
Carbon Monoxide	15 Minutes	100,000	119	162	280
	1-hour	30,000	83	113	196
	24-hours	10,000	13	40	53
Hydrogen Flouride	24-hours	2.9	Not available but assumed to be minimal.	1.5	Not available but assumed to be similar to Project Increment.
	7 days	1.7		0.86	
	30 days	0.84		0.51	
	90 days	0.5		0.39	
PM ₁₀	24-hour	50	39	6.2	45.3
	Annual	30	20	1.2	21
TSP	Annual	90	49.9	1.1	51

Table 4 - Maximum predicted ground level concentrations ($\mu\text{g}/\text{m}^3$) of toxic air pollutants at any off-site receiver

Toxic Pollutant	Approved Methods Criteria	Maximum offsite concentration
Carbon tetrachloride	0.012	0.007
Chlorobenzene	0.1	0.034
Mercury (organic)	0.00018	0.00003
Benzene	0.029	0.00055
Polyaromatic Hydrocarbons	0.0004	0.0000001
Chloroform	0.9	0.0016
Ethylene dichloride	0.07	0.0013
Trichloroethylene	0.5	0.036
Toluene	0.36	0.008
Xylene	0.19	0.000017
1,2 Dichloroethane	14.4	0.001
1,1,1 Trichloroethane	12.5	0.0085
Vinyl Chloride	0.024	0.017
Hydrogen Chloride	0.14	0.12
Dioxins and Furans	0.000000002	0.0000000019
DDX	Note: There are no Approved Methods criteria for these pollutants (many are Scheduled Chemical Wastes and listed in the Stockholm Convention). The maximum predicted off-site concentrations are used in the Health Hazard and Cancer Risk predictions in the Air Health Risk Assessment (GHD July 2010) assessed below.	0.00055
Napthalene		0.000007
Perchloroethene		0.015
Endosulfan		0.00008
Dichlorobenzene		0.0001
Deildrin		0.000024
Hexchlorobenzene		0.000065
Trichlorbenzene		0.000065
Benzene Hexachloride		0.0065
1,1 Dichloroethane		0.00044
1,1 Dichlorethylene		0.0005

Human Health

The Air Health Risk Assessment identified the following as the key potential health impact exposures:

- acute and chronic inhalation of chemicals in air emissions by workers in the adjacent industrial area and by recreational users of nearby Abbott Park; and
- acute and chronic inhalation of chemicals in air emissions and potential multiple pathway exposures (such as by way of ingestion or skin contact) to persistent or bio-accumulative chemicals that may deposit in soils and home-grown produce in residential areas nearby.

The Air Health Risk Assessment used dispersion data from the Air Quality Impact Assessment (see note in **Table 4**) as well as human exposure data in the Human Health and Environmental Risk Assessment (see section 5.1 on page 11) to calculate a health hazard index and a cancer risk index in accordance with the methodology in the Approved Methods.

The Air Health Risk Assessment concluded that:

- the total Hazard Index for the Maximum Off-site Exposed Individual (MEI) for all non-carcinogenic chemicals is predicted to be 0.0064, which comfortably complies with the acceptance criteria in the EPA's Approved Methods of 0.2;
- the total incremental lifetime cancer risk for the MEI for all carcinogenic threshold chemicals is 1 in 30-million, which comfortably complies with the Acceptance Criteria in the EPA's Approved Methods of 1 in 1-million; and
- the short-term acute exposures from emissions during worst-case abnormal conditions are considered to carry negligible risk.

Conclusion

NSW Health and the EPA have reviewed the Project and have raised no concerns with the proposal and the potential air quality and human health risk impacts. Based on the findings of the specialists' reports in respect of predicted maximum concentrations, Hazard Index and Cancer Risk Acceptance Criteria, the Department is satisfied that the proposal meets all relevant air quality and human health risk requirements.

Notwithstanding, the Department has recommended strict conditions of approval that require the Proponent to develop an air quality management plan specifying emissions monitoring and reporting and independent environmental auditing of the operation if it becomes necessary.

