ASSESSMENT REPORT

Section 75W Modification
Replacement of Caustic Storage Tanks – Chlor-Alkali Plant (DA 38/98 Mod 4)

1. BACKGROUND

The Botany Industrial Park (BIP) is located in the suburb of Banksmeadow in the Botany Bay local government area, and covers an area of around 74 hectares (see Figure 1). Three companies carry out operations within the BIP: Orica, Huntsman and Qenos.

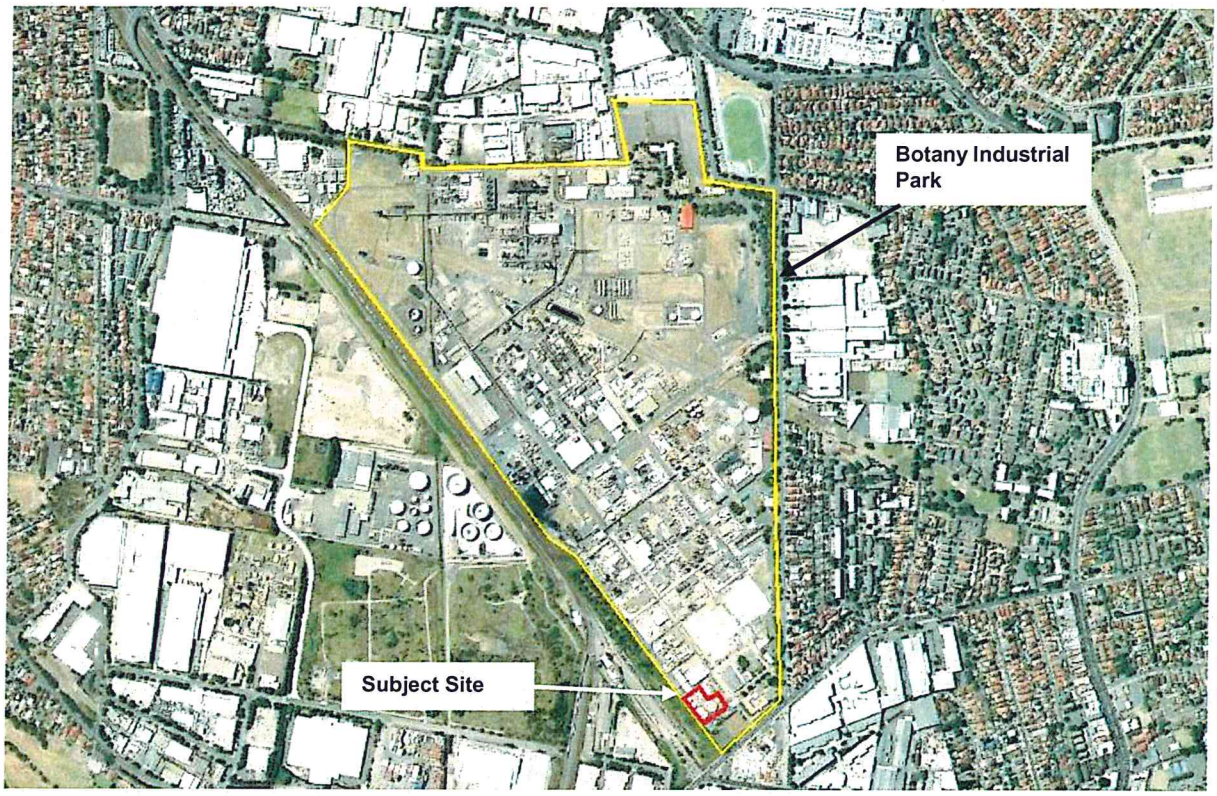

Figure 1: *Site location*

Orica Australia Pty Ltd (Orica) has been manufacturing chemicals at the BIP since 1941. Orica operates a Chlor-Alkali Plant in the southern part of the BIP, which manufactures hydrogen gas, chlorine gas and caustic soda.

The original Chlor-Alkali Plant started operating in the 1940's, but on 6 November 1998 the Minister approved the construction and operation of a new Chlor-Alkali plant to replace the existing 1940's plant. The new Chlor-Alkali plant has been in operation since 2002 and the former Chlor-Alkali plant was demolished in 2007/8. Figure 2 shows the location of the old and new plants.