The Department has also specified the need for the Proponent to undertake Commissioning and Proof of Performance Trials as part of the recommended conditions to demonstrate the appropriate environmental and safety performance of the technology under controlled conditions. Progression from Commissioning to Proof of Performance, then to full operation would be dependent on the Director-General's approval, having considered the environmental and safety performance of the technology at each stage.

The recommended conditions also require the Proponent to appoint an Independent Environmental Expert (IEE) for the project. At the request of the Director-General, the IEE should review the CPoP trial plan, monthly reports, including results of the CPoP trials and the Air Quality Monitoring Program. This independent review process is separate to the site auditor process, and has the flexibility to respond to requests from the Director-General or the community to review specific project information. This recommended condition would also strengthen the technical input into verifying and addressing potential air quality issues should they arise during the operation of the project.

5.3 Noise

Issue

The Project has the potential to generate noise impacts (during construction and operation) at nearby residences and other sensitive receivers.

Consideration

The EA was accompanied by a noise impact assessment undertaken for the Proponent by Wilkinson Murray (November 2010). The assessment identified the primary noise sources during construction and operation of the Project as including:

- construction noise during site establishment;
- the possible use of a hydraulic hammer for brief periods for concrete breaking (if necessary) at times throughout the Project, which is deemed to be construction noise; and
- operational noise including:
 - 24-hour operation of the water treatment plant, DTD plant, and feed soil building;
 - daytime operation of heavy excavation and earth-moving equipment; and
 - traffic noise (assessed at item 9 in Table 5 of this Report).

There are industrial buildings adjoining the site to the north and east. To some extent, these buildings will buffer the potential noise impacts. Nevertheless, the machinery and processes involved in the Project can be noisy and the potential noise impacts warrant modelling and assessment.

The Wilkinson Murray report modelled the predicted noise impacts of the proposal, which shows that the EPA's construction and operation noise criteria would be complied with at all residential properties.

However, the assessment also concluded that there would be some minor short-term exceedances of the construction and operational noise criteria at the Villawood Detention Centre.

Construction phase non-compliance with noise criteria

The site establishment/construction phase of the development is expected to take approximately 26 weeks. Any short-term use of an excavator mounted hydraulic hammer for concrete breaking would be during the site establishment phase or shortly after the operational phase begins.

If the hydraulic hammer was used for concrete breaking near the northern site-boundary, the noise assessment predicts a noise level of around 61 dBA ($L_{Aeq15min}$) at the Villawood Detention Centre, which is around 8dBA above the daytime construction criteria for the centre. Noise mitigation is not proposed because the predicted non-compliance would be very brief and only if the use of a hydraulic hammer was necessary for concrete breaking.

While the exceedence is not predicted to be high (if it is used) and is only expected to occur for a short-term period, the Department has recommended conditions that require Orica to include respite periods when a hydraulic hammer is in use to minimise its potential impact and to also notify the detention centre of the days and times that the hydraulic hammer would be in use.

Operational phase non-compliance with noise criteria

The operational phase of the development is expected to take 20 weeks. The noise assessment predicts an operational noise level of around 50dBA ($L_{Aeq15min}$) at the Villawood detention centre while excavators are working near the northern site boundary. The predicted noise level is 2dBA above the daytime intrusive criteria for the detention centre.

The predicted non-compliance is small and short-lived as work in this location would be approximately one week's duration. Noise mitigation measures, such as acoustic screens, are not proposed and the Department does not consider that any further mitigation is required given the expected minor and short-lived exceedence that is predicted.

Conclusion

The Department and the EPA are both satisfied with the noise assessment and the potential noise impacts associated with the proposal. While it is acknowledged that there may be some minor short-term exceedences at the Villawood Detention Centre, the Department is satisfied that the notification and respite periods required by the approval conditions would assist in mitigating any potential impacts on the Detention Centre from any hydraulic hammering on site. As the predicted exceedences would also only occur during the day, the Department is satisfied that these exceedences are acceptable.

5.4 Assessment of other issues

Table 5 – Assessment of other issues

Issue	Department's assessment	Recommendation
<i>Traffic impact</i>	<ul style="list-style-type: none"> Access to the site is off Christina Road via Woodville Road to the west and Miller Road to the East. Traffic generation during site establishment involves up to 10 heavy vehicles per day and up to 45 light vehicles per day. Operational traffic would be 30 light vehicles per day and 5 heavy supply vehicles. Excavation and soil-transport equipment will remain on site for the duration of the Project. The Department considers that the predicted traffic generation from the Project is low and would be accommodated within the capacity of the local and regional road network. The Council and the RMS raise no objection regarding traffic generation. Orica has committed to a Traffic Management Plan to minimise traffic conflicts during the site establishment and operation phases of the Project. 	<p>Recommended conditions require Orica to:</p> <ul style="list-style-type: none"> implement a Traffic Management Plan to ensure that impacts on the local and regional traffic network are minimised. Prepare the Traffic Management Plan in consultation with the RMS and Council.

Issue	Department's assessment	Recommendation
<i>Vegetation</i>	<ul style="list-style-type: none"> ▪ The site is largely clear and there is no significant impact on threatened species, habitat or endangered ecological communities. ▪ Orica and Council have agreed that Orica will prepare a Vegetation Management and Rehabilitation Plan in consultation with Council. ▪ The Plan would provide for the protection of trees that are to be retained during work and rehabilitation work. ▪ The Plan will need to take into account the guidelines that have been prepared for the protection and restoration of Cooks River Castlereagh Ironbark Forest (an EEC), remnants of which occur on the site. 	<p>Recommended conditions require Orica to:</p> <ul style="list-style-type: none"> ▪ to prepare a Vegetation Management and Rehabilitation Plan in consultation with Council to address tree protection measures during remediation works.
<i>Hazards and Risk</i>	<ul style="list-style-type: none"> ▪ Orica prepared a Preliminary Hazard Analysis (PHA) for the Project identifying potential off-site hazards. ▪ The PHA concluded that there were no incidents that would result in an off-site fatality or injury and irritation to nearby residential areas. ▪ The Department is satisfied that the risk of off-site hazards is within relevant guidelines. ▪ Orica must prepare a suite of hazard and safety related plans for on-site activity. 	<p>Recommended conditions require Orica to:</p> <ul style="list-style-type: none"> ▪ prepare a suite of hazard and safety studies for site operations in accordance with the relevant guidelines.
<i>Asbestos Management</i>	<ul style="list-style-type: none"> ▪ Bonded asbestos containing materials (BACM) are present on the site in the form of old stormwater drains, water pipes and pits. ▪ The RAP (which has been audited by an EPA Accredited Site Auditor) proposes to collect and dispose of any BACM in the following manner: <ul style="list-style-type: none"> – establish appropriate barriers and signage around the area where BACM has been identified; – remove BACM from the Site by an licensed Asbestos Removal Contractor (ARC); – dispose of BACM at a licence landfill; and – validate soil samples collected from the soils adjacent to and surrounding the BACM removal area and analyse for asbestos. Should the soils beneath the BACM be impacted with asbestos fibres, the impacted soils will be excavated for off-site disposal. ▪ The remediated area must not contain asbestos (bonded or otherwise) as determined by the following: <ul style="list-style-type: none"> – no detection of asbestos in samples submitted for analysis; and – a visual inspection of the remediated area to confirm the removal of all visible BACM fragments. 	<p>Recommended conditions require Orica to:</p> <ul style="list-style-type: none"> ▪ handle, classify and transport any asbestos material in accordance with the RAP and WorkCover requirements.
<i>Groundwater</i>	<ul style="list-style-type: none"> ▪ The Project does not include groundwater treatment. ▪ Groundwater modelling shows there are contamination plumes that probably grew quickly, but became static once operations ceased. ▪ The Proponent's 'Human and Environmental Health Risk Assessment' concluded that the level of groundwater contamination already present does not pose an unacceptable risk to human health or the environment. ▪ The contaminants already present are not likely to migrate far because of diffusion, biodegradation and slow groundwater movement. ▪ The Department considers that removing the contamination source by treating the overlying soils would minimise further ground-water contamination. ▪ NOW recommend groundwater monitoring to ensure remedial work does not exacerbate contaminant migration. 	<p>Recommended conditions require Orica to:</p> <ul style="list-style-type: none"> ▪ to prepare a site Water Management Plan that includes ongoing groundwater monitoring to detect any contamination plume migration in the unlikely event that it occurs.
<i>Surface water, soil and erosion</i>	<ul style="list-style-type: none"> ▪ Orica has committed to best practice site environmental controls and will need to liaise with Council, NOW and the EPA in preparation of a Water Management Plan for the Project 	<p>Recommended conditions require Orica to:</p> <ul style="list-style-type: none"> ▪ prepare management plans for appropriate site environmental controls.
<i>Greenhouse Gas and Energy Efficiency</i>	<ul style="list-style-type: none"> ▪ Anticipated greenhouse emissions for the Project based on a preliminary mass and energy balance for the DTD Plant plus emissions from other plant and equipment for the Project are: 	<p>Recommended conditions require Orica to:</p> <ul style="list-style-type: none"> ▪ implement all reasonable and feasible measures to