Adjacent to the Chlor-Alkali Plant, and forming part of the broader Chlorine area, are four sub-plants, including the Hydrogen Chloride Plant; Ferric Chloride Plant; Sodium Hypochlorite Plant; and Hypochlorite loading bay and electrolysis area. The Chlorine area, including the Chlor-Alkali Plant and four sub-plants operate under the Minister's consent of 1998 (DA 35/98) and have been modified three times, namely:

- MOD-12-1-2006-i for the demolition of the decommissioned Chlor-Alkali Plant;
- MOD-180-11-2005-i for the replacement of the hypochlorite loading bay, upgrading the hypochlorite tank farm and replacement of the technicians' change room. Upgrade of the hypochlorite tank farm did not proceed due to economic constraints at the time; and
- 35/98 MOD 3 for the relocation of the sodium hypochlorite plant.

The plant is also regulated by the Environment Protection Authority (EPA) through an Environmental Protection Licence (EPL 2148).

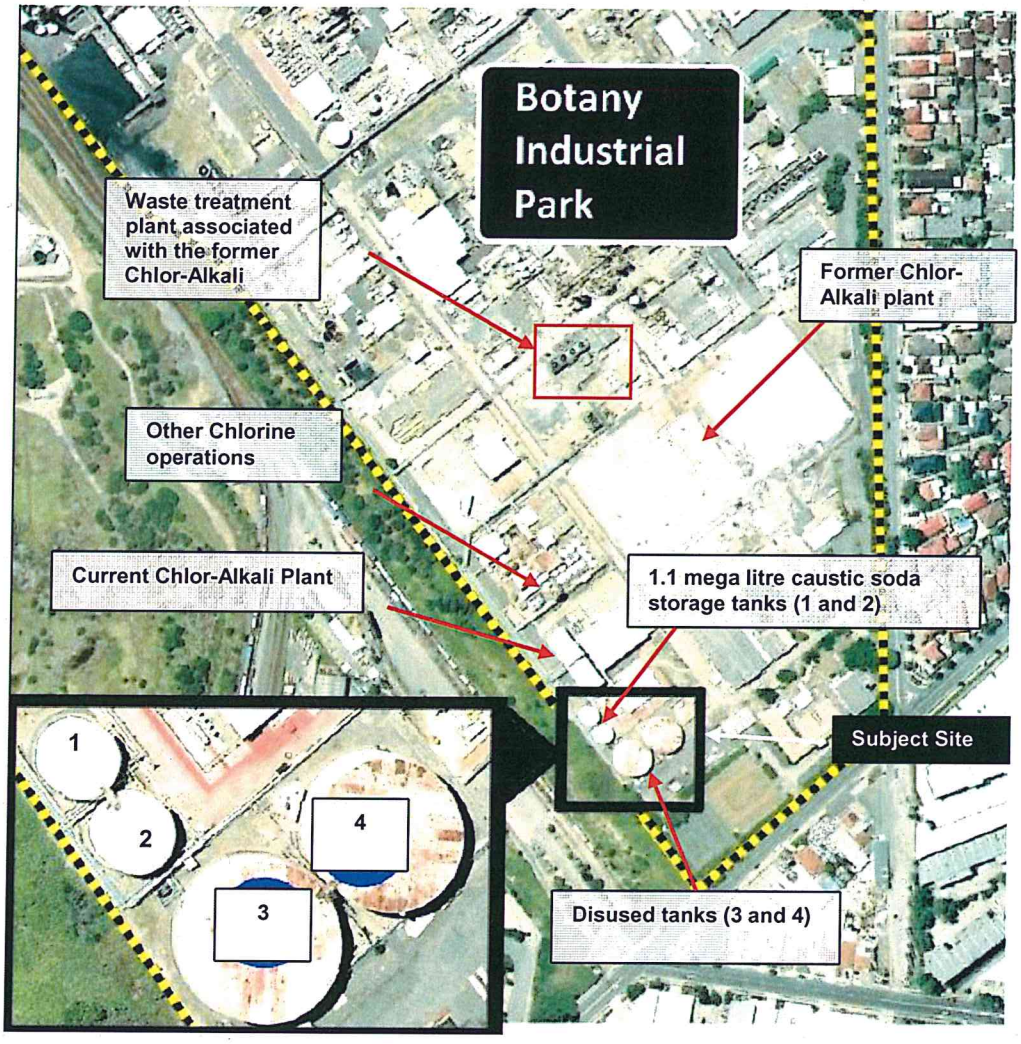

Figure 2: *Chlor-Alkali Plant and Other Chlorine Operations*

The Chlor-Alkali plant manufactures chlorine using membrane cell technology. By products generated in the process are caustic soda and hydrogen.

The chlorine is used to manufacture sodium hypochlorite, ferric chloride and hydrochloric acid for sale. Some of the caustic soda is re-used in the chlorine process and the remainder is sold to customers. The hydrogen is used internally for hydrochloric acid production.

The Chlor-Alkali plant produces up to 70,000 litres per day of caustic soda which is currently stored in two 1.1 mega litre steel storage tanks (shown as Tanks 1 and 2 in Figure 2) that are situated adjacent to the western boundary of the plant (the subject site). Recent inspections have identified a number of deficiencies in Tanks 1 and 2, including inadequate bunding.

Two decommissioned tanks formerly used for liquid caustic soda storage (shown as Tanks 3 and 4 in Figure 2), are located adjacent to Tanks 1 and 2.

Potential Contamination

From 1944 until 2002, Orica used elemental mercury at the former Chlor-Alkali plant in an electrolytic process to manufacture chlorine, caustic soda, hydrochloric acid, sodium hypochlorite and ferric chloride from a brine solution.

Environmental investigations undertaken since 2002 have identified significant concentrations of mercury in soil and groundwater at and down gradient of the former Chlor-Alkali plant. The mercury was found to be concentrated primarily beneath the former plant (Block G) see Figure 3, however, some other areas of contamination have been identified, including some within Block A, the block that also contains the caustic soda tanks.

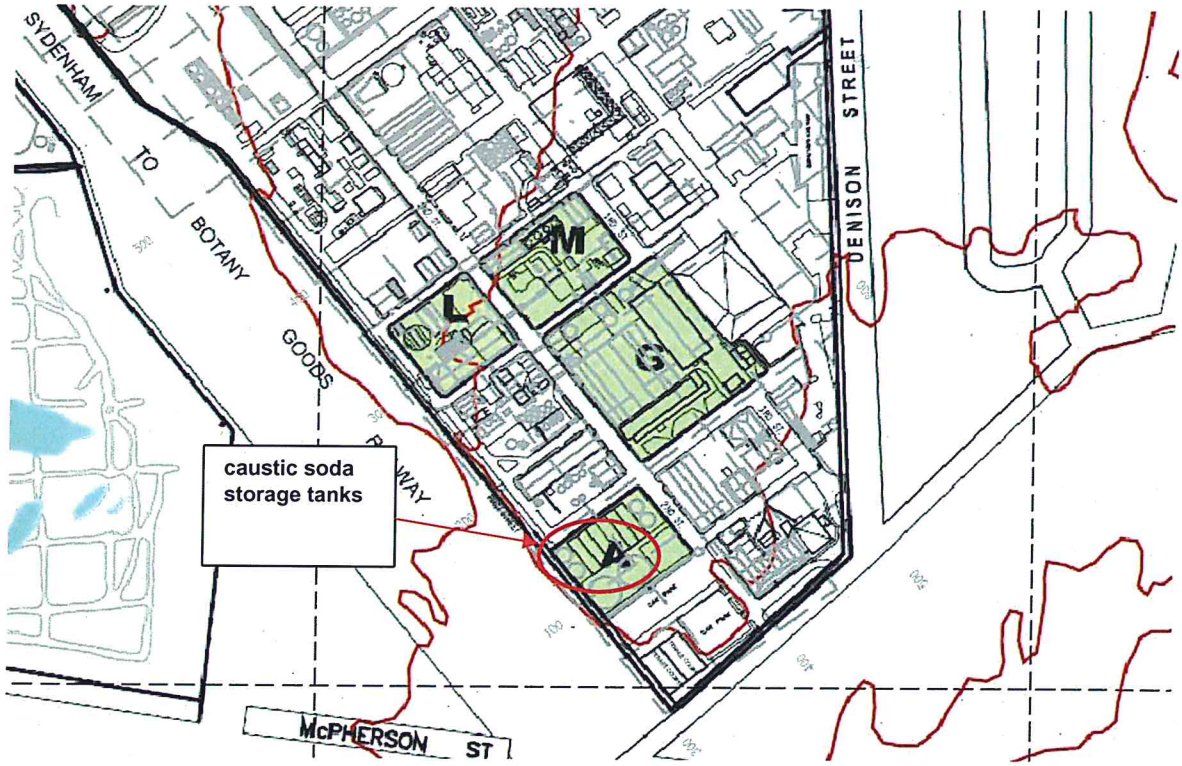

Figure 3: *Blocks in which mercury contaminated soil has been identified*

In January 2012, the EPA issued Orica with a Management Order under the *Contaminated Land Management Act 1997* (Order Number 20111406), to set out an appropriate framework and timeframe for the remediation of mercury contamination from the former Chlor-Alkali Plant. The Management Order applied over identified Blocks A, G, M and L. However, the EPA has subsequently amended the land to which the Management Order applies, to better reflect known areas of contamination, essentially removing the portion of Block A (which relates to this modification) from the Management Order. Figure 4 shows the land to which the Management Order now applies.

The remediation of the former Chlor-Alkali Plant is classified as Category 2 remediation works, which under the *State Environmental Planning Policy 55 – Remediation of Land* does not require development consent. However, the remediation will be regulated by the EPA under the CLM Act 1997. As such, on 16 July 2012 Orica submitted two Remediation Action Plans for the remediation of blocks A, M, G and L to the EPA for approval. Category 2 works must also comply with Council's policies in relation to the management of contaminated land.

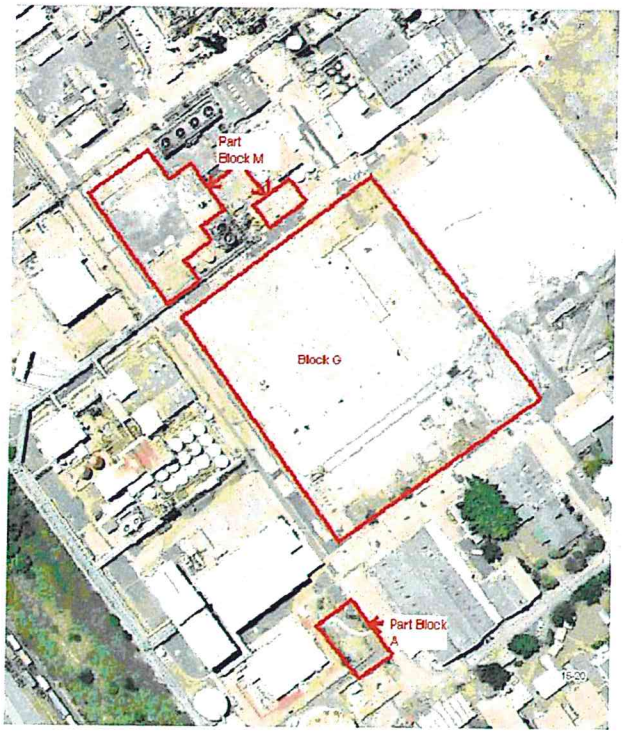

Figure 4: *Land to which the Management Order (20111406) applies*

Former Chlor-Alkali Plant - Waste treatment facility

Due to the use of mercury in the production of chlorine at its former Chlor-Alkali Pant, Orica operated an associated waste treatment facility capable of treating/separating small volumes of mercury. The facility, which is still in use, works by separating water from the sludge using reagants such as ferric chloride which are added to the waste, which is then left to settle. The sludge is taken to the sludge pad and dried, tested before classification and offsite disposal, while the water is sent to the sewer under a trade waste agreement.

2. PROPOSED MODIFICATION

On 8 May 2012, Orica submitted a modification application (DA 35/98 Mod 4) under Section 75W of the EP&A Act (see **Appendix A** for a copy of the application supporting the proposal).

This application seeks to:

- Demolish two disused caustic soda storage tanks (3 and 4 in Figure 2);
- Dispose of some 50 L of mercury-contaminated sludge and water currently contained within Tank 4;
- Decontaminate Tank 4;
- Demolish Tanks 1 and 2 (see Figure 2);
- Construct two new double skinned liquid caustic soda storage tanks in the location of the demolished Tanks 3 and 4; and
- Construct bunding around the two new tanks.

The new tanks, which would be located adjacent to the southern boundary of the plant, within the current footprint of the existing Tanks 3 and 4, would be constructed to comply with relevant work health and safety regulations and guidelines.

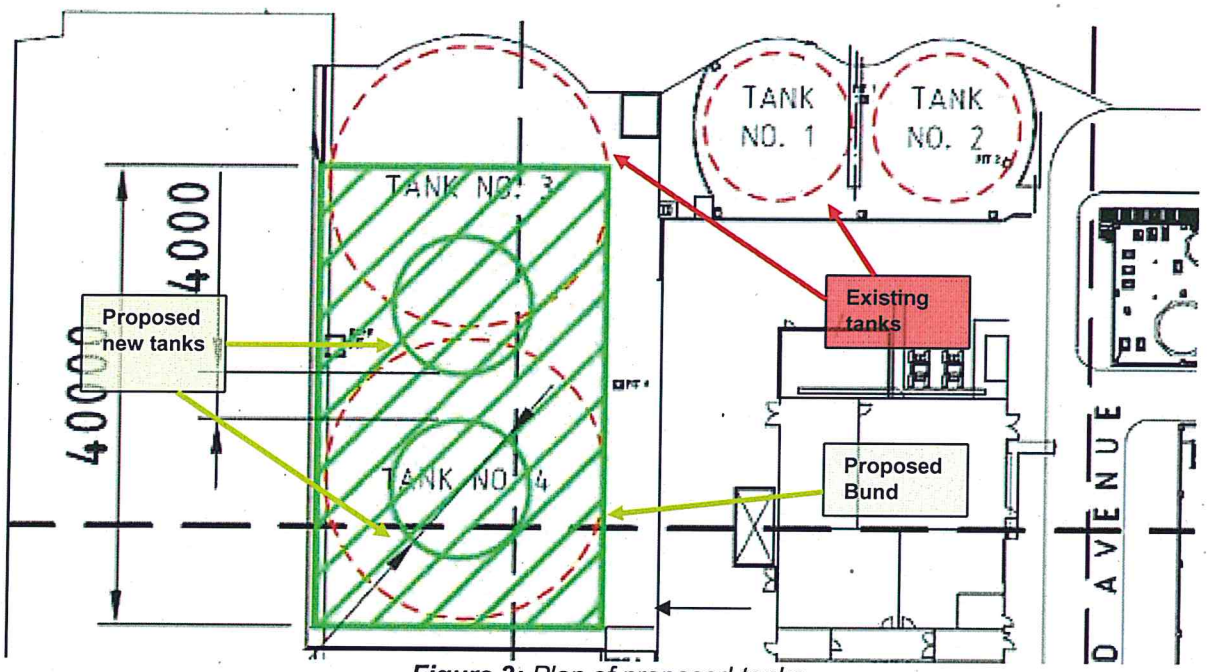

Figure 3: *Plan of proposed tanks*

Construction would take approximately one year. The construction sequence would generally comprise the following stages, with indicative dates included in brackets.

Table 1 *Proposed Construction staging*

Staging	Construction activities
Stage 1 (November 2012 – January 2013) – decommissioning, demolition and removal of Tanks 3 and 4	• The existing tanks would be mechanically demolished. • Approximately 50 L of mercury contaminated sludge from tank 4 would be treated in Orica's existing waste treatment facility (associated with the former Chlor-Alkali Plant) prior to disposal at a licensed facility. • Once the bitumen surface has been removed, soil samples would be collected from beneath Tanks 3 and 4 to determine whether the soil beneath the tanks is contaminated. Orica estimates that up to 200 tonnes of soil would be excavated to enable construction of the new tanks and concrete bund. • If the soil is found to be contaminated it would be treated in the same way as the mercury contaminated sludge.
Stage 2 (February 2012 – September 2013) – construction of new Tanks 1 and 2 at the former location of Tanks 3 and 4	• New single-skinned steel tanks enclosed with conventional concrete wall bunds would be constructed at the locations shown in Figure 3.
Stage 3 (October 2013) – commissioning and operation of new Tanks 1 and 2	• Caustic soda would be pumped from existing Tanks 1 and 2 into the top of the new tanks via fixed steel piping.
Stage 4 (November 2013 – January 2014) decommissioning, demolition and removal of Existing Tanks 1 and 2.	• The existing tanks would be mechanically demolished.

Orica estimate that construction would generate some 80 heavy vehicle movements (and 130 movements in total) during the entire construction period, with a maximum of six truck movements on any given day. This traffic would enter and exit the site via Denison Street, Matraville.

3. STATUTORY CONTEXT

Approval Authority

This application proposes to modify consent DA 35/98 granted by the then Minister under Part 4 of the *Environmental Planning and Assessment Act 1979* (the Act).

Under clause 8J (8) of the *Environmental Planning and Assessment Regulation 2000*, this consent is taken to be an approval under Part 3A of the Act and can be modified by the Minister under Section 75W of the Act.

Section 75W of the Act as in force immediately before its repeal on 1 October 2011, and as modified by Schedule 6A, continues to apply to this development consent in accordance with Clause 12 of Schedule 6A of the Act

The Minister has delegated his functions to determine Section 75W modifications to the Executive-Director of 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 Council has not made an objection to the proposal. There has also been no political disclosure statement made 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 Executive Director, Major Projects Assessment under delegation.

Section 75W

Under Section 75W of the EP&A Act, the Minister is obliged to be satisfied that what is proposed is indeed a modification of the original proposal, rather than being a new project in its own right.

The Department has reviewed the scale and nature of the proposed modification, and is satisfied that it can be characterised as a genuine modification of the original project as:

- it involves only minor changes to the approved project to allow the replacement of two caustic soda storage tanks;
- there would be no increase in the allowed storage volume of caustic soda;
- there are management measures already in place within the development consent and licence; and
- the project as modified could be carried out with some minor amendments to the existing conditions of consent.

4. CONSULTATION

Under Section 75W of the EP&A Act, the Department is not required to notify or exhibit the application. Following a review of the application the Department made the environmental assessment (EA) for the proposal publicly available on its website and sought submissions from the Environment Protection Authority (EPA) and City of Botany Bay Council (Council). Consultation with other government agencies and neighbouring sites was considered to be unnecessary as the environmental impacts of the proposal would essentially remain unchanged.

The **EPA** supports the modification as it considers that the replacement of the caustic tanks would reduce the risk of soil contamination and stormwater pollution. However, it recommended a number of conditions of consent. The EPA also reminded the Proponent that it must comply with the requirements of its EPL.

Council did not object to the proposal, however, it raised a number of concerns and sought clarification on a number of issues, particularly in relation to the modification's interaction with the former chlor-alkali plant remediation and Management Order, and regarding the proposed methodology for the treatment of the mercury contaminated sludge. Council subsequently indicated that its concerns were satisfactorily addressed by Orica's Response to Submissions.

In addition, Council sought information about traffic movements and tank dimensions and recommended a number of conditions of consent including monitoring of the heritage items during the construction phase.

Copies of these submissions can be found in **Appendix B** and Orica's Response to Submissions is contained in **Appendix A.**

5. ASSESSMENT

During its assessment of the merits of the proposed modification, the Department has reviewed the:

- existing conditions of consent;
- Environmental Assessment of the proposed modification;
- submissions on the proposed modification;
- Orica's Response to Submissions; and
- relevant policies and guidelines.

The assessment is detailed in Table 2.

***Table 2** – Assessment of Key Issues*

Issue	Consideration	Recommendation
Contamination	<u>Mercury contaminated sludge</u> (within Tank 4) • Some 50L of mercury contaminated sludge, currently contained in Tank 4, would need treatment prior to disposal offsite. • Orica proposes to use its existing treatment facility (associated with the former Chlor-Alkali Plant (see **Section 1**)) to treat this material before it is disposed of at a licensed facility. • The EPA has advised that it is satisfied with this approach. • The Department has recommended that Orica prepare a Construction Environmental Management Plan to document how the sludge will be collected, handled and transported. • The Department is satisfied that the small volume of contaminated material can be appropriately managed by Orica. <u>Potential Soil contamination</u> (under Tanks 3 and 4) • The modification would require removal of approximately 200 tonnes of soil from under the caustic soda tanks. There is some potential that this material may be contaminated. However recent soil sampling undertaken by Orica indicates that the material beneath Tanks 3 and 4 is not contaminated. • The EPA advised that additional sampling of shallow soils may still be required. • The Department has recommended that the CEMP (required above) include the results of recent soil sampling as well as measures to manage any areas of shallow soil contamination. • Orica has indicated that if contaminated soil is encountered, it would be treated in the same manner as the sludge from Tank 4 in the on-site waste treatment facility. • If after treatment the material is still classified as hazardous waste, it would be retained onsite with the	Recommended conditions require the Proponent to: • Prepare a Construction Environmental Management Plan to include: o details of the management strategy for the handling, treatment and disposal of any contaminated material • Prepare a Construction Environmental Management Plan to include: o the results of recent soil sampling documented in the Figure titled *Orica Botany Caustic Tank Project and* dated 2/8/2012; and o measures, such as additional sampling and/or remedial measures, to manage any areas

Issue	Consideration	Recommendation
	rest of the contaminated material associated with the former Chlor-Alkali plant for treatment in accordance with an EPA approved Remedial Action Plan and in accordance with Council's Contaminated Land Development Control Plan. • The EPA is satisfied that Orica can manage this material with this approach. Its recommended that conditions be incorporated into the Department's modifying instrument via a CEMP. • Given the small quantity of material to be excavated and the proposed management measures, the potential impacts associated with contaminated material are considered to be minimal.	of shallow soil contamination.
Hazards	• The proposed modification involves replacement of existing storage tanks, and would not increase the volume of caustic soda stored on site. • The new storage tanks would be fully bunded and constructed in accordance with the relevant work health and safety regulations and guidelines. • Council suggested that a Preliminary Hazard Analysis (PHA) may be required. • However, it is the Department's view that the hazards and risks would actually reduce as a result of the modification due to the installation of new tanks which would meet the current work health and safety guidelines. Consequently, the Department is satisfied that a Preliminary Hazard Analysis is not required. • However, to manage any construction risks the Department has recommended that Orica prepare a Construction Safety Study prior to commencement of construction.	Recommended conditions require the Proponent to: • Prepare a Construction Safety Study consistent with the Department of Planning's Hazardous Industry Planning Advisory Paper No. 7 '*Construction Safety Study Guidelines*'.
Noise	• The EA considers that there may be a temporary increase in noise emissions during construction, however standard mitigation measures would be implemented to minimise impacts. • The proposed works are also shielded from the nearest receivers (some 150m to the east) to some extent by the adjacent industrial buildings. • The EPA raised no concerns over noise. • The Department considers that the existing consent conditions, including emission limits for construction noise and limited construction hours are sufficient to manage construction noise impacts, particularly given the short duration of the construction works. • Notwithstanding, the Department recommends that the Proponent include construction noise management measures for the Mod 4 activities in the CEMP required above.	Recommended conditions require the Proponent to: • include construction noise management measures in the CEMP.
Waste Management	• Waste produced during construction would primarily be steel from the decommissioned tanks, however some 200 tonnes of soil and 50 litres of mercury contaminated sludge would also be generated. • Management of the sludge and soil is discussed above (see Contamination section in this table). • Other waste would be temporarily stored in covered skip bins on site adjacent to Tanks 3 and 4 prior to being sorted, and removed from the site to licensed facilities. • The Department considers that the management measures and the existing and modified conditions of consent would ensure waste is managed appropriately.	Recommended conditions require the Proponent to: • Prepare a Construction Environmental Management Plan to include: o waste management measures.

Issue	Consideration	Recommendation
Water	• Replacement of the old storage tanks and the bunds with tanks and bunds that comply with current hazard and risk legislation, would reduce the long term risk of storm water pollution and groundwater contamination. • The Department has recommended that the CEMP required above include measures to control soil and sediment and surface run-off during construction.	Recommended conditions require the Proponent to: • Prepare a Construction Environmental Management Plan to include: o soil sedimentation and runoff control measures.
Traffic	• Orica predicts a combined total of 130 truck and light vehicle movements over the year long construction period. This equates to an average of 1 truck and 8 light vehicle movements per day with a maximum of 6 truck movements on any given day. All construction traffic would enter and leave the site via Wentworth Avenue and Denison Streets. • Orica proposes a number of measures to limit impacts on the surrounding network including limiting construction vehicle movements on Beauchamp Road and Denison Street to outside peak AM and PM periods, and staggering vehicles to and from the site. Council was satisfied with these measures provided all construction traffic uses the arterial road network. • Given the BIP's industrial setting and the volume of traffic on the surrounding network, the Department considers that the additional 3 trucks a day would have minimal impact on the surrounding network. • Notwithstanding, the Department has recommended that the CEMP specify that all construction traffic use the arterial road network.	Recommended conditions require the Proponent to: • Prepare a Construction Environmental Management Plan to include: o a defined heavy vehicle route restricted to the arterial road network and contractor induction requiring the use the defined route;
Heritage	• The caustic storage tanks are located some 50m from Orica's main administration building and a mature fig tree, both of which are listed as heritage items under Schedule 3 of the *State Environmental Planning Policy (Major Development) 2005.* • Council recommended a condition requiring Orica to monitor the heritage items during construction to ensure that they are not damaged. Given the site's proximity to the items, the Department considers Council's request reasonable. As such a recommended condition requires Orica to monitor the administration building and the mature fig tree during the use of any vibration intensive equipment. • In addition, Orica proposes to adopt safe working distances for any vibration intensive equipment that would be used on site. The Department recommends that these be included in the CEMP. • Although the caustic tanks are not listed as heritage items, the existing approval requires a photographic record and documentation of the history of equipment and structures that would be demolished. A modified condition recommends a supplementary report be prepared to include photographic documentation of the tanks prior to demolition.	Recommended conditions require the Proponent to: • Monitor the heritage listed items during the use of any vibration intensive equipment; • Include safe working distances for the vibration intensive equipment in the CEMP; and • Prepare a supplementary photographic record and report to document the tanks prior to demolition.
Air	• Construction of the tanks and bund has the potential to emit dust. • The Department considers that standard management measures would be appropriate to manage dust and has recommended that these be included in the CEMP.	Recommended conditions require the Proponent to: • Prepare a Construction Environmental Management Plan to include: o dust control measures.

6. CONCLUSION

The Department has assessed the merits of the proposal in accordance with the requirements of the EP&A Act.

This assessment has found that the proposed modification is minor in nature and would not increase impacts of the development beyond those originally assessed and approved. The proposal is in the public interest as the replacement of the four older caustic soda storage tanks with two modern equivalents would actually reduce the risks of soil and groundwater contamination. In addition, the construction would be closely monitored through existing and modified conditions of consent

Consequently, the Department believes the modification should be approved subject to some minor amendments to the existing conditions of consent.

7. RECOMMENDATION

It is RECOMMENDED that, as delegate for the Minister, the Executive Director:

- **consider** the findings and recommendations of this report;
- **determine** that the proposed modification is within the scope of section 75W of the EP&A Act;
- **approve** the application subject to conditions; and
- **sign** the attached notice of modification **(Appendix C).**

Emma Barnet
(02) 9228 6550

Chris Ritchie 6/9/12.
Manager
Industry Projects

Chris Wilson
Executive Director
Major Projects Assessment