Issue	Department's assessment	Recommendation
	<ul style="list-style-type: none"> – CO₂ – estimated to be 6,579 tonnes; – CH₄ – estimated to be 13 tonnes; and – NO_x – estimated to be 5.9 tonnes. <ul style="list-style-type: none"> ▪ CO₂ emissions from electrical consumption is estimated at a further 400 tonnes. ▪ The amount of CO₂ estimated to be produced by the proposed remediation facility therefore represents an increase of 0.001% on Australia's annual emissions and as such is considered to be negligible. ▪ Further, this increase will be temporary as works on the Site will cease and the Plant will be decommissioned once remediation is complete. ▪ Overall, the construction and operation of the Project as a whole is not expected to contribute significant levels of greenhouse gases, and would have a negligible contribution to climate change. 	<ul style="list-style-type: none"> minimise energy use and greenhouse gas emissions; and ▪ prepare and implement an Energy Savings Action Plan.
<i>Heritage</i>	<ul style="list-style-type: none"> ▪ There are no listed heritage sites or relics within the Project area. ▪ The Department considers it unlikely that heritage items are present within the site boundary because of the extensive history of site disturbance. 	There are no recommended conditions.
<i>Socio-economic</i>	<ul style="list-style-type: none"> ▪ The Project would have positive employment impacts generating 35 short term jobs. ▪ The Project would remove a long-term source of contamination and make the site available for productive industrial uses in-line with its industrial zoning. 	There are no recommended conditions.

6. CONCLUSION

The Department has reviewed the Environmental Assessment and is satisfied that the proposed remedial work will be adequate to render the site suitable for ongoing industrial uses. Orica will need to obtain a Site Audit Statement from an accredited Site Auditor at the conclusion of work to verify proper completion of the work in accordance with the *Contaminated Land Management Act 1997*.

The Department is also satisfied that the remedial work can be carried out with acceptable impacts on air and water quality, noise amenity, and human health among other environmental matters. The Department has recommended strict conditions for noise and other emission limits, as well as a suite of environmental management plans to consolidate the day to day operational aspects of the Project and provide ongoing monitoring and review of the Project to ensure off-site impacts are minimal.

The Project would remove a long-term source of contamination from the area and return the affected land to productive industrial uses in line with its industrial zone. On balance, the Department believes the Project is in the public interest and should be approved subject to the aforementioned conditions.

7. RECOMMENDATION

It is recommended that the Deputy Director-General:

- consider the findings and recommendations of this report;
- approve the Project application, subject to conditions, under section 75J of the *Environmental Planning and Assessment Act 1979*; and
- sign the attached Project approval (tagged 'B').

 10/5/12
Chris Ritchie
Manager, Industry Assessments

 18/5/12
Richard Pearson
Deputy Director-General
Development Assessment and Systems Performance

 14.5.12
David Mooney
